



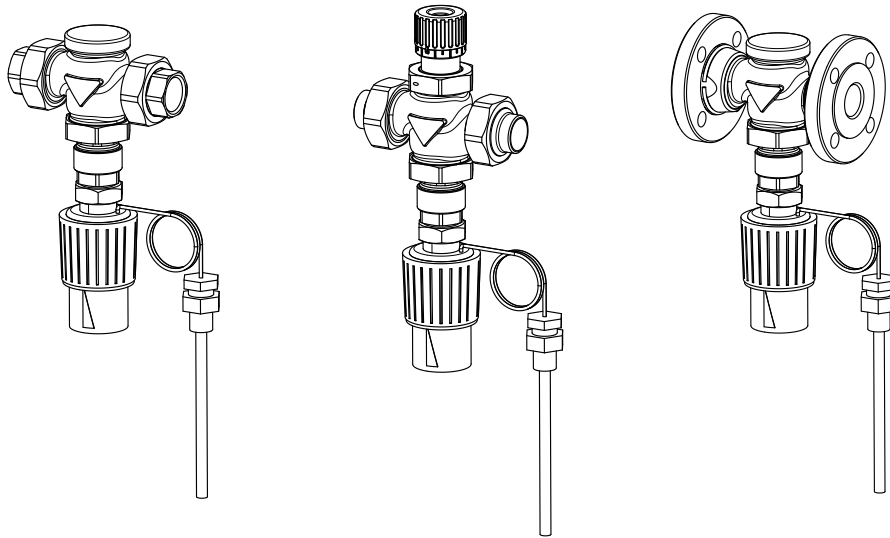
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## SELF-ACTING TEMPERATURE REGULATORS

# RT 122 **BEE line**



# BEE line



## Application

RT 122 valves are designed for use in district heating systems, for heat exchangers and other heating, air conditioning and industrial applications. Maximum pressure differential on the valve cannot exceed 1.6 MPa.

## Process media

Valves are suitable for process media such as water, steam, air and other non-aggressive liquids and non-flammable gases in the temperature range from 2°C to 150°C (respectively up to 180°C). Working conditions with cavitation are not permissible.

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 process medium.

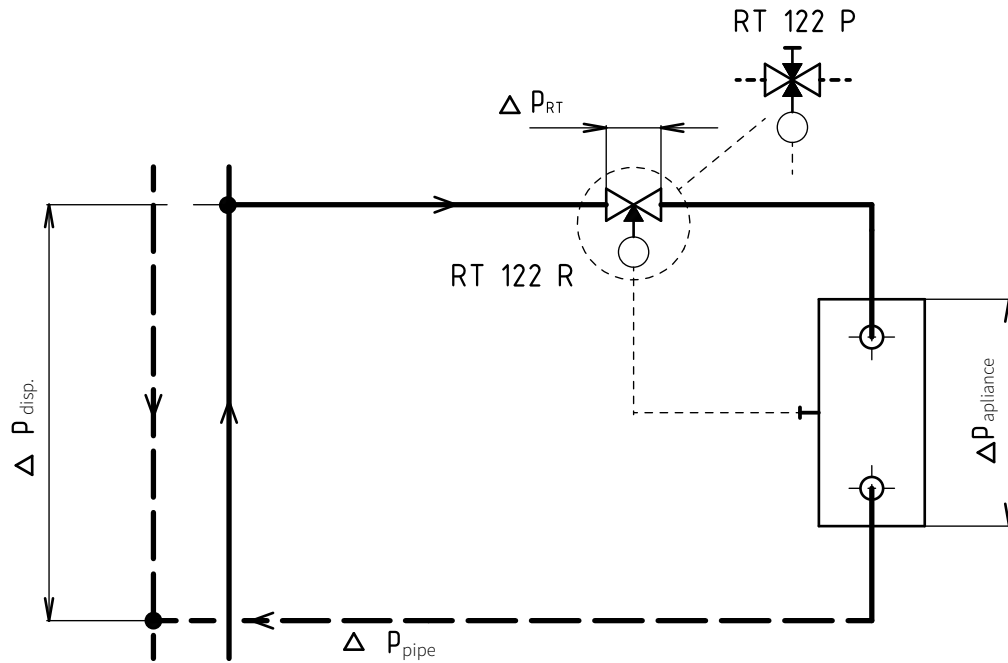
Thermostatic sensor is suitable for operation in liquid and gaseous media in the temperature range from 0°C to 150°C (according to the sensor type) with guaranteed resistance to exceeding set temperature by 50 K. Standard version is designated for use up to PN 25 pressure class, version with thermowell up to PN 40 pressure class.

## Installation

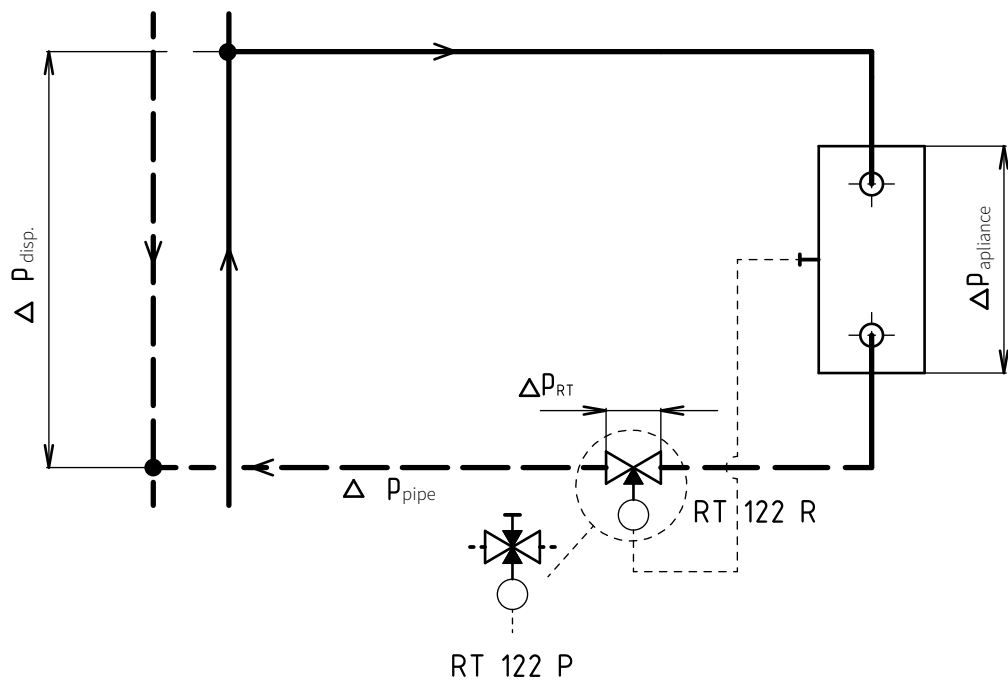
Basic operating position of regulator is when the valve body is above the thermostatic head that points downwards. Other positions are applicable for medium temperature below 110 °C. Temperature sensor position is not restricted. It is important for temperature sensor to have all its sensory surface in contact with controlled medium.

## Typical scheme of wiring for temperature regulators

Scheme of typical regulation loop with temperature regulator RT 122 R, P at primary side



Scheme of typical regulation loop with temperature regulator RT 122 R, P at secondary side





# RT 122 R

# RT 122 P

## BEE line

**DN 15 - 50**  
**PN 25**

**Self-acting temperature regulator RT 122 R** is designed to control flow through the appliance on the basis of medium set temperature. Valve is controlled by thermostatic head using an adsorption temperature sensor. It closes the valve upon increase of temperature.

**Self-acting temperature regulator with flow restrictor RT 122 P** restricts maximum flow through the appliance apart from its basic function of temperature control. This function is provided by a secondary plug adjusted for the required maximum flow by the operator.

Technical data		
Series	RT 122 R	RT 122 P
Version	Self-acting temperature regulator	Self-acting temperature regulator with flow restrictor
Nominal diameter range	DN 15 to 50	
Nominal pressure	PN 25	
Operating temperature range	+2 °C to 150 °C, respectively up to 180 °C	
Body material	Nodular cast iron EN-JS1030	
Plug material	Stainless steel 1.4021	
Seat material	Stainless steel 1.4021	
Stem material	Stainless steel 1.4305	
Sealing material	EPDM	
Material of weld unions	DN 15 to 32 ... 1.0038 / 11 375.1 DN 40 to 50 ... 1.0308 / 11 353.0	
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
Leakage rate	Class IV. - S1 acc. to ČSN EN 1349 (< 0.0005 % Kvs)	
Connection	Externally threaded coupling + screw joints Flanges with raised faces Externally threaded coupling + weld unions	

Thermostatic head - type 2430 K	
Sensor material	Copper
Thermowell material *)	Copper, stainless steel 1.4310
Pressure class of thermostatic head **)	Sensor (without thermowell) ... PN 25 Sensor with thermowell ... PN 40
Sensor operating temperature range	0 ° to 150 °C
Environmental temperature	-20 to 80 °C
Range of adjust. values on therm. head	0 to 35°C ; 25 to 70°C ; 40 to 100°C ; 50 to 120°C ; 70 to 150°C

\*) ... Thermowell is used in applications with nominal pressure in the location of temperature sensor higher than PN 25

\*\*\*) ... Relative to nominal pressure in the location of temperature sensor

Note: It is necessary to combine same kind of materials of sensor (or thermowell) and of connected piping. For example it is not possible to use non-ferrous sensor material in combination with stainless steel heat exchanger. In this case it would be necessary to use stainless steel sensor.

## Specification code for ordering of valves RT 122

		XX	XXX	X	XXXX	XX	/	XXX	-	XX	/	X
<b>1. Valve</b>	Self-acting temperature regulator	RT										
<b>2. Series</b>	Pressure-balanced		122									
<b>3. Function</b>	Temperature regulator											
	Temperature regulator with flow restrictor											
<b>4. Version</b>	Without thermowell (PN 25)											<b>1</b>
	With thermowell, copper (PN 40)											<b>2</b>
	With thermowell, CrNiMo steel (PN 40)											<b>3</b>
<b>5. Set temperature range</b>	0 - 35 °C											<b>1</b>
	25 - 70 °C											<b>2</b>
	40 - 100 °C											<b>3</b>
	50 - 120 °C											<b>4</b>
	70 - 150 °C											<b>5</b>
	Different range after agreement											<b>9</b>
<b>6. Capillary tube with temperature sensor</b>	2 m - G1/2											<b>1</b>
	5 m - G1/2											<b>2</b>
<b>7. Kvs</b>	Column header according to Kvs table											<b>X</b>
<b>8. Nominal pressure</b>	PN 25											<b>25</b>
<b>9. Max. operating temp.</b>	150 °C											<b>150</b>
	180 °C											<b>180</b>
<b>10. Nominal size</b>	DN 15 to 50											<b>XX</b>
<b>11. Connection</b>	Externally threaded coupling + screw joints											<b>T</b>
	Flanges PN 25 with raised faces											<b>F</b>
	Externally threaded coupling + weld unions											<b>W</b>

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

Ordering example: **RT 122 R 1411 25/150-25/W**

## Kvs values and pressure differentials table

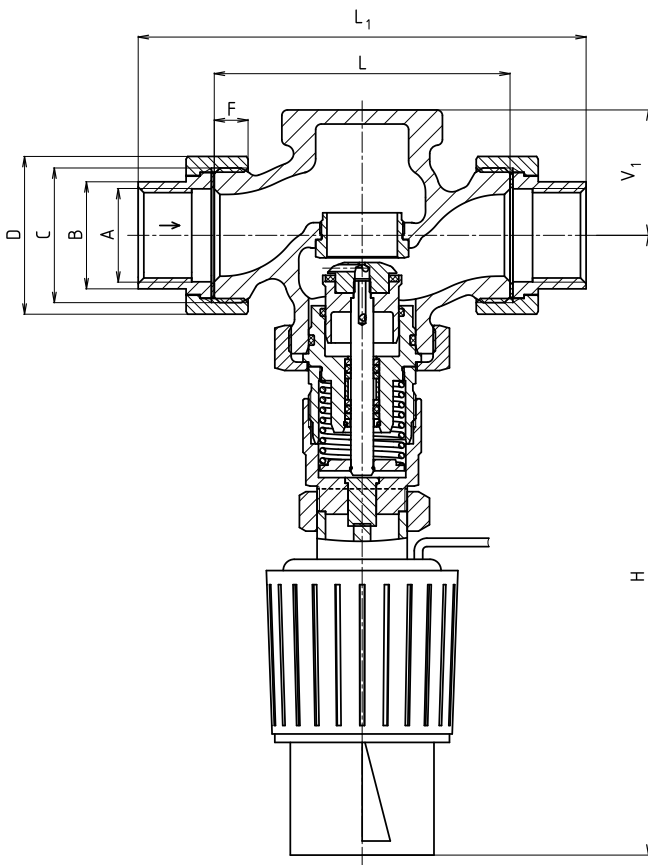
DN	Kvs [m <sup>3</sup> /h]					$\Delta p_{set}$ [MPa]
	1	2	3	4	5	
15	5	2.5	1.6	1.0	0.63	2.5
20	8	---	---	---	---	2.5
25	10	---	---	---	---	2.5
32	15	---	---	---	---	2.5
40	21	---	---	---	---	2.5
50	32 / 28.5 *)	---	---	---	---	2.5

\*) Kvs value for self-acting temperature regulator with flow restrictor RT 122 P

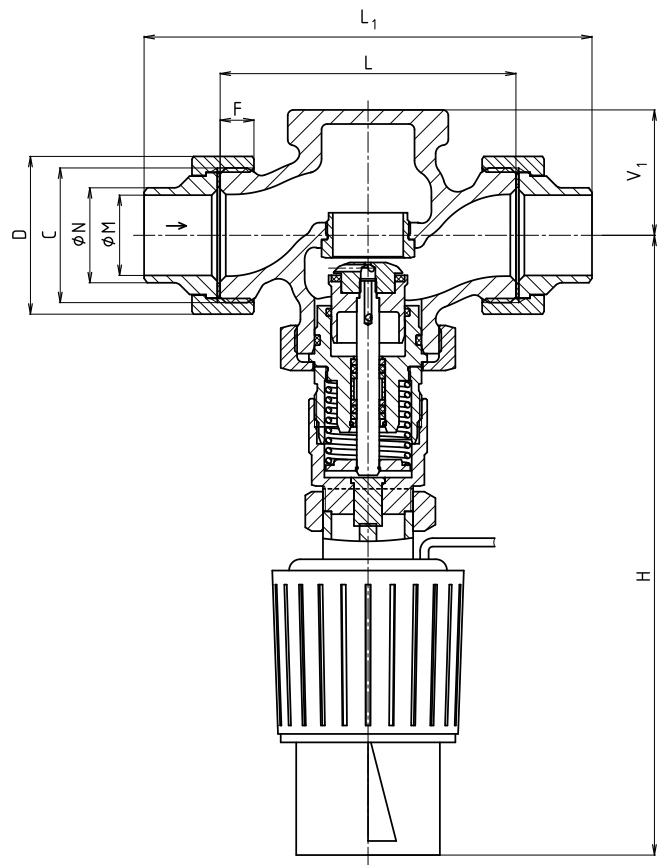
## Dimensions and weights of valves RT 122 R .../T with screw joints, .../W with weld unions

DN	L [mm]	L <sub>1</sub> [mm]	V <sub>1</sub> [mm]	H [mm]	A	B [mm]	C	D [mm]	ØM [mm]	ØN [mm]	F [mm]	m [kg]
15	100	145	44.5	220	Rp 1/2	25	G 1	41	16.1	21.3	9.5	2.7
20	100	148	44.5	220	Rp 3/4	32	G 1 1/4	51	21.7	26.9	11.5	2.7
25	105	159	44.5	220	Rp 1	38	G 1 1/2	56	28.5	33.7	12	2.9
32	130	192	63	240	Rp 1 1/4	47	G2	71	37.2	42.4	12.5	4
40	140	206	63	240	Rp 1 1/2	53	G 2 1/4	76	43.1	48.3	15.5	5.2
50	160	232	63	240	Rp 2	66	G 2 3/4	91	54.5	60.3	16.5	6.8

**Valves RT 122 R../T  
with screw joints**



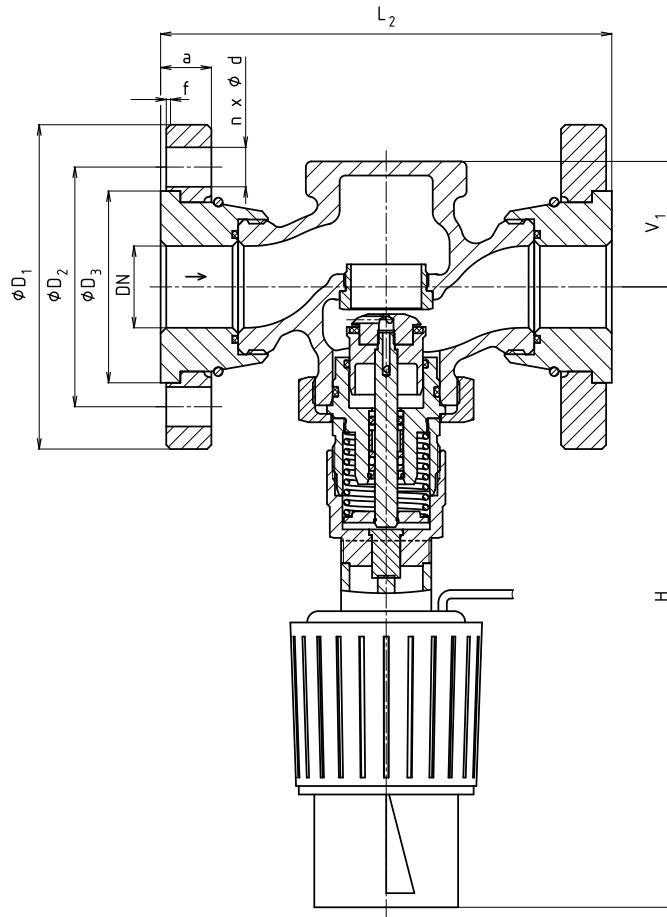
**Valves RT 122 R../W  
with weld unions**



**Dimensions and weights of valves RT 122 R../F with flanges**

DN	L <sub>2</sub> [mm]	V <sub>1</sub> [mm]	H [mm]	ØD <sub>1</sub> [mm]	ØD <sub>2</sub> [mm]	ØD <sub>3</sub> [mm]	a [mm]	f [mm]	n	Ød [mm]	m [kg]
15	130	44.5	220	95	65	45	16	2	4	14	3.9
20	150	44.5	220	105	75	58	16	2	4	14	4.5
25	160	44.5	220	115	85	68	18	2	4	14	5.3
32	180	63	240	140	100	78	18	2	4	18	7.4
40	200	63	240	150	110	88	19	3	4	18	8.8
50	230	63	240	165	125	102	19	3	4	18	11

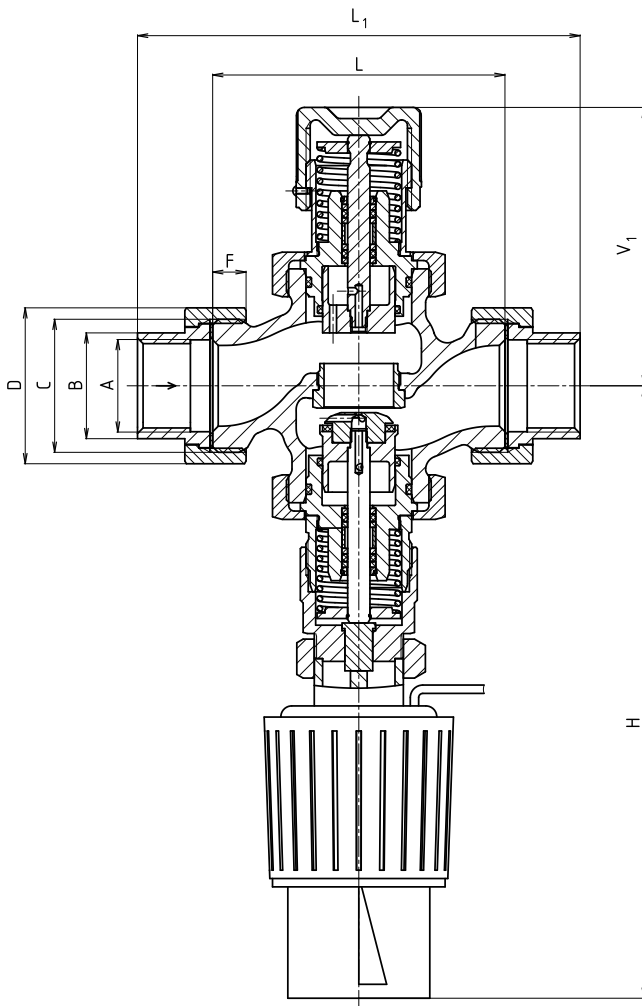
**Valves RT 122 R../F  
with raised face flanges**



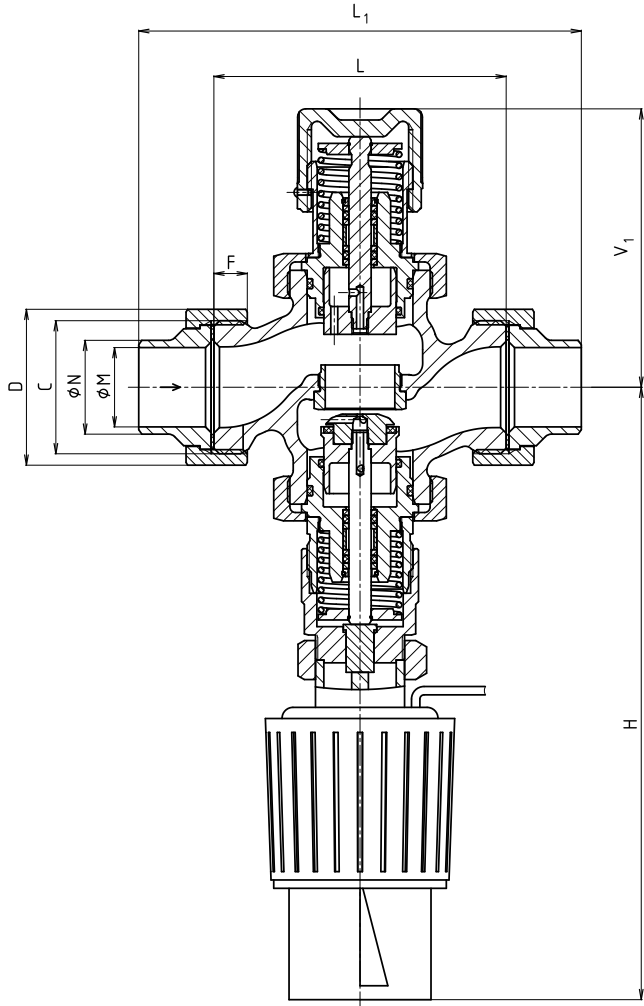
**Dimensions and weights of valves RT 122 P./T with screw joints, RT 122 P./W with weld unions**

DN	L [mm]	L <sub>1</sub> [mm]	V <sub>1</sub> [mm]	H [mm]	A	B [mm]	C	D [mm]	ØM [mm]	ØN [mm]	F [mm]	m [kg]
15	100	145	100	220	Rp 1/2	25	G 1	41	16.1	21.3	9.5	3.1
20	100	148	100	220	Rp 3/4	32	G 1 1/4	51	21.7	26.9	11.5	3.1
25	105	159	100	220	Rp 1	38	G 1 1/2	56	28.5	33.7	12	3.3
32	130	192	119	240	Rp 1 1/4	47	G2	71	37.2	42.4	12.5	4.5
40	140	206	119	240	Rp 1 1/2	53	G 2 1/4	76	43.1	48.3	15.5	6
50	160	232	119	240	Rp 2	66	G 2 3/4	91	54.5	60.3	16.5	7.9

**Valves RT 122 P./T with screw joints**



**Valves RT 122 P./W with weld unions**

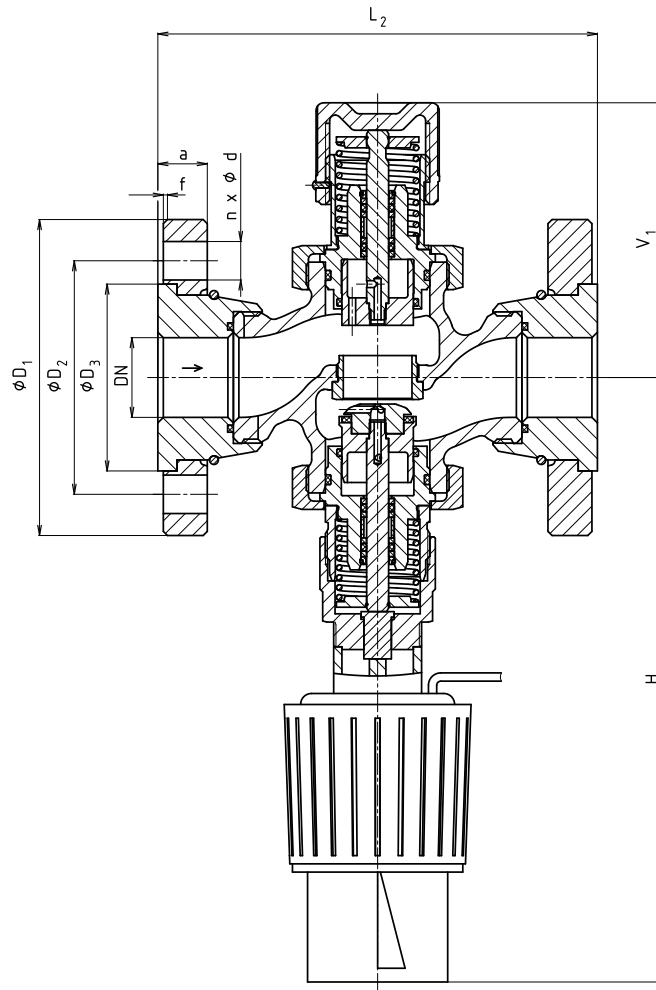




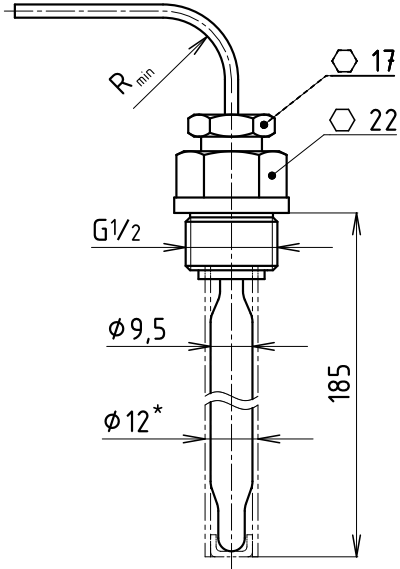
**Dimensions and weights of valves RT 122 P./F with flanges**

DN	L <sub>2</sub> [mm]	V <sub>1</sub> [mm]	H [mm]	ØD <sub>1</sub> [mm]	ØD <sub>2</sub> [mm]	ØD <sub>3</sub> [mm]	a [mm]	f [mm]	n	Ød [mm]	m [kg]
15	130	100	220	95	65	45	16	2	4	14	4.3
20	150	100	220	105	75	58	16	2	4	14	4.9
25	160	100	220	115	85	68	18	2	4	14	5.7
32	180	119	240	140	100	78	18	2	4	18	7.9
40	200	119	240	150	110	88	19	3	4	18	9.6
50	230	119	240	165	125	102	19	3	4	18	12.1

**Valves RT 122 P./F  
with raised face flanges**



## Temperature sensor dimensions



$R_{min}$  ... smallest allowed bending radius - 50 mm

\* ... configuration with thermowell (PN 40)

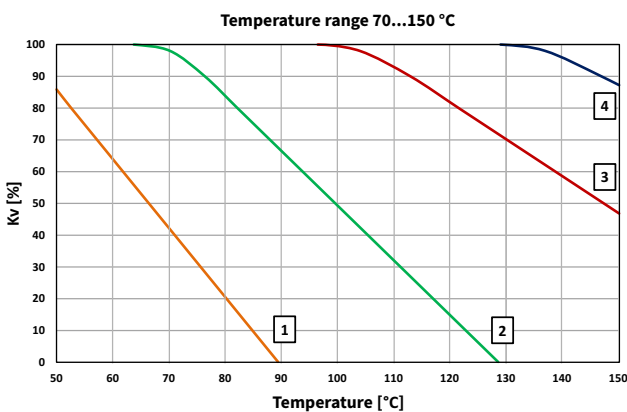
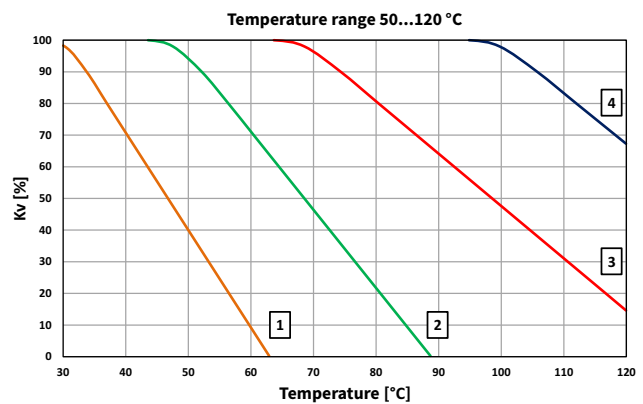
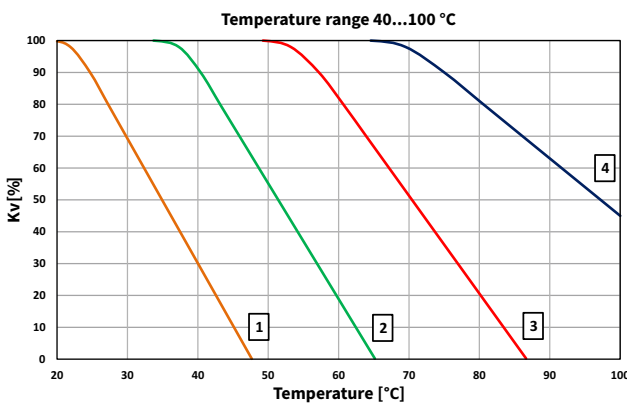
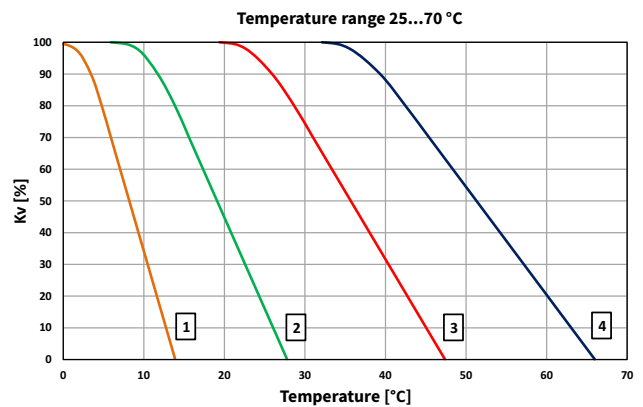
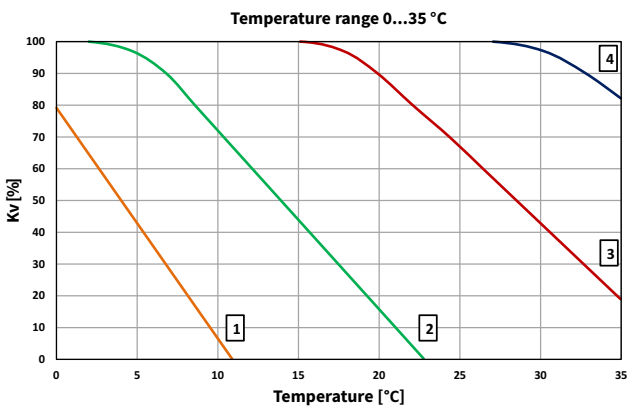
Environment temperature cannot reach out of permissible range (-20°C to 80°C) and should fluctuate as little as possible.

## Adjustment diagrams

Diagrams can be used as guide to find first approximate values of thermostatic head setting.

Temperature setting on thermostatic head is performed by turning set point adjuster. Set temperature is lowered by turning clockwise and increased by turning counterclockwise.

### Temperature adjustment diagrams for RT 122 R; P (valve closes upon increase of temperature) DN 15 - 25



#### 1..4 Thermostatic head setting

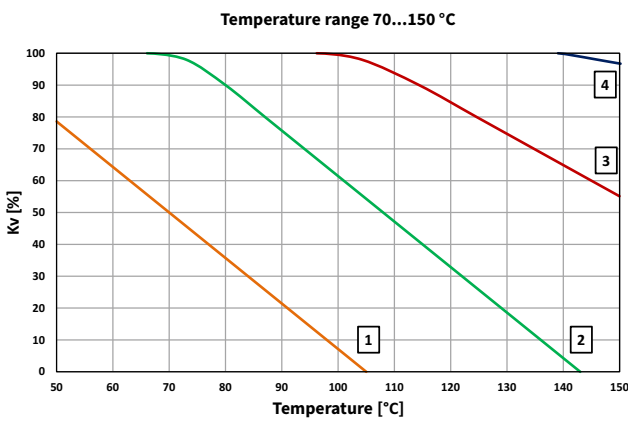
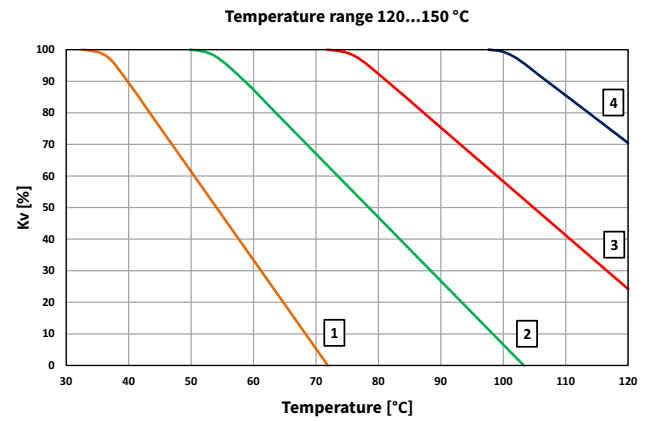
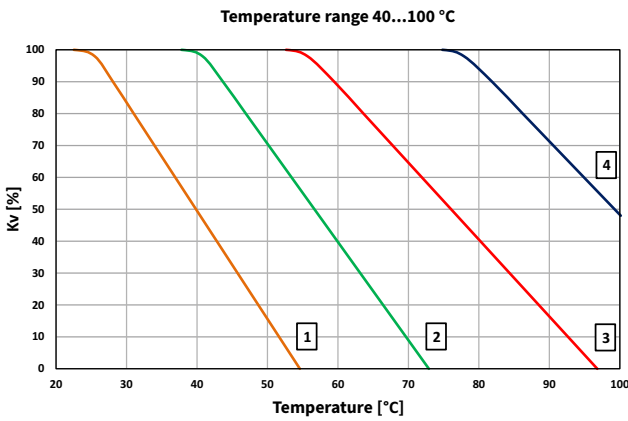
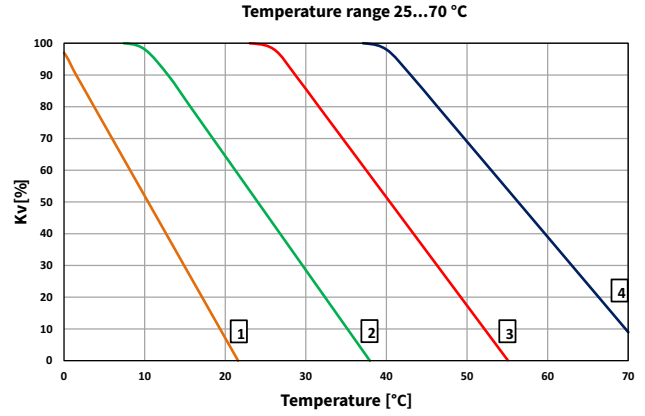
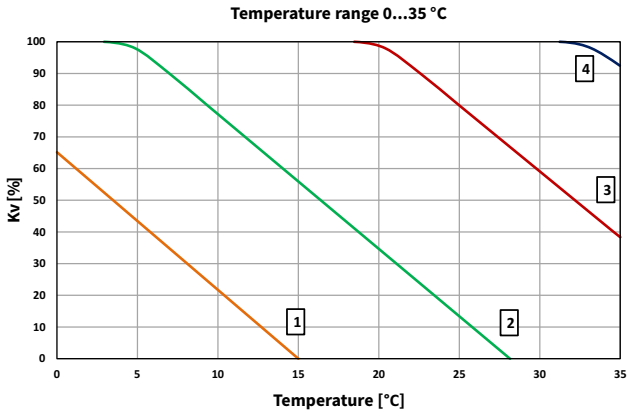
Curves display dependence of regulator  $K_v$  value on medium temperature and thermostatic head setting.

$$K_v (\%) = \frac{K_v \text{ required}}{K_{vs}} \times 100$$

$K_{vs}$  nominal flow coefficient of temperature regulator

Temperature adjustment diagrams for RT 122 R; P (valve closes upon increase of temperature)

DN 32 - 50



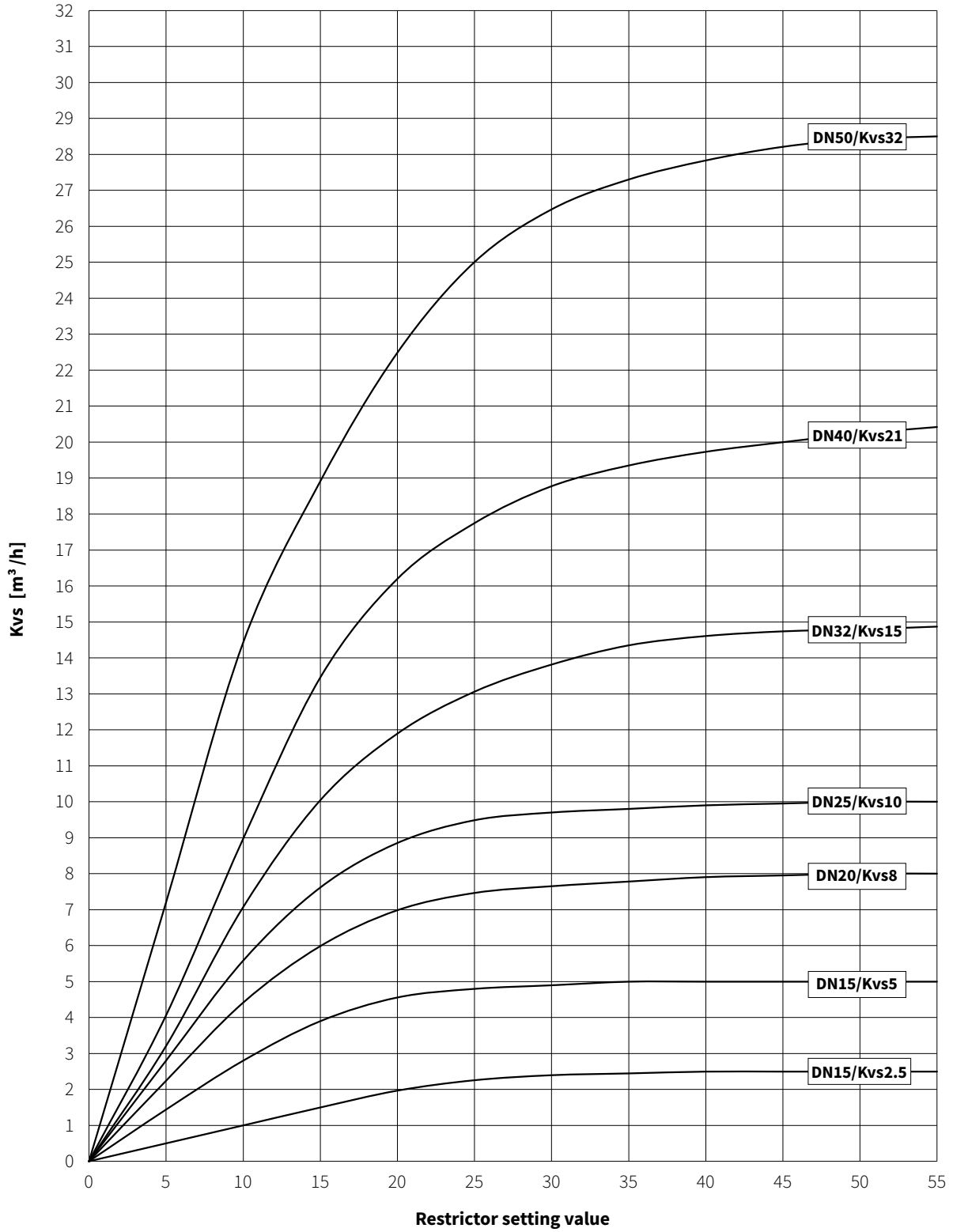
**1..4** Thermostatic head setting

Curves display dependence of regulator Kv value on medium temperature and thermostatic head setting.

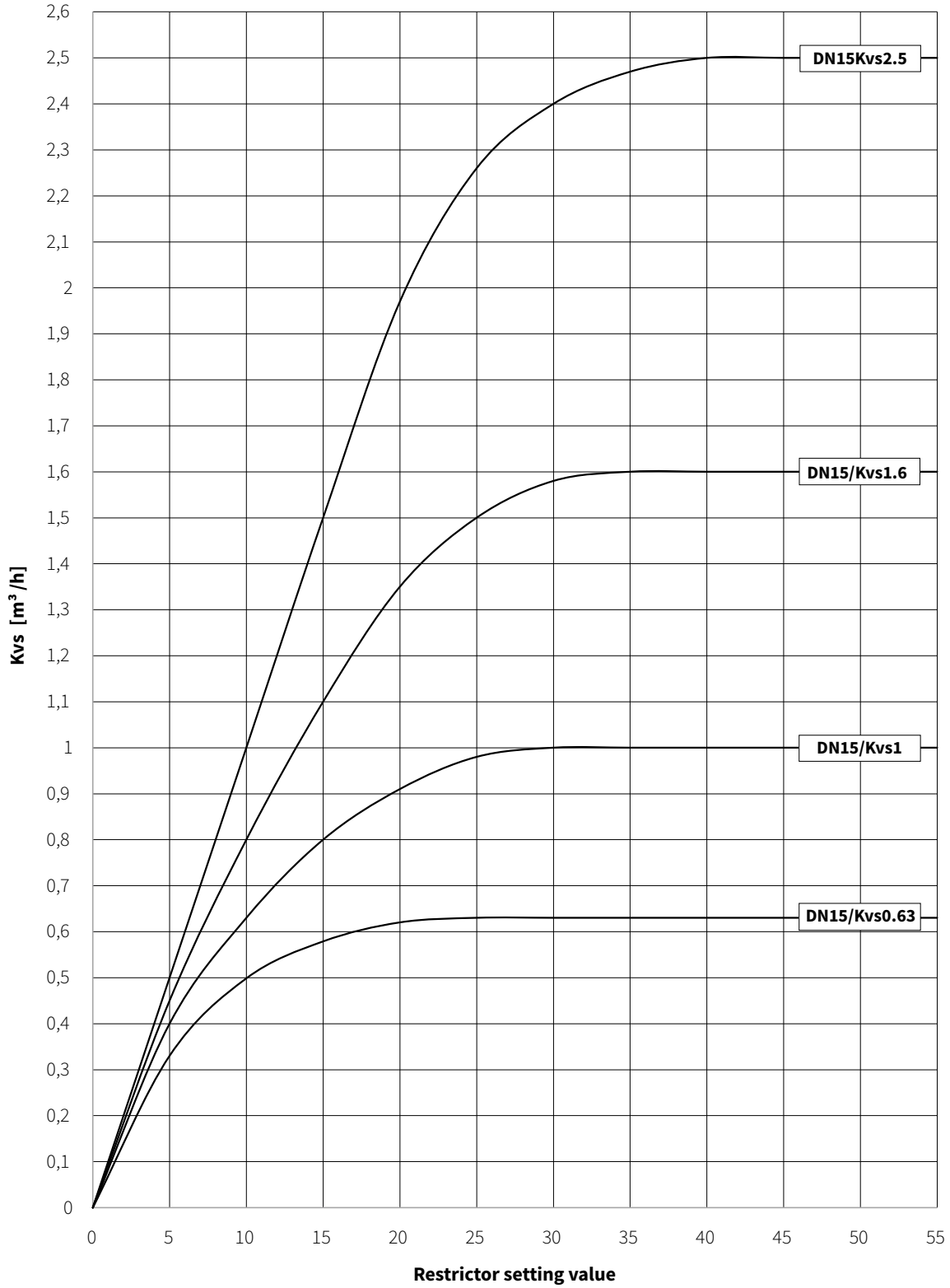
$$K_v (\%) = \frac{K_v \text{ required}}{K_{vs}} * 100$$

*K<sub>vs</sub> nominal flow coefficient of temperature regulator*

### RT 122 P - flow restrictor adjustment diagram



### RT 122 P - flow restrictor adjustment diagram



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

Material	PN	Temperature [°C]		
		120	150	180
<b>Nodular cast iron EN-JS1030</b>	<b>25</b>	2.50	2.43	2.38



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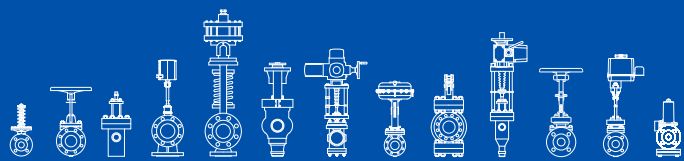
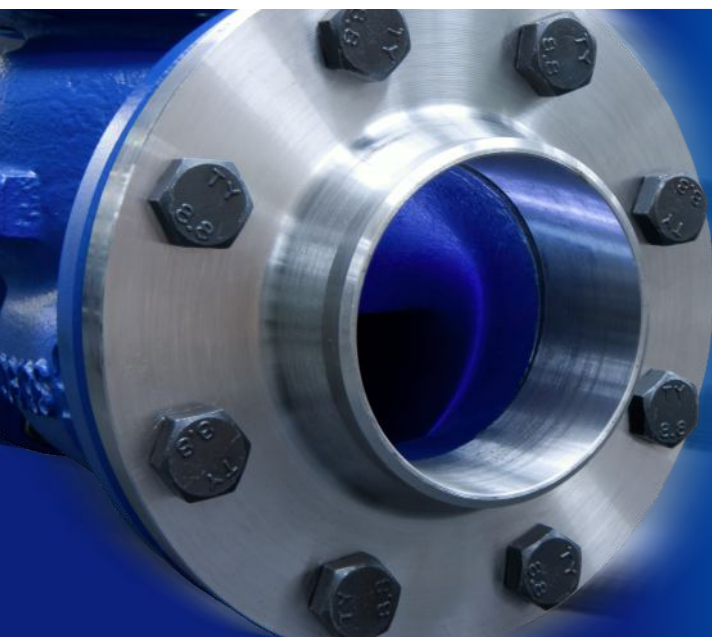
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