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ISO 9001 · ISO 14001
ISO 45001

LDM®

01 - 01.3
10.19.GB

SELF-ACTING PRESSURE REGULATORS

200 line



POWER THROUGH IDEAS
www.ldmvalves.com

200 line



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.
Throttling application with the presence of cavitation is permissible but it is inevitable to expect increased wear of throttling system.

Process media

Valves series **RD 2xx** are suitable for process media such as water, air or steam up 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, alternatively with condensate wells up to 180°C. Sealing surfaces of the trim are resistant to common sludge or media impurities. Yet it is recommended to pipe a strainer in front of the valve to ensure a reliable function and tightness in the case of abrasive particles presence in the process medium.

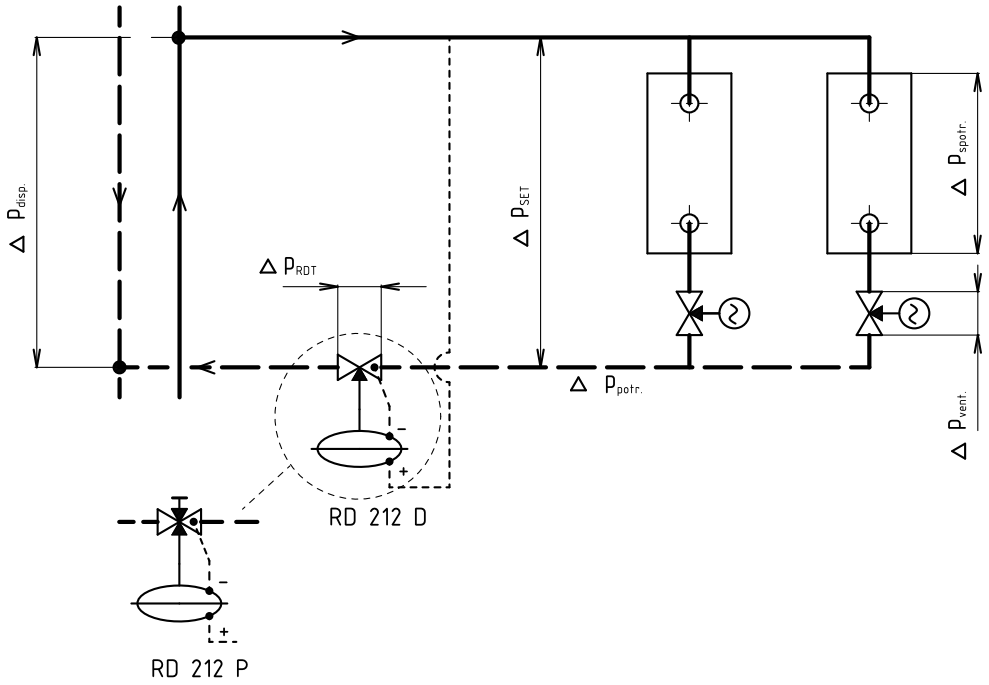
Installation

Basic operating position of regulator is when the valve body is above its controlling head that points downwards. This position must be particularly kept when reducing steam pressure or when temperature exceeds 90 °C. For gaseous and liquid media of lower temperatures valve can be installed also on the vertical piping or on the horizontal piping with head oriented sideways. The controlling head can be rotated along its axis after the installation as required by the space disposition needs.

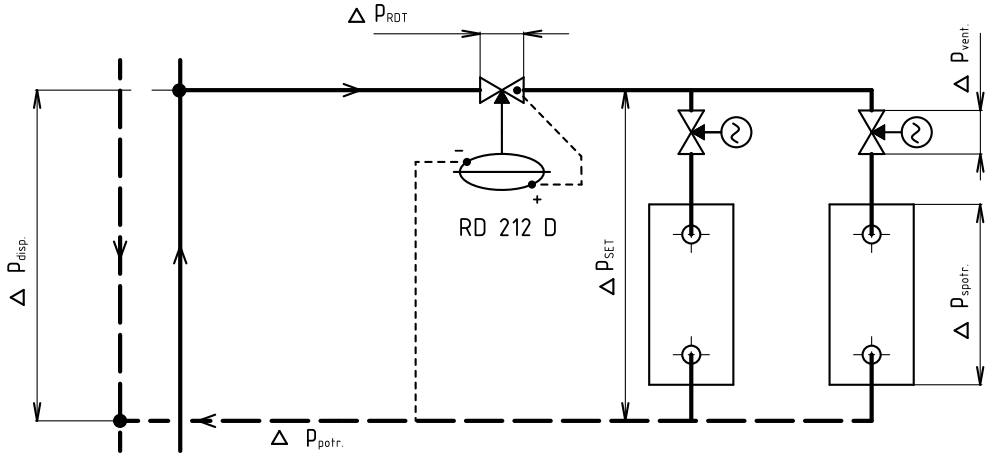
Impulse pipelines for extraction of the pressure from the body or the pipeline are within the scope of supply as standard.

Typical scheme of wiring for RD 212 D; P; V (rising pressure / pressure difference closes the valve)

Scheme of typical regulation loop with differential pressure regulator RD 212 D (P) at secondary side

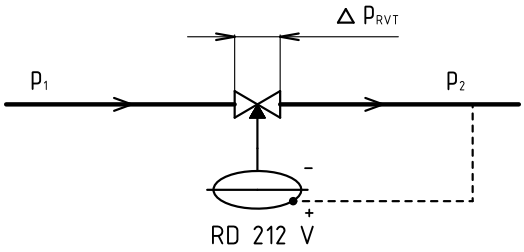


Scheme of typical regulation loop with differential pressure regulator RD 212 D at primary side

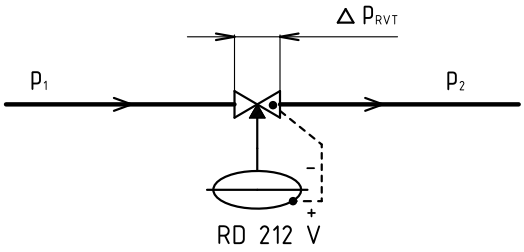


Basic scheme of piping for outlet pressure regulator RD 212 V

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

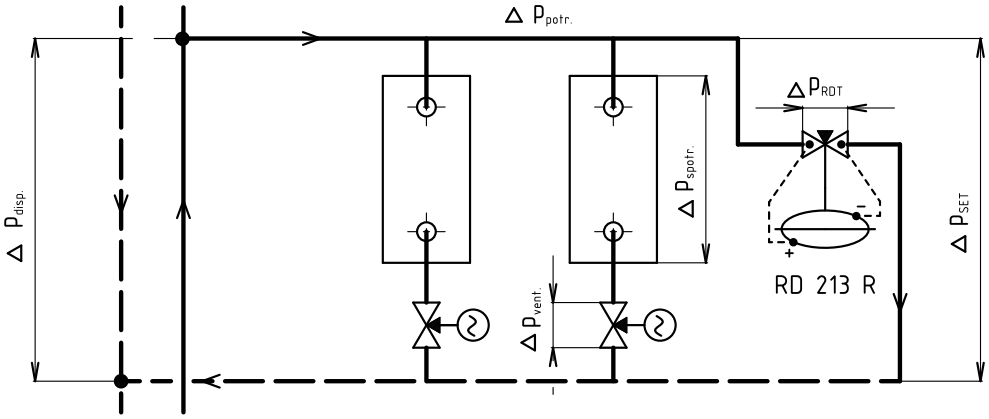


- with input of pressure signal from sample point on the valve



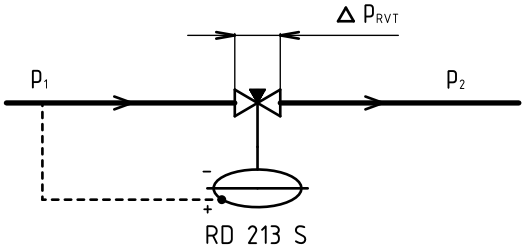
Typical scheme of wiring for RD 213 R; S (rising pressure or pressure difference opens the valve)

Scheme of typical regulation loop with bypass valve RD 213 R (S) in the crossover

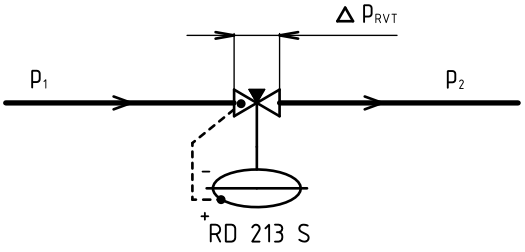


Basic scheme of piping for input pressure regulator RD 213 S

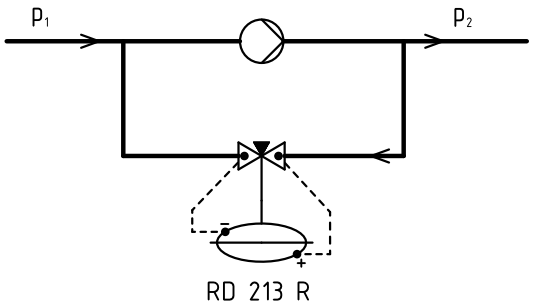
- with input of pressure signal from sample point on the pipe



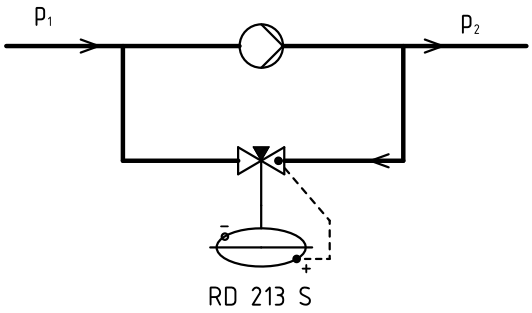
- with input of pressure signal from sample point on the valve



Scheme of piping for bypass valve RD 213 R in by-pass of the pump



Scheme of piping for input pressure regulator RD 213 S in by-pass of the pump





RD 212 D
RD 212 P
RD 212 V

200 line

DN 65 - 150
PN 16, 25

Self-acting regulator of differential pressure RD 212 D is designed to keep constant differential pressure value of given appliance. Such a function is ensured by a diaphragm exposed to the effects of inlet and outlet 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 212 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-acting regulator of output pressure RD 212 V is designed to reduce output pressure of the appliance and to maintain it on set value. This function is enabled by a diaphragm exposed to the effects of the outlet pressure and actuated by a 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 212 D**	**RD 212 P**	**RD 212 V**
Version	**Differential pressure regulator**	**Differential pressure regulator with flow resctrictor**	**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 65 to 150		
Nominal pressure	PN 16, 25		
Body material	Nodular cast iron EN-JS1025		
Plug material	Stainless steel 1.4021		
Seat material	Stainless steel 1.4028 + PTFE		
Stem material	Stainless steel 1.4305		
Diaphragm and sealing material	EPDM		
Bonnet of diaphragm chamber material	Nodular cast iron, carbon steel		
Operating temperature range	+2 °C to +150 °C, version with condensate wells up to +180°C		
Connection	Flanges with raised face		
Plug type	V-ported, pressure-balanced		
Kvs values	76 to 235 m^3 /hr	72 to 215 m^3 /hr	76 to 235 m^3 /hr
Leakage rate	Class IV. acc. to ČSN-EN 1349 (< 0.01 % Kvs)		
Leakage rate of flow resistor	- - -	not guaranteed	- - -
Range of adjustable work. pressure values Δp_{set}	Chamber 240 cm^2: 15 - 60; 20 - 100; 32 - 160 kPa Chamber 64 cm^2: 45 - 225; 75 - 375; 120 - 600 kPa Chamber 36 cm^2: 240 - 1000 kPa		

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

Specification code for ordering of valves RD 212 D, RD 212 P and RD 212 V

			XX	XXX	XXXX	XXXX	XX	/	XXX	-	XXX
1. Valve	Self-acting pressure regulator		**RD**								
2. Series	Pressure-balanced			**212**							
3. Function	Differential pressure regulator				**D**						
	Differential pressure regulator				**P**						
	Differential pressure regulator with flow restrictor				**V**						
4. Version	With diaphragm 240 cm²				**1**						
	With diaphragm 64 cm²				**2**						
	With diaphragm 36 cm²				**3**						
5. Equipment	Without manometer(s)				**0**						
[1] „V" function always with manometer	With manometer(s) [1]				**1**						
6. Range of pressure setting / spring colour	Diaphragm 240 cm²	15 - 60 kPa / red			**1**						
[2] In this configuration the range can be altered by removing outer (yellow) or inner (red) spring to configuration No.1 or No.2		20 - 100 kPa / yellow			**2**						
		32 - 160 kPa / red + yellow [2]			**3**						
[3] In this configuration the range can be altered by removing outer (yellow) or inner (red) spring to configuration No.4 or No.5	Diaphragm 64 cm²	45 - 225 kPa / red			**4**						
		75 - 375 kPa / yellow			**5**						
		120 - 600 kPa / red + yellow [3]			**6**						
	Diaphragm 36 cm²	240 - 1000 kPa / red + yellow			**7**						
7. Connection	Flange RF (Raised face)					**1**					
	Other connection after agreement					**9**					
8. Body material	Nodular cast iron EN-JS1025					**4**					
	Other material after agreement					**9**					
9. Impulse pipeline	Standard 1.6 m					**1**					
	Extended 2.5 m					**2**					
	Lenght 1.6 m, with cock valve R 1/4					**3**					
	Extended 2.5 m, with cock valve R 1/4					**4**					
	Other configuration after agreement					**9**					
10. Kvs	According to Kvs table					**X**					
11. Nominal pressure	PN 16						**16**				
	PN 25						**25**				
12. Max. operating temp.	150°C								**150**		
	With condensate wells up to 180°C								**180**		
13. Nominal size	DN 65 to 150										**XXX**

Ordering example: **RD212 D102 1411 16/150-065**

Kvs values table

DN	Kvs [m³/hr] RD 212 D	RD 212 V	RD 212 P
code value	**1**		**6**
65	76		72
80	100		100
100	140		130
125	190		182
150	235		215



RD 213 R
RD 213 S

200 line

DN 65 - 150
PN 16, 25

Self-acting bypass valve RD 213 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 inlet and outlet 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 213 S is designed to limit maximum pressure in the system. Diaphragm is exposed to the pressure from the pipe 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 213 R	RD 213 S
Version	**Bypass valve**	**Input pressure regulator**
Function	The valve opens upon increase of differential pressure value	The valve opens upon increase of controlled pressure value
Nominal diameter range	DN 65 to 150	
Nominal pressure	PN 16, 25	
Body material	Nodular cast iron EN-JS1025	
Plug material	Stainless steel 1.4021	
Seat material	Stainless steel 1.4028 + PTFE	
Stem material	Stainless steel 1.4305	
Diaphragm and sealing material	EPDM	
Bonnet of diaphragm chamber material	Nodular cast iron, carbon steel	
Operating temperature range	+2°C to +150°C, version with condensate wells up to +180°C	
Connection	Flanges with raised face	
Plug type	V-ported, pressure-balanced	
Kvs values	76 to 235 m^3 /hr	
Leakage rate	Class IV. acc to ČSN-EN 1349 (< 0.01 % Kvs)	
Range of adjustable work. pressure values Δp_{set}	Chamber 240 cm^2: 5 - 50; 10 - 80; 15 - 130 kPa Chamber 64 cm^2: 20 - 200; 30 - 300; 50 - 500 kPa Chamber 36 cm^2: 100 - 1000 kPa	

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

Specification code for ordering of valves RD 213 R, RD 213 S

			XX	XXX	XXXX	XXXX	XX	/	XXX	-	XXX
1. Valve	Self-acting pressure regulator		**RD**								
2. Series	Pressure-balanced			**213**							
3. Function	Self-acting bypass valve				**R**						
	Input pressure regulator				**S**						
4. Version	Diaphragm 240 cm²				**1**						
	Diaphragm 64 cm²				**2**						
	Diaphragm 36 cm²				**3**						
5. Equipment	Without manometer(s)				**0**						
[1] „S" function always with manometer	With manometer(s) [1]				**1**						
6. Range of pressure setting / spring colour	Diaphragm 240 cm²	5 - 50 kPa / red			**1**						
		10 - 80 kPa / yellow			**2**						
		15 - 130 kPa / red + yellow [2]			**3**						
	Diaphragm 64 cm²	20 - 200 kPa / red			**4**						
		30 - 300 kPa / yellow			**5**						
		50 - 500 kPa / red + yellow [3]			**6**						
	Diaphragm 36 cm²	100 - 1000 kPa / red + yellow			**7**						
[2] In this configuration the range can be altered by removing outer (yellow) or inner (red) spring to configuration No.1 or No.2											
[3] In this configuration the range can be altered by removing outer (yellow) or inner (red) spring to configuration No.4 or No.5											
7. Connection	Flange RF (Raised face)					**1**					
	Other connection after agreement					**9**					
8. Body material	Nodular cast iron EN-JS1025					**4**					
	Other material after agreement					**9**					
9. Impulse pipeline	Standard 1.6 m					**1**					
	Extended 2.5 m					**2**					
	Lenght 1.6 m, with cock valve R 1/4					**3**					
	Extended 2.5 m, with cock valve R 1/4					**4**					
	Other configuration after agreement					**9**					
10. Kvs	According to Kvs table					**X**					
11. Nominal pressure	PN 16						**16**				
	PN 25						**25**				
12. Max. operating temp.	150°C							/	**150**		
	With condensate wells up to 180°C							/	**180**		
13. Nominal size	DN 65 to 150									-	**XXX**

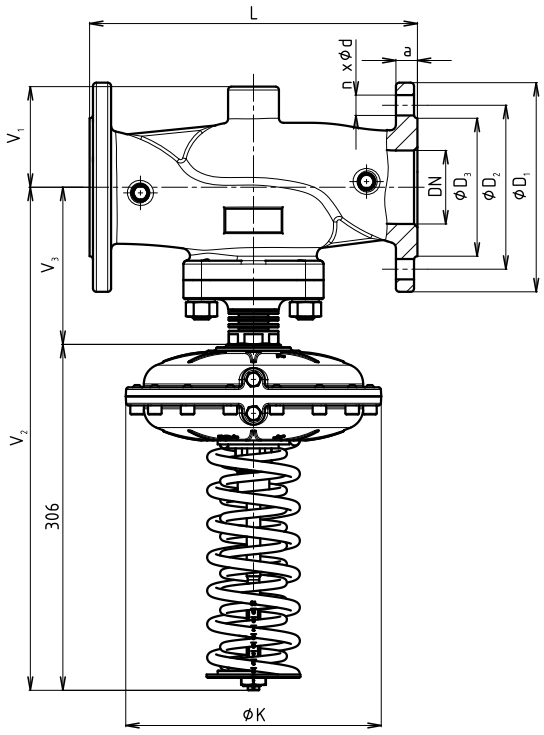
Ordering example: **RD213 R102 1411 16/150-065**

Kvs values

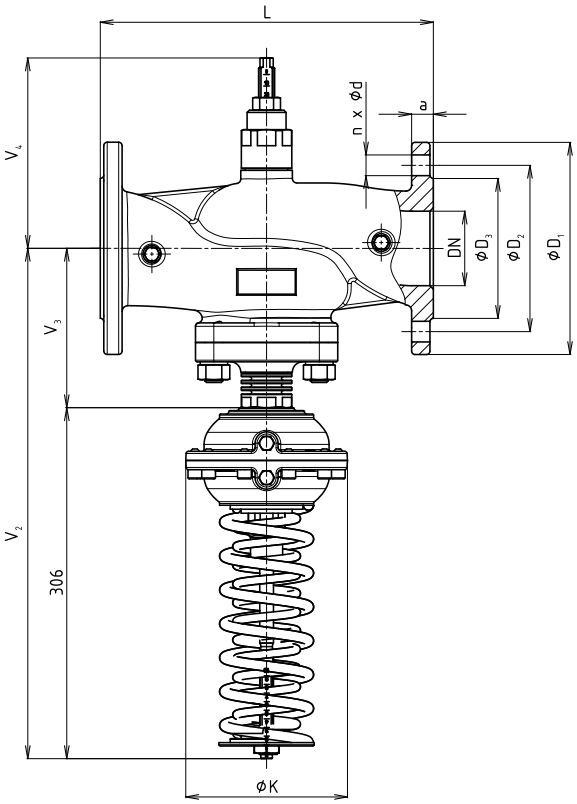
DN	Kvs [m³/hr] RD 213 R	RD 213 S
code value	**1**	
65	76	
80	100	
100	140	
125	190	
150	235	

Dimension sketches of valves

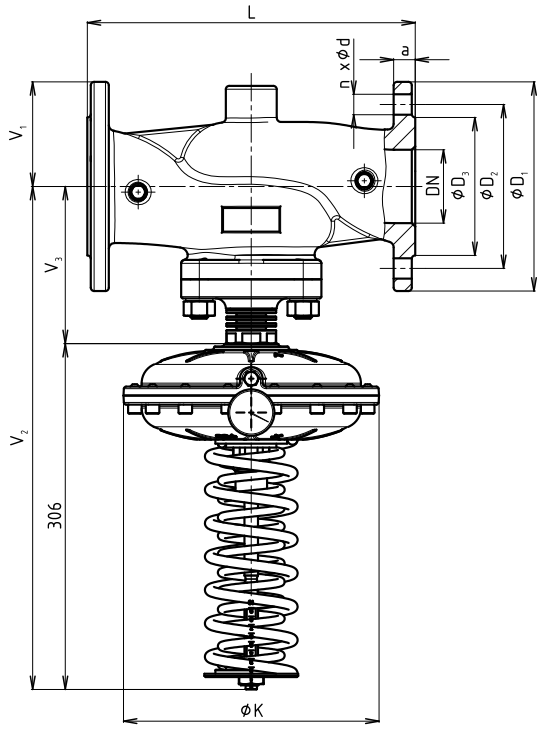
Version RD 212 D (chamber 240 cm²)



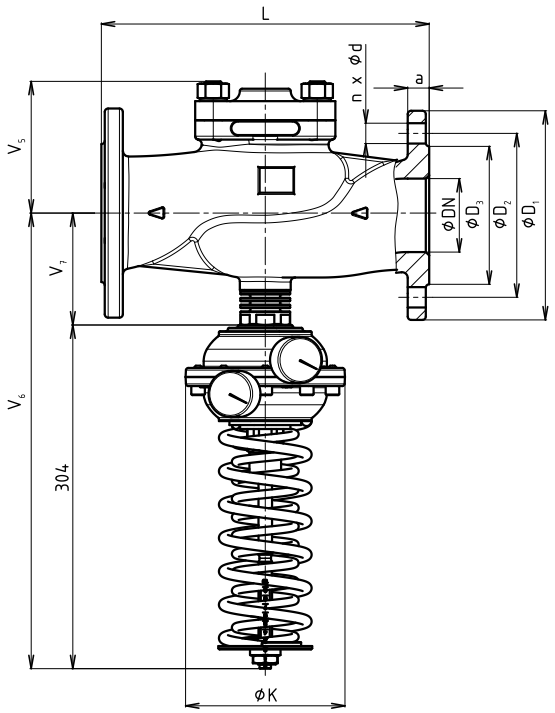
Version RD 212 P (chamber 64 cm²)



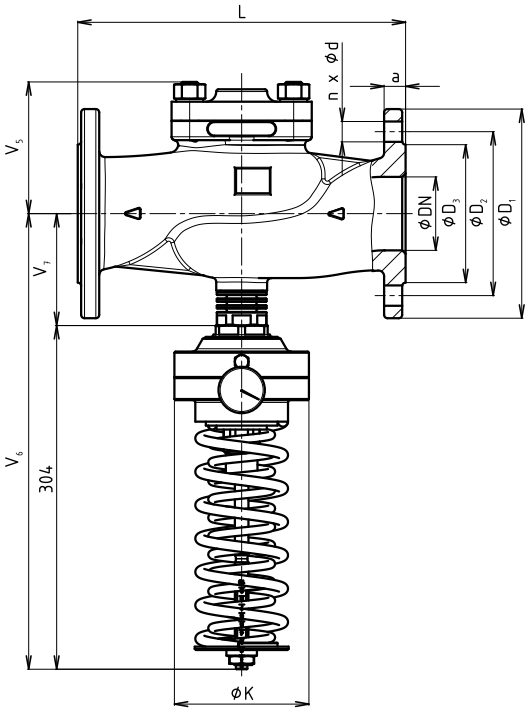
Version RD 212 V (chamber 240 cm²)



Version RD 213 R with manometers (chamber 64 cm²)



Version RD 213 S (chamber 36 cm²)



Connecting dimensions

	PN16						PN25					
	$ØD_1$	$ØD_2$	$ØD_3$	a	n	Ød	$ØD_1$	$ØD_2$	$ØD_3$	a	n	Ød
DN	[mm]	[mm]	[mm]	[mm]		[mm]	[mm]	[mm]	[mm]	[mm]		[mm]
65	185	145	118	19	4	19	185	145	118	19	8	19
80	200	160	132	19	8	19	200	160	132	19	8	19
100	220	180	156	19	8	19	235	190	156	19	8	23
125	250	210	184	23.5	8	19	270	220	184	23.5	8	28
150	285	240	211	26	8	23	300	250	211	26	8	28

Dimensions and weights of RD 2xx

Function	D, V, P					R, S			D, V, R, S		P		Diameter of controlling head K		
	L	V_1	V_2	V_3	V_4	V_5	V_6	V_7	m_1*)	m_2*)	m_3*)	m_1*)	240 cm²	64 cm²	36 cm²
DN	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[kg]	[kg]	[kg]	[kg]	[mm]	[mm]	[mm]
65	290	93	445	139	166	117	403	99	26	23	27	24	226	141	119
80	310	105	490	184	196	152	447	143	38	35	39	36	226	141	119
100	350	118	490	184	196	152	447	143	45	42	47	44	226	141	119
125	400	135	509	203	224	180	475	171	72	69	76	73	226	141	119
150	480	150	526	220	224	200	475	171	104	101	107	104	226	141	119

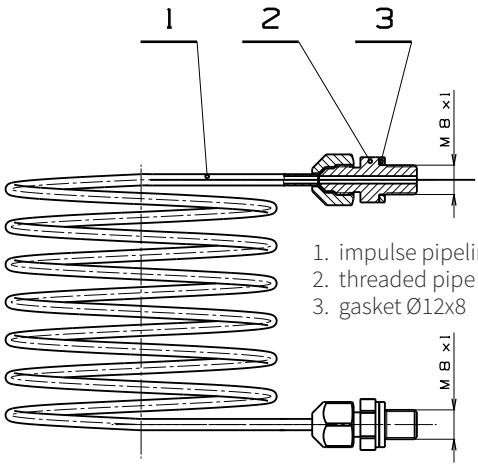
*) **m_1, m_3** ... weight of valves with 240 cm² diaphragm

*) **m_2, m_4** ... weight of valves with 36 and 64 cm² diaphragm

Accessories

Standard impulse pipeline for supply of pressure impulse into regulator

It is in the scope of supply as standard

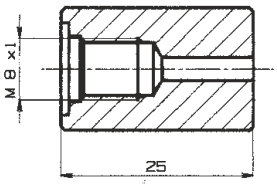


1. impulse pipeline
2. threaded pipe fitting
3. gasket Ø12x8

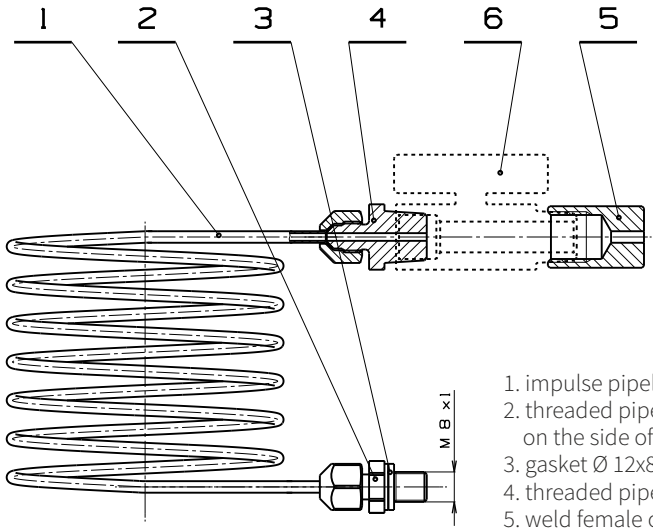
Weld female connector for connection of impulse pipeline

It is in the scope of supply as standard

Material: **1.0036 / 11 373.0**
Ordering code: **VM 43 0046**



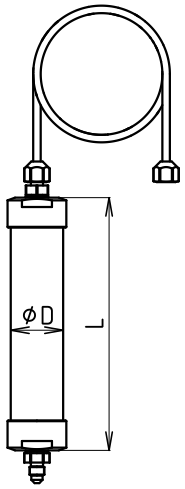
Impulse pipeline with shut-off cock valve and connection thread 1/4"



1. impulse pipeline
2. threaded pipe fitting on the side of regulator
3. gasket Ø 12x8
4. threaded pipe fitting R1/4
5. weld female connector G1/4
6. shut-off cock valve

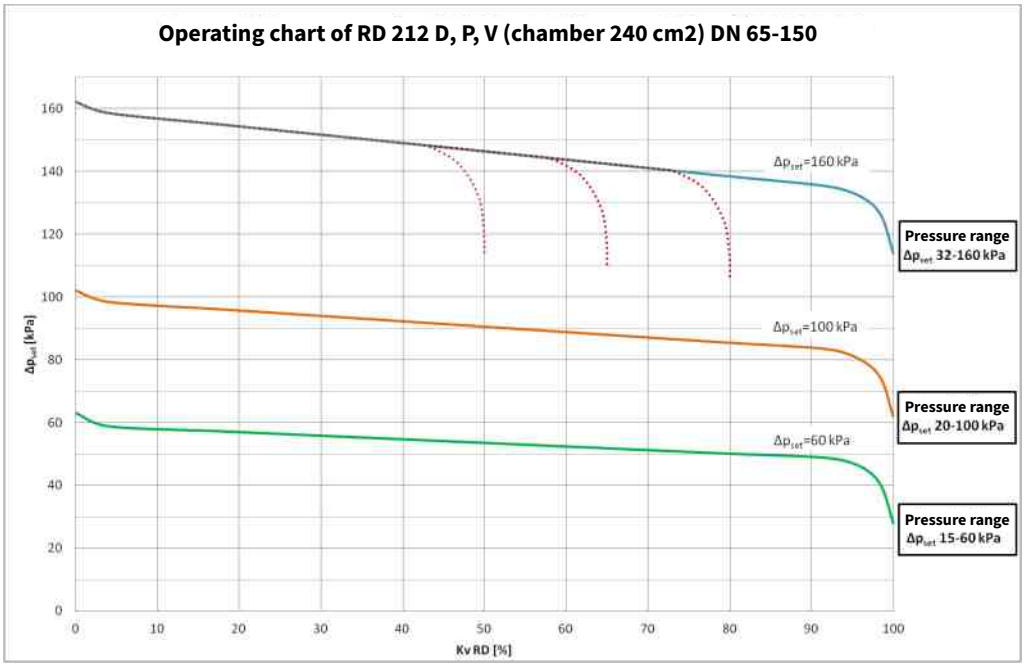
Cooling condensate well

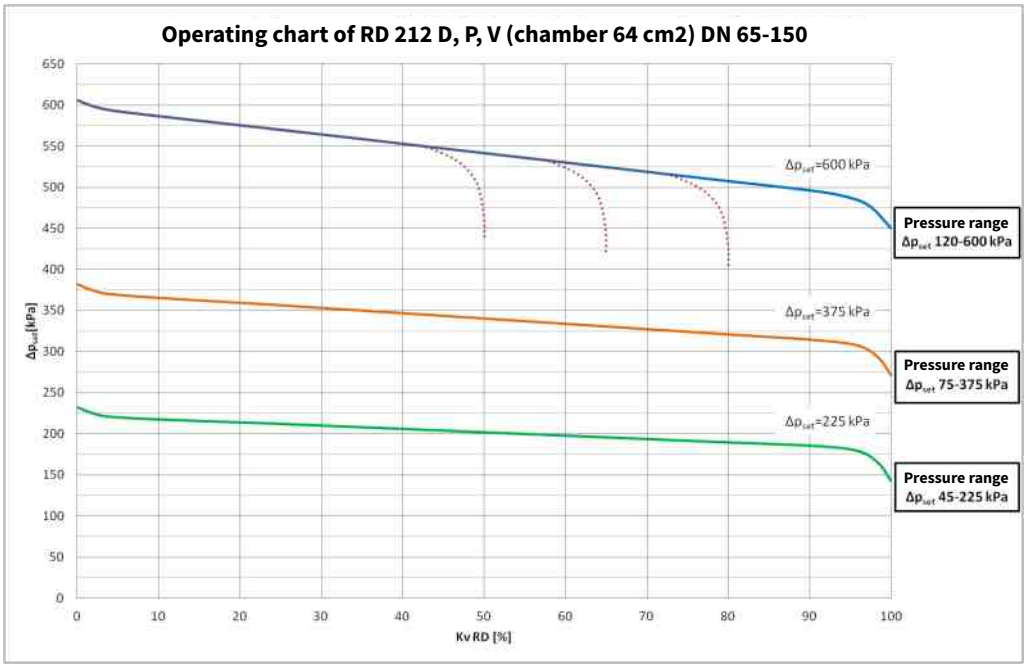
It is in the scope of supply for higher temperature version of valve (up to 180°C)



Dimension table of condensate wells		
Diaphragm	**L**	**ØD**
240 cm²	440	42
64 cm²	140	42
32 cm²	135	28

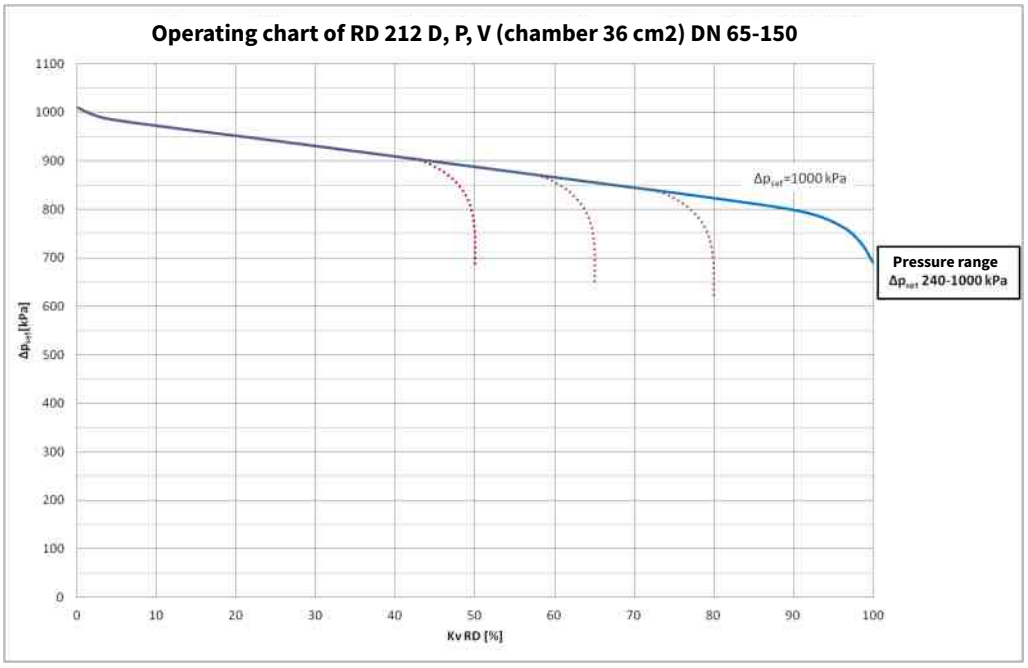
Operating charts of RD 212 D, RD 212 P, RD 212 V (the valve closes upon increase of pressure / pressure difference)





..... Examples of curve characteristic for RD 212 P in dependence on the flow restrictor setting

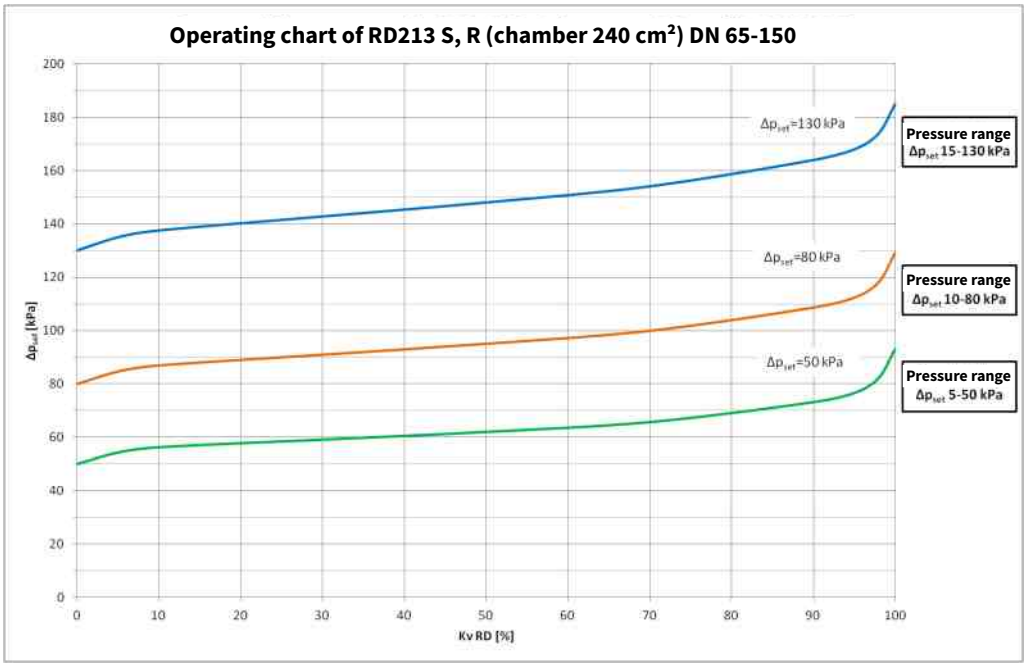
All presented curves are measured in conditions of $\Delta p_{disp} = 2 \times \Delta p_{set}$.
All curve characteristics are reciprocally parallel upon different settings for Δp_{set} as long as pressure quantity remains within setting range



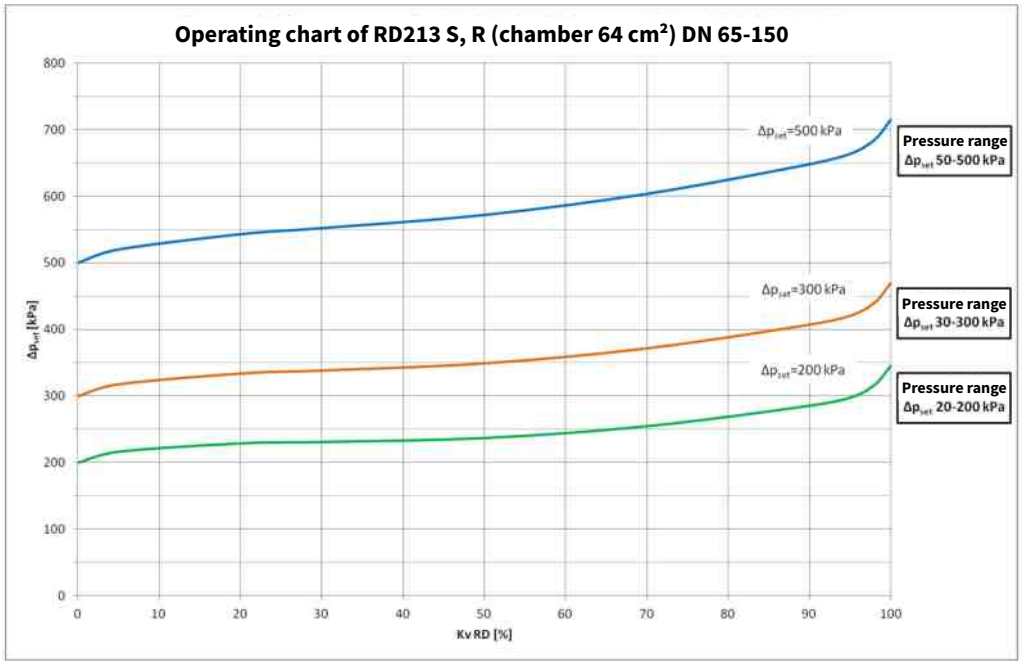
..... Examples of curve characteristic for RD 212 P proportional to the flow restrictor setting

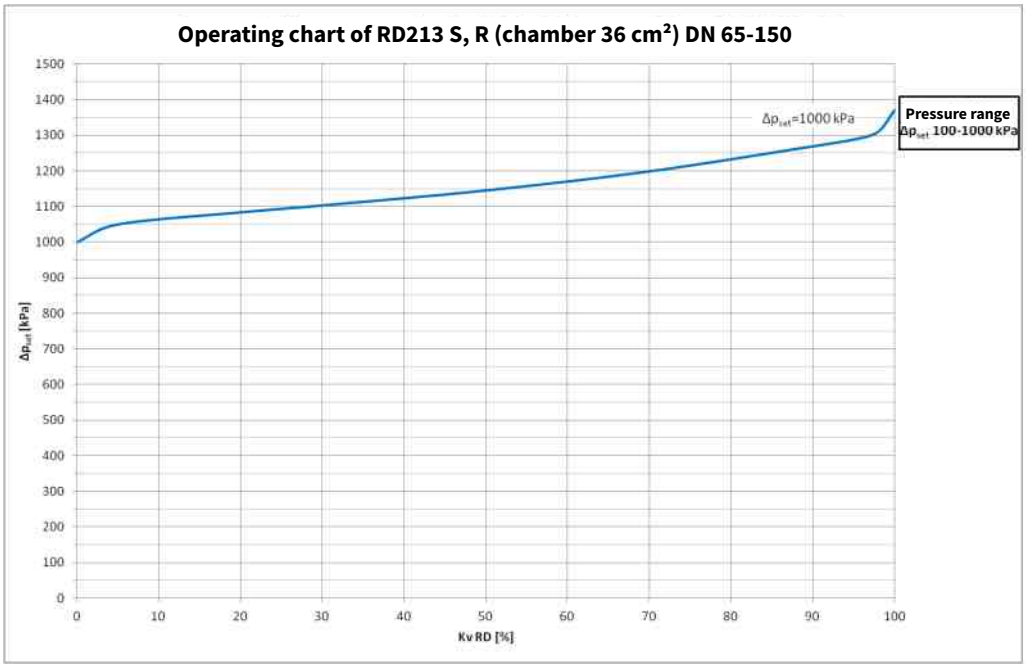
All presented curves are measured in conditions of $\Delta p_{disp} = 2 \times \Delta p_{set}$. Curve characteristics are reciprocally parallel upon different settings for as long as pressure quantity remains within setting range

Operating charts of RD 213 R, RD 213 S the valve opens upon increase of pressure / pressure difference)



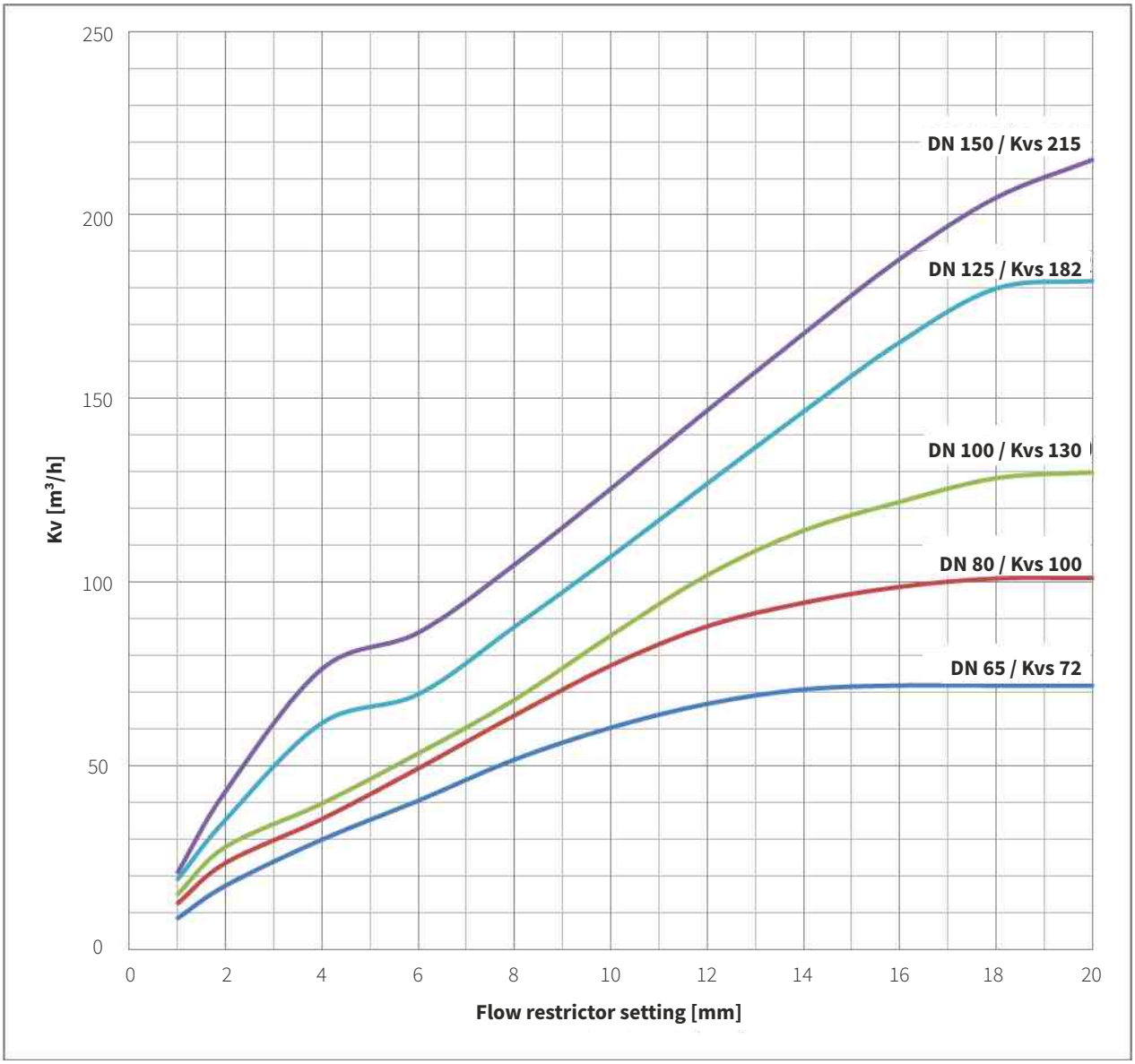
All presented curves are measured in conditions of $\Delta p_{RDT} = 100$ kPa
All curve characteristics are reciprocally parallel upon different settings for Δp_{set} as long as pressure quantity remains within setting range





All presented curves are measured in conditions of Δp_{RDT} = 100kPa
Curve characteristics are reciprocally parallel upon different settings for Δp_{set}
as long as pressure quantity remains within setting range

RD 212 P - function of Kv value in dependence on flow restrictor setting



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

Material	PN	Temperature [°C]				
		RT[1)]	100	120	150	180
Nodular cast iron EN-JS1025	16	1,60	1,60	1,60	1,55	1,50
	25	2,50	2,50	2,50	2,43	2,35

1) -10°C to 50°C

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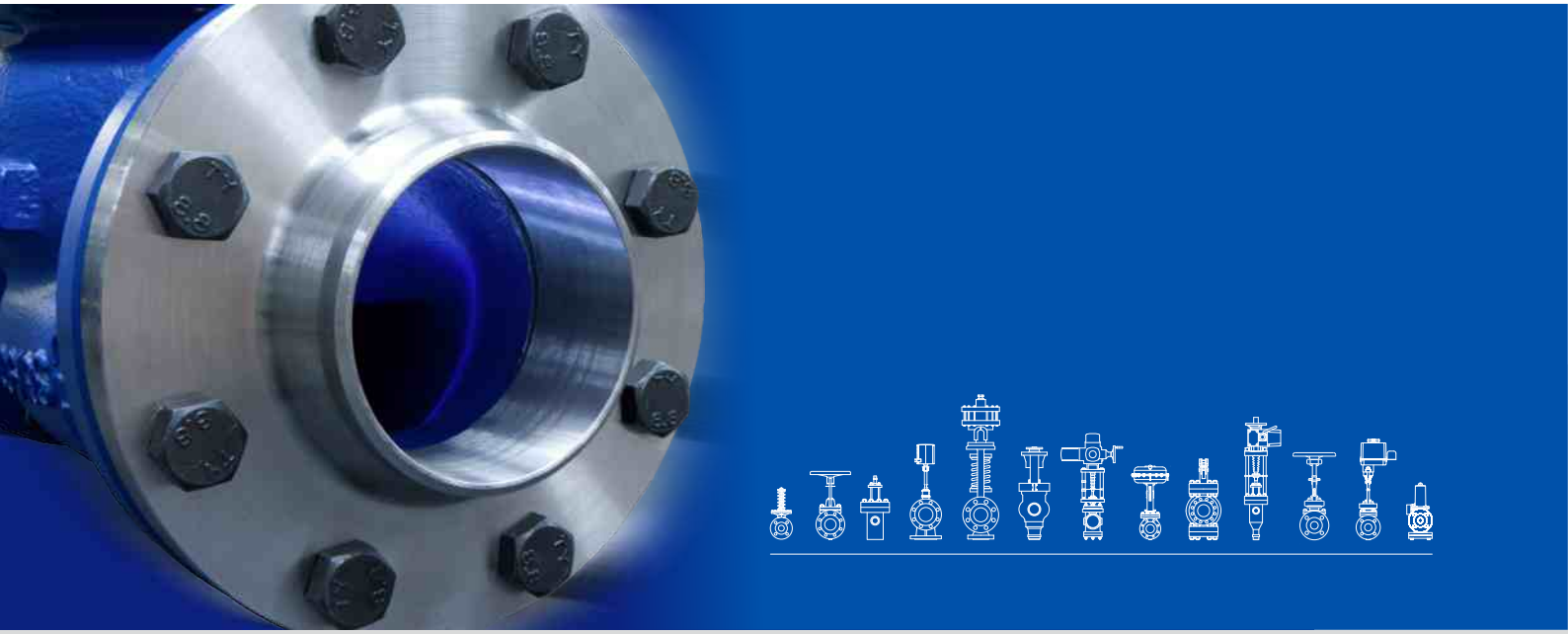
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