

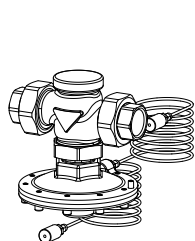
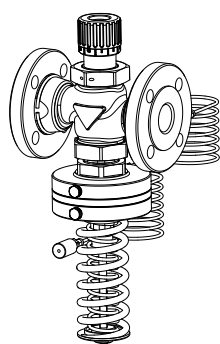
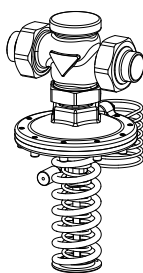
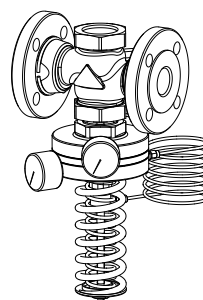
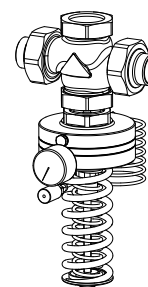
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11.23.GB

## 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

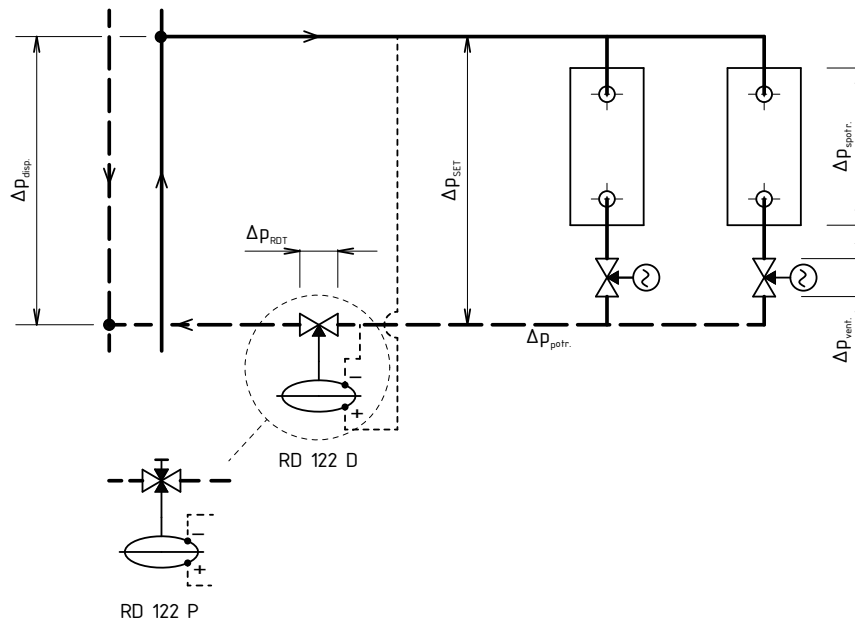
Basic operating position of regulator is when the body is above its controlling head that points downwards. This position must be kept especially when reducing steam pressure or when temperature exceeds 90 °C. For gases and liquids with temperatures under 90° C, the valve can be installed into vertical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

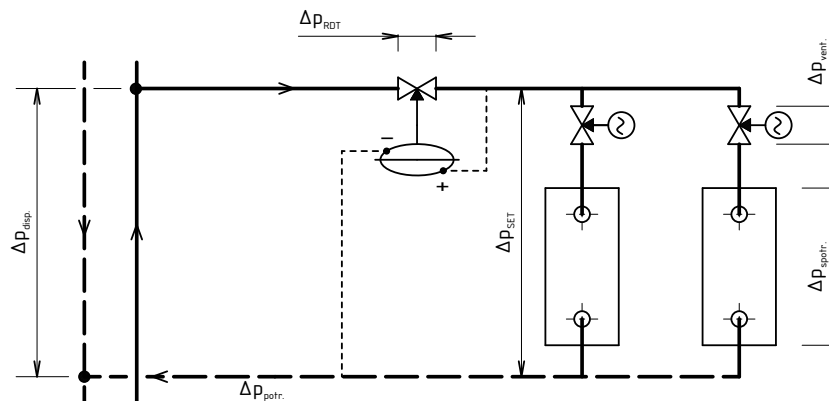
(rising pressure / pressure difference closes the valve)

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



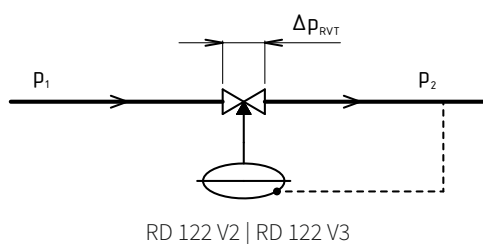
In cases that the differential pressure regulator is forced to work with high differential pressure ( $\Delta p_{RDT} > 250 \text{ kPa}$ ), the producer recommends to install both differential pressure regulator and control valves at primary line of the control loop. Such an installation ensures better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

### Scheme of regulation loop with differential pressure regulator at primary side

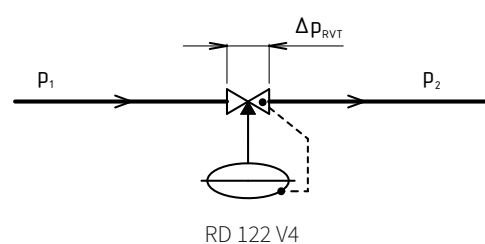


### Basic scheme of piping output pressure regulator RD 122 V

- with pressure sampling point on the pipeline

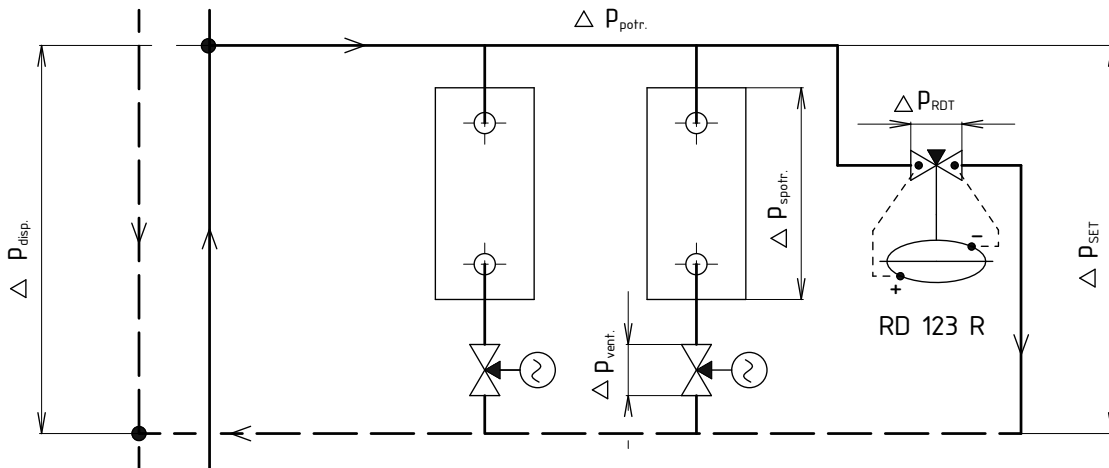


- with pressure sampling point on the valve



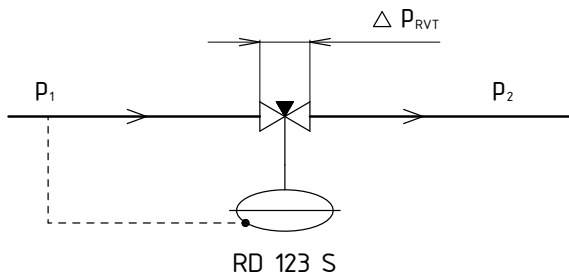
## Typical scheme of wiring for regulators RD 123 R, S (rising pressure / pressure difference opens the valve)

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

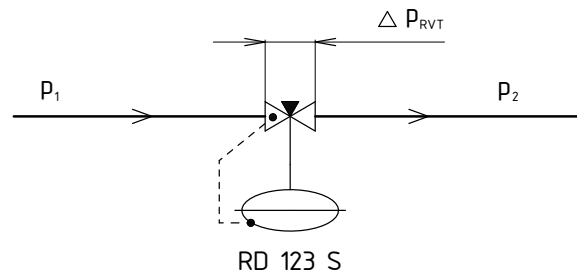


### Basic scheme of piping for input pressure regulator RD 123 S

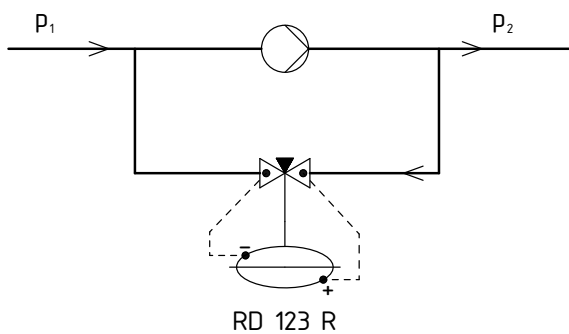
- with input of pressure signal from sample point on the pipeline



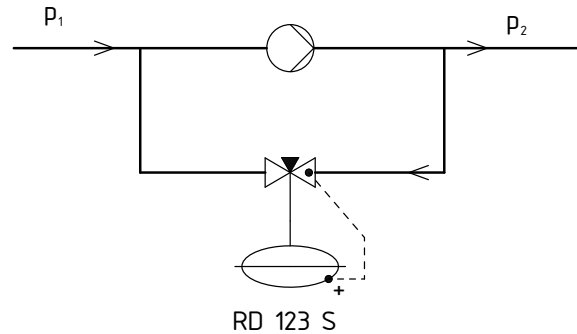
- with input of pressure signal from sample point on the valve



### 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 <sup>3</sup> /h	0,63 to 28,5 m <sup>3</sup> /h	0,63 to 32 m <sup>3</sup> /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 $\Delta p_{set}$	see specification code table		

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

DN	L	L <sub>1</sub>	V <sub>1</sub>	V <sub>2</sub>	H <sub>1</sub> <sup>*)</sup>	H <sub>2</sub> <sup>*)</sup>	H <sub>2</sub> <sup>**)</sup>	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

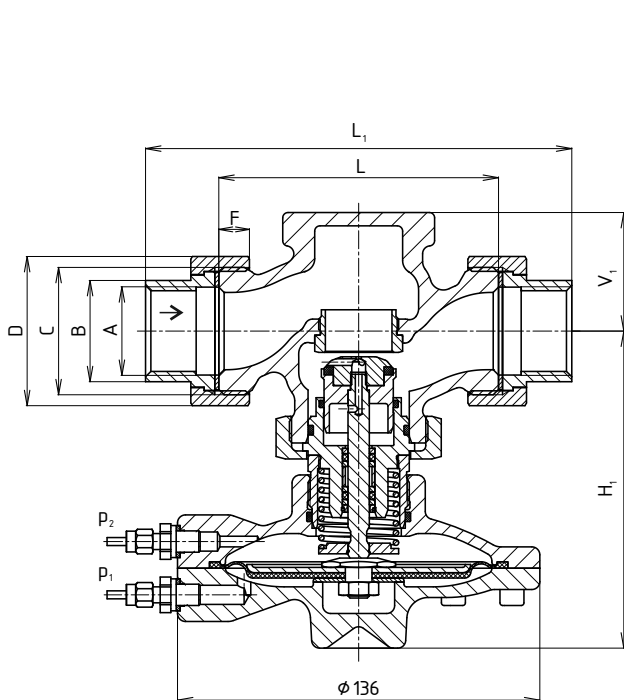
### Weights of RD 122 ../T with thread couplings and RD 122 ../W with weld unions

Typ	D, V		P	
DN	m <sub>1</sub> <sup>*)</sup>	m <sub>2</sub> <sup>*)</sup>	m <sub>1</sub> <sup>*)</sup>	m <sub>2</sub> <sup>*)</sup>
	[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

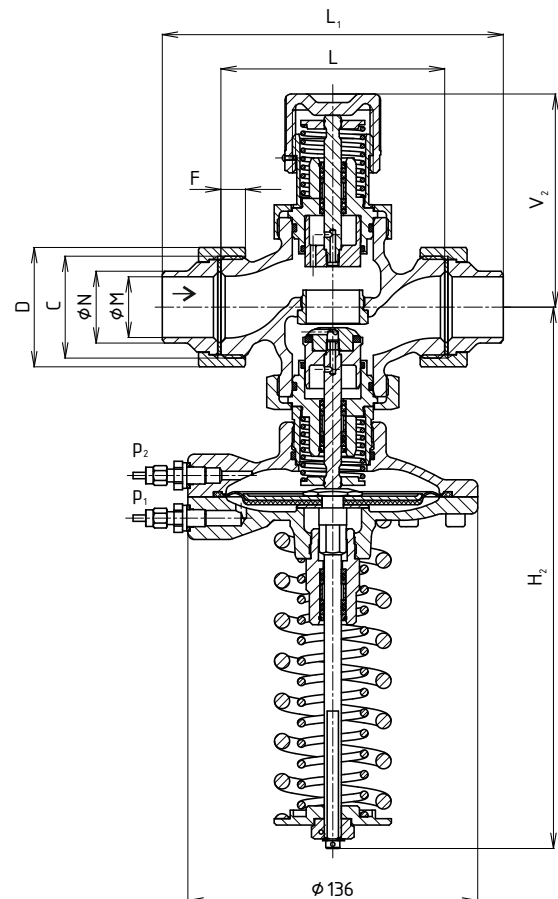
- \*) H<sub>1</sub>, m<sub>1</sub> ... dimensions and weights for the valves with constant differential pressure  
H<sub>2</sub>, m<sub>2</sub> ... dimensions and weights for the valves with adjustable differential pressure

- \*\*) 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 <sub>1</sub>	V <sub>1</sub>	V <sub>2</sub>	H <sub>1</sub> *)	H <sub>2</sub> *)	H <sub>2</sub> **)	ØD <sub>1</sub>	ØD <sub>2</sub>	ØD <sub>3</sub>	a	f	n	Ød
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]		[mm]
15	145	44.5	100	119	254	287	95	65	45	16	2	4	14
20	148	44.5	100	119	254	287	105	75	58	16	2	4	14
25	159	44.5	100	119	254	287	115	85	68	18	2	4	14
32	192	63	119	139	274	307	140	100	78	18	2	4	18
40	206	63	119	139	274	307	150	110	88	19	3	4	18
50	232	63	119	139	274	307	165	125	102	19	3	4	18

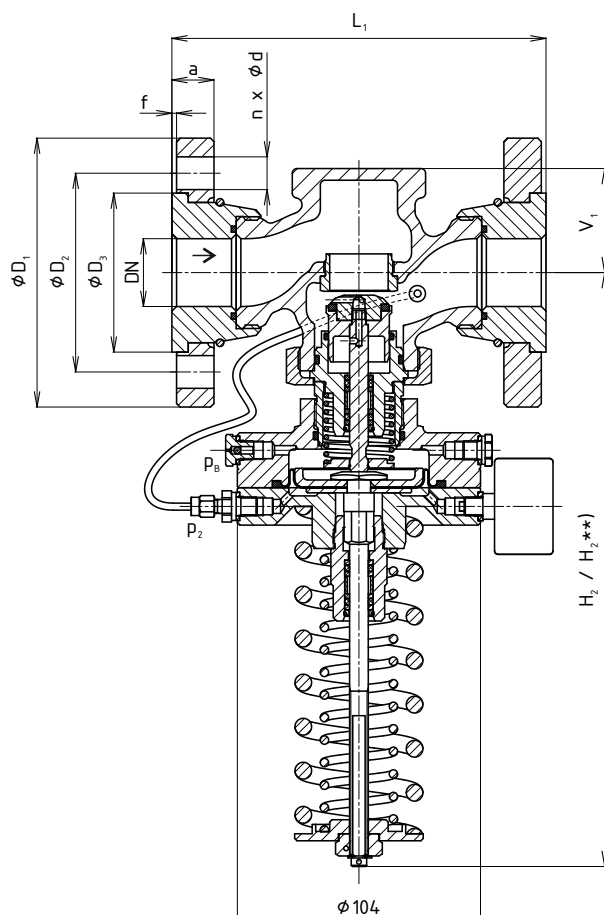
### Weights of RD 122 ../F with flange connection

Typ	D, V		P	
DN	m <sub>1</sub> *)	m <sub>2</sub> *)	m <sub>1</sub> *)	m <sub>2</sub> *)
	[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

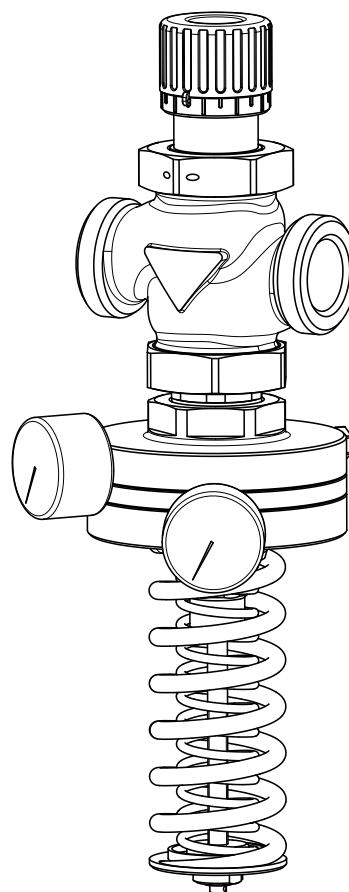
- \*) H<sub>1</sub>, m<sub>1</sub> ... dimensions and weights for the valves with constant differential pressure  
H<sub>2</sub>, m<sub>2</sub> ... dimensions and weights for the valves with adjustable differential pressure

- \*\*) 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**



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

Bee RD ... **8**





# RD 123 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.*

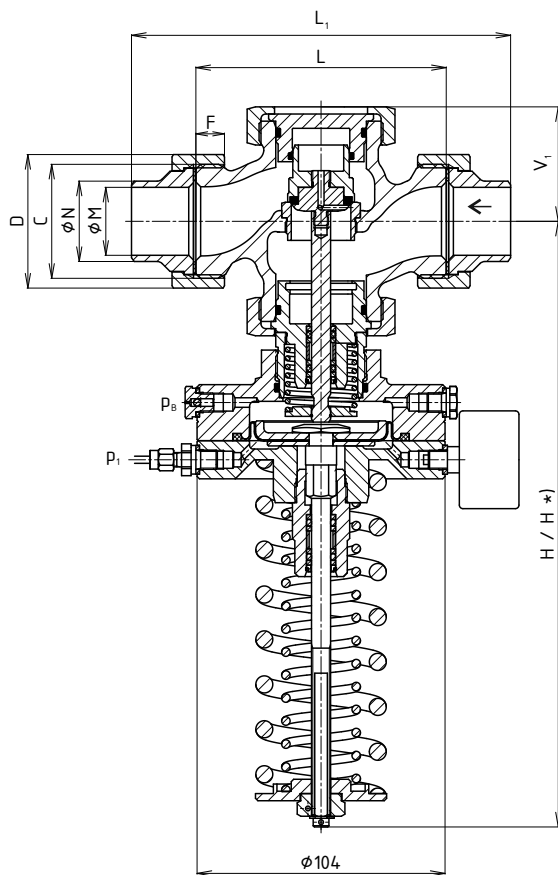
Technical data		
Series	RD 123 R	RD 123 S
Version	Bypass valve	Input pressure regulator
Nominal diameter range	DN 15 to 50	
Nominal pressure	PN 25	
Operating temperature range	+2°C to +150°C, version with condensate well up to +180°C	
Body material	Stainless steel EN-JS1030	
Plug material	Stainless steel 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 <sup>3</sup> /h	
Leakage rate	Class IV. - S1 acc. to ČSN-EN 1349 (5/2001) (< 0.0005 % Kvs)	
Range of adjust. operating press. values $\Delta p_{set}$	63 cm <sup>2</sup> : 30 - 75 kPa, 40 - 220 kPa, 50 - 385 kPa 26 cm <sup>2</sup> : 100 - 570 kPa, 130 - 1000 kPa	

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

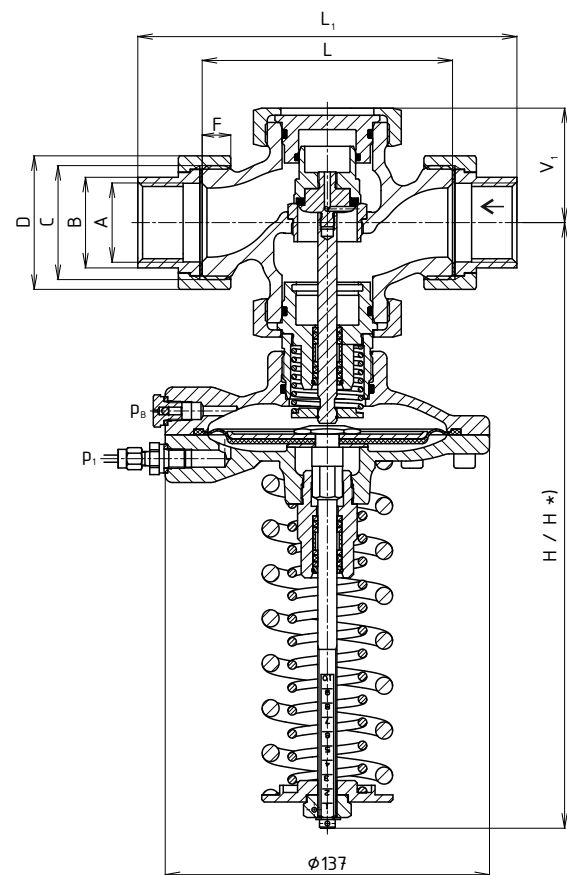
DN	L	L <sub>1</sub>	V <sub>1</sub>	H	H *	A	B	C	D	ØM	ØN	F	m
	[mm]	[mm]	[mm]	[mm]	[mm]		[mm]		[mm]	[mm]	[mm]	[mm]	[kg]
15	100	145	48	254	287	Rp 1/2	25	G 1	41	16.1	21.3	9.5	5
20	100	148	48	254	287	Rp 3/4	32	G 1 1/4	51	21.7	26.9	11.5	5.3
25	105	159	48	254	287	Rp 1	38	G 1 1/2	56	28.5	33.7	12	5.5
32	130	192	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 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

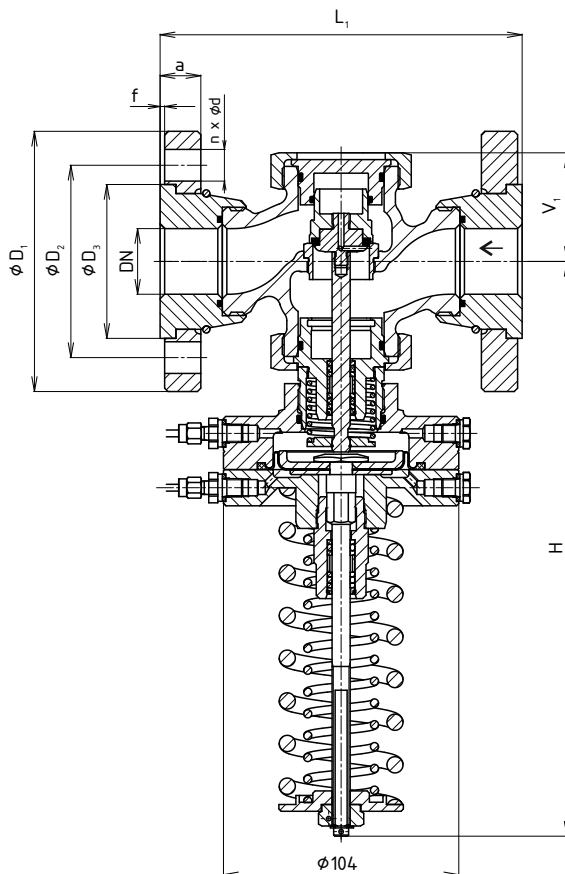


### Dimensions and weights for RD 123 ../F with flanges

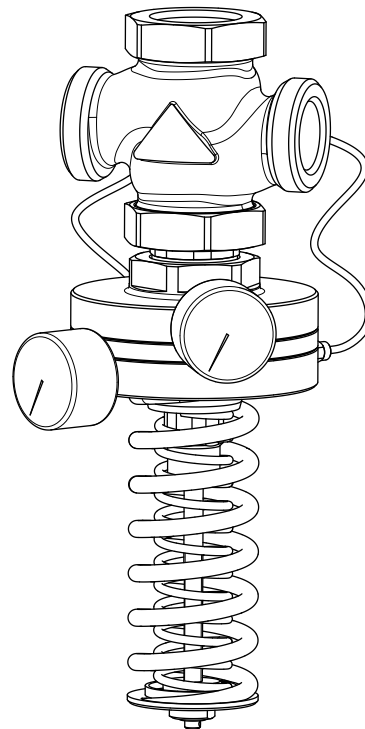
DN	L <sub>1</sub>	V <sub>1</sub>	H	H *	ØD <sub>1</sub>	ØD <sub>2</sub>	ØD <sub>3</sub>	a	f	n	Ød	m
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]		[mm]	[kg]
15	130	48	254	287	95	65	45	16	2	4	14	6.2
20	150	48	254	287	105	75	58	16	2	4	14	7
25	160	48	254	287	115	85	68	18	2	4	14	7.7
32	180	67	274	307	140	100	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
<b>1. Valve</b>	Self-acting pressure regulator		RD							
<b>2. Series</b>	Pressure-balanced			123						
<b>3. Function</b>	Bypass valve				R					
	Input pressure regulator				S					
<b>4. Version</b>	Function	R	Diaphragm 63 cm <sup>2</sup>			2				
			Diaphragm 26 cm <sup>2</sup>			3				
			Diaphragm 26 cm <sup>2</sup> , with manometers			4				
	S		Diaphragm 63 cm <sup>2</sup>			2				
			Diaphragm 26 cm <sup>2</sup> , with manometers			4				
<b>5. Range of operating pressure setting / spring colour</b>	Diaphragm 63 cm <sup>2</sup>	30 - 75 kPa / red				22				
		40 - 220 kPa / red + yellow				23				
		50 - 385 kPa / red + black				24				
	Diaphragm 26 cm <sup>2</sup>	100 - 570 kPa / red + yellow				33				
		130 - 1000 kPa / red + black				34				
	Diaphragm 26 cm <sup>2</sup>	100 - 570 kPa / red + yellow				43				
		130 - 1000 kPa / red + black				44				
<b>6. Impulse pipeline</b>	Without impulse pipeline (integral sampling point)					0				
	Standard 1,6 m					1				
	Extended 2,5 m					2				
	Length 1,6 m, with cock R 1/4					3				
	Extended 2,5 m, with cock R 1/4					4				
	Other version after agreement					9				
<b>7. Kvs</b>	Column header according to Kvs table (page no. 18)					X				
<b>8. Pressure nominal</b>	PN 25						25			
<b>9. Max. operating temp.</b>	150 °C							150		
	With condensate well up to 180°C							180		
<b>10. Nominal size</b>	DN 15 - 50								XX	
<b>11. Connection</b>	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  $\pm 10\%$

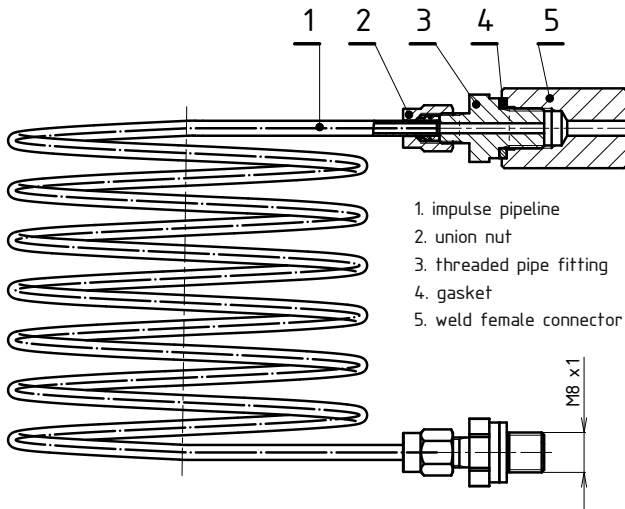
Note: Dimensions for PN 25, PN 16 and PN 10 flanges are identical in the range of DN 15 - 50

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

## Accessories

### Impulse pipeline for supply of pressure impulse into regulator

It is in the scope of supply as standard.

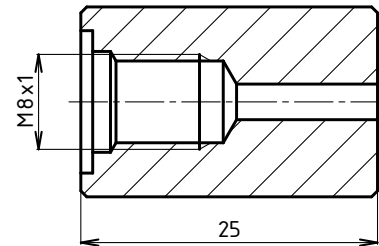


### Welding coupling for connecting of impulse pipe

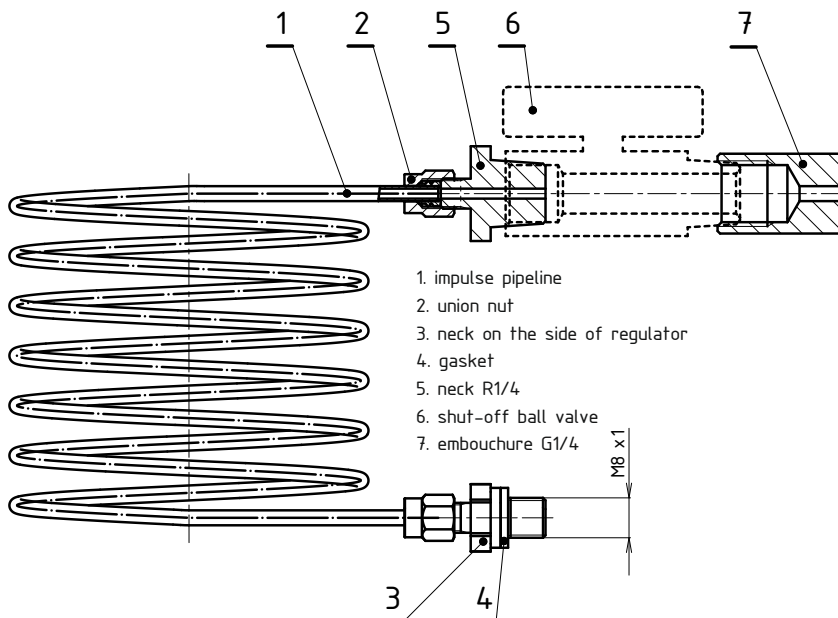
It is in the scope of supply as standard.

Material: **1.0036 / 11 373.0**

Ordering code: **VM 43 0046**

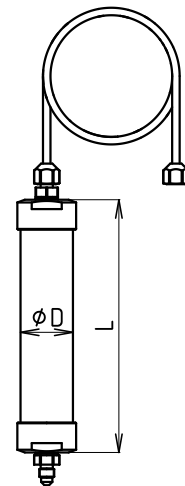


### Impulse pipe for supplying a pressure impulse with shut-off ball valve and connecting thread 1/4"



### Cooling condensate well

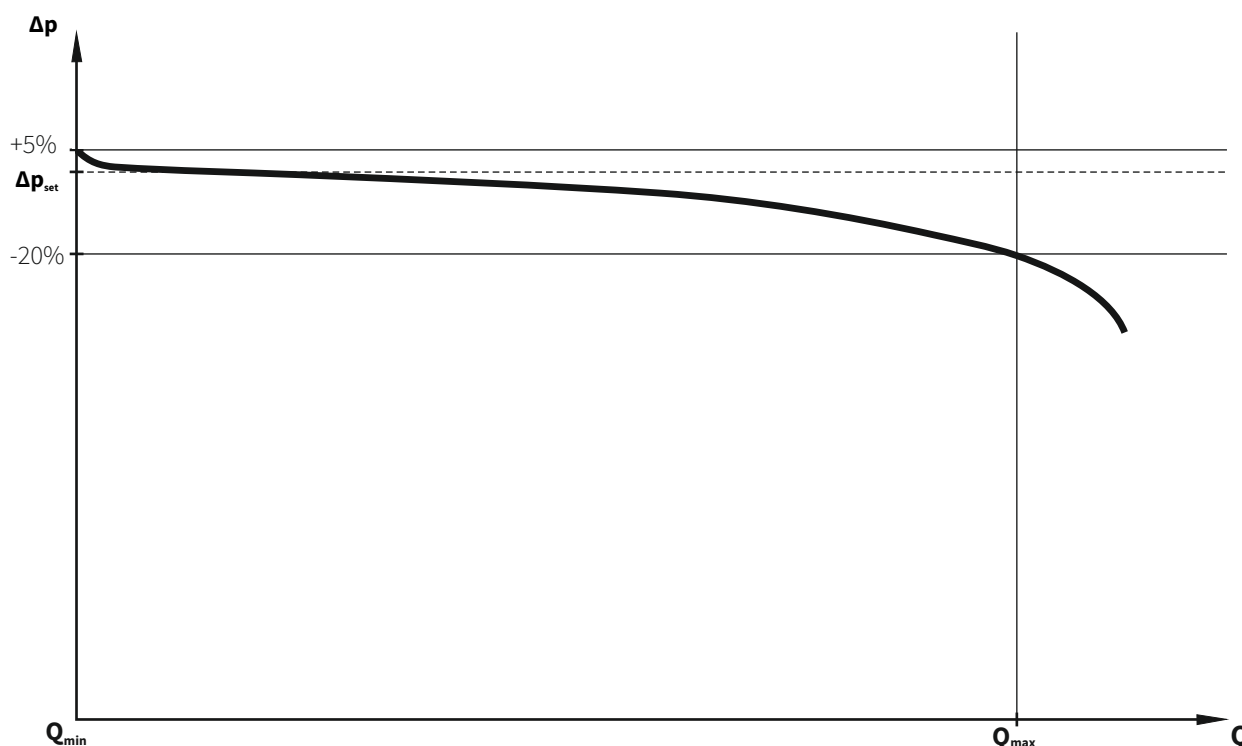
It is in the scope of supply as standard for valves in version up to 180°C



### Dimensions of cooling cond. well

Diaphragm	L [mm]	ØD [mm]
26 cm <sup>2</sup>	135	28
63 cm <sup>2</sup>		

## $\Delta p$ flow rate diagram for RD 122 D, P, V



### $Q_{max}$ [m<sup>3</sup>/h] table for selected set pressure differential values $\Delta p_{set}$

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

DN	Kvs	$\Delta p_{set}$ [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	$\Delta p_{set}$ [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  $\Delta p_{set}$ , it is possible to calculate an approximate value of  $Q_{max}$  according to the following formula:

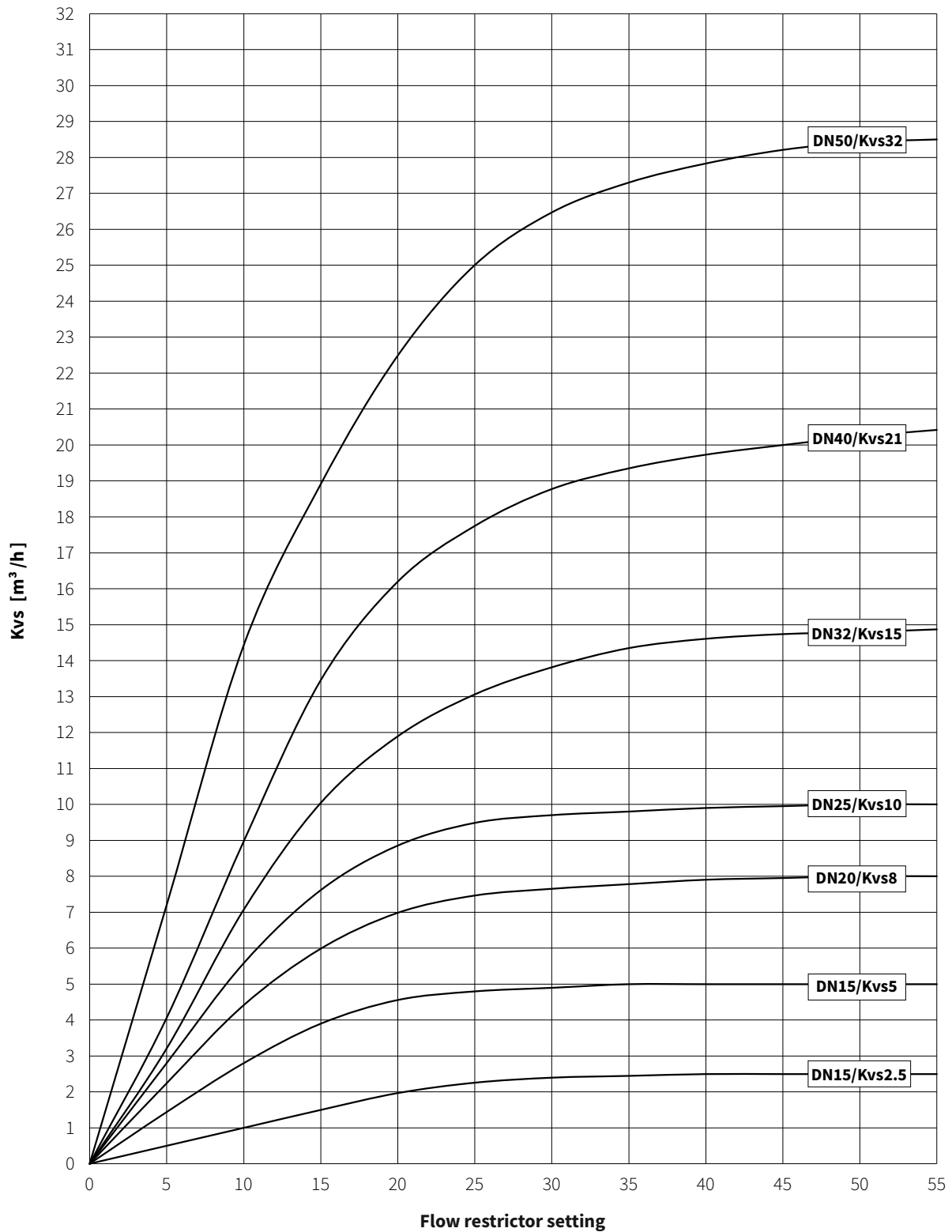
$$Q_{max} = \frac{Kvs}{k} \cdot \sqrt{\frac{\Delta p_{set}}{100}},$$

where:  $\Delta p_{set}$  stands for set differential pressure value [kPa]

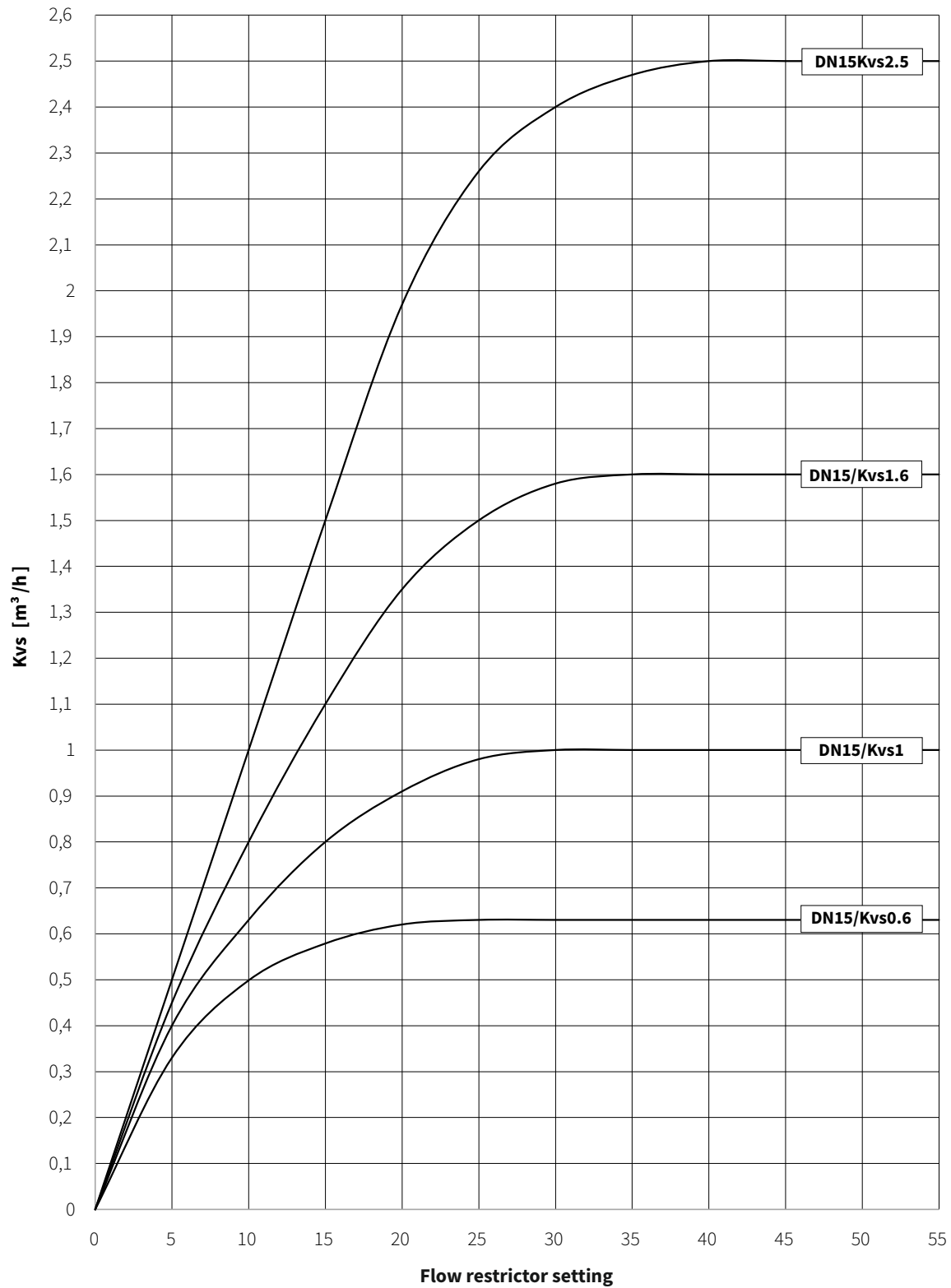
$k$  is correction coefficient [-]

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

## RD 122 P - Kvs flow restrictor setting diagram



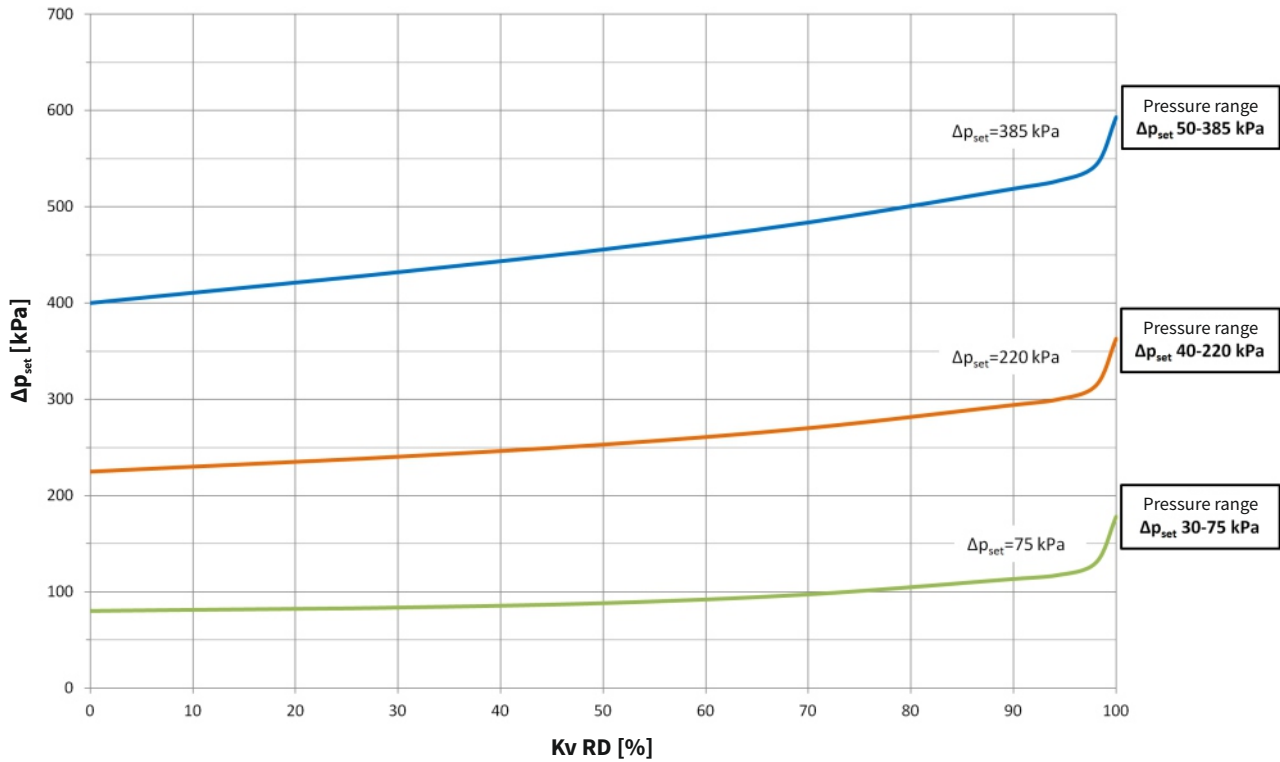
## RD 122 P - Kvs flow restrictor setting diagram



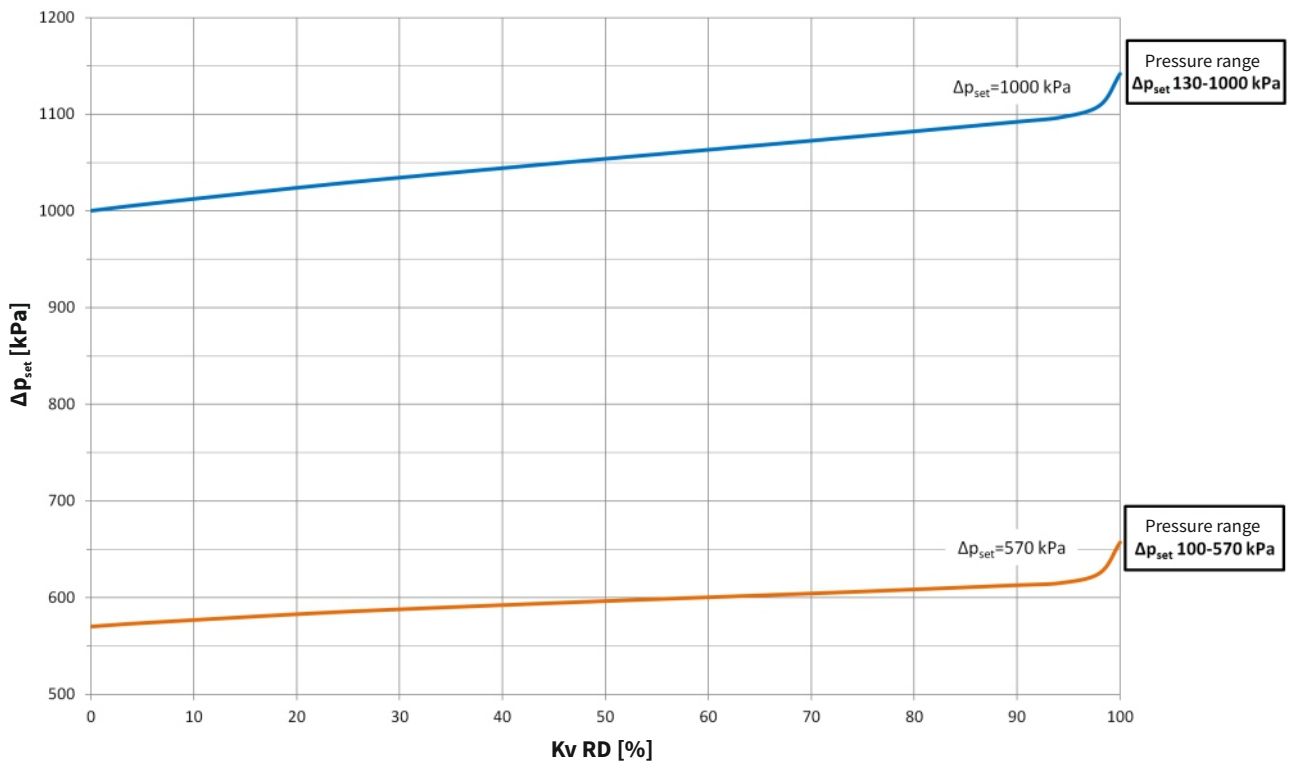


## Operating chart of RD 123 R, S (the valve opens upon increase of pressure / pressure difference)

Operating chart of RD 123 R, S (chamber 63 cm<sup>2</sup>) DN 15 - 50



Operating chart of RD 123 R, S (chamber 26 cm<sup>2</sup>) DN 15 - 50



## Kvs values

RD 122					
DN	1	2	Kvs [m <sup>3</sup> /h]		
			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 <sup>3</sup> /h]
	1
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 <sup>1)</sup>	100	120	150	180
Spheroidal cast iron EN-JS1030	25	2,50	2,50	2,50	2,43	2,38

<sup>1)</sup> -10°C to 50°C

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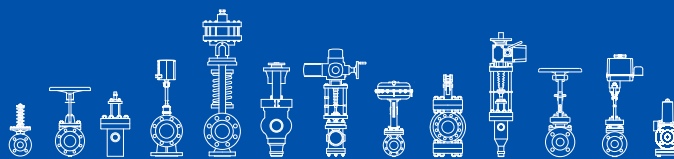
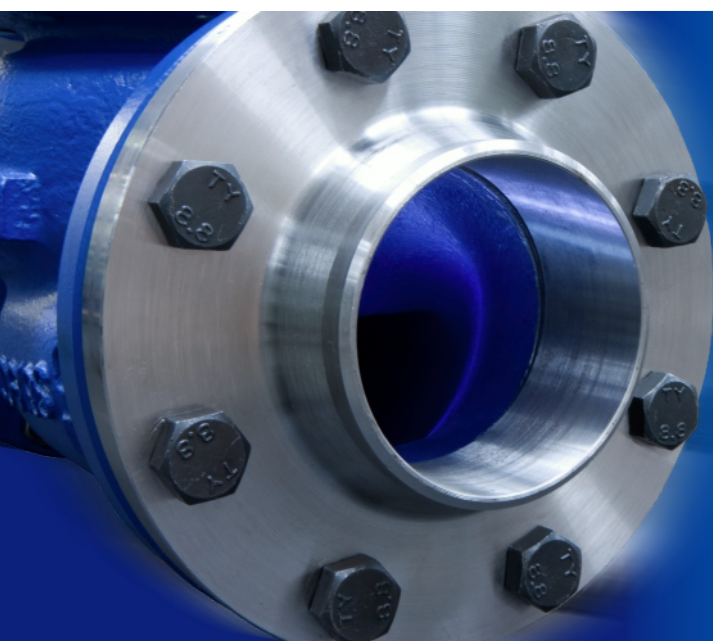
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