



EN 215



Straight valves VDN2..



Angle valves VEN2..



Reverse angle valves VUN2..

ACVATIX™

## Radiator valves

**VDN2..**  
**VEN2..**  
**VUN2..**

NF norm, for 2-pipe heating systems

- Valve bodies made of brass, mat nickel-plated
- DN 10, DN 15 and DN 20 (VDN2.., VEN2..)
- Integrated preadjustment of  $k_v$ -values
- Internally and externally threaded (Rp/R) conforming to ISO 7-1
- Manual knob / protective cover included in the delivery
- Can be combined with RTN.. thermostatic actuators, SSA.. electromotoric actuators, STA..40.. electrothermal actuators or SSA911-controlled actuators

## Use

The radiator valves are used in hot water heating plant for individual room or zone temperature control and limitation. They are basically recommended in all rooms, especially where heat gains or different temperature levels occur.

## Type summary

Product number straight	Product number angle	Product number reverse angle	DN	$k_{vs}$ -value [m <sup>3</sup> /h] without actuator N
VDN210	VEN210		10	0.63
		VUN210		0.60
VDN215	VEN215		15	0.89
		VUN215		0.77
VDN220	VEN220		20	1.41

The  $k_{vs}$  values in combination with the different actuators can be taken from the table on page 5.

## Ordering

Example:

Product number	Order number	Designation	Quantity
VDN220	VDN220	Straight Valves	2
ATN2	ATN2	Protection against dismantling	1

Delivery

Valves and accessories are packed separately.

## Equipment combinations

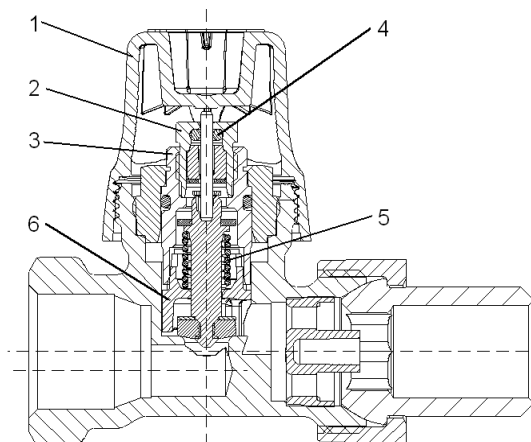
Product	Product number	Data sheet
Thermostatic actuators	RTN..	N2111
Electromotoric actuators	SSA131 / SSA331 / SSA161.05	A6V11858276
	SSA151.05HF / SSA161.05HF	A6V11858278
RF-controlled electromotoric actuators	SSA955	N2700
Electrothermal actuators	STA..40..	A6V14028280

## Mechanical design / technical design

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The flow rate can be preadjusted with an orifice. Full stroke is ensured irrespective of the preadjustment, which is made with the help of the protective cover.

- 1 Manual knob / protective cover
- 2 Sealing gland
- 3 Valve insert
- 4 O-ring
- 5 Reset spring
- 6 Orifice



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### Features and benefits

- The valves conform to EN 215.
- The sealing gland can be replaced while the plant is under pressure (no tools required).

### Accessories

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#### ATN2

Protection against dismantling



#### ATN4

Manual knob



#### AVN..

Compression fittings



The reference numbers for preadjustment are given in the table with the  $k_v$ -values (see page 5) and in the "Valve sizing charts" (see pages 8 – 7).

1. Calculate the volumetric water flow  $\dot{V}_{100}$

$\dot{V}_{100} = \frac{Q_{100}}{1.163 \times \Delta T \times f_1} \text{ [m}^3\text{/h]}$	$Q_{100}$ = heat demand [kW] $\Delta T$ = temperature differential [K] 1.163 = constant of water $f_1$ = correction factor = 1 for water
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2. Define the pressure drop  $\Delta p_{v100}$  across the fully open valve  
 In most types of plant, a differential pressure  $\Delta p_{v100}$  of 0.05 to 0.2 bar is adequate.

3. Calculation of the nominal flow value  $k_v$

$k_v = \frac{\dot{V}_{100}}{\sqrt{\Delta p_{v100}}} \text{ [m}^3\text{/h]}$	$\Delta p_{v100}$ = differential pressure across the valve [bar]
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Example:

Heat demand	$Q_{100}$	= 1.2 kW
Temperature differential	$\Delta T$	= 20 K
Water volume	$\dot{V}_{100} = \frac{1.2}{1.163 \times 20}$	= 0.052 m <sup>3</sup> /h = 52 l/h
Required differential pressure across the valve	$\Delta p_{v100}$	= 0.1 bar
Flow	$k_v = \frac{0.052}{\sqrt{0.1}}$	= 0.17 m <sup>3</sup> /h

**Solution**

According to the chart (refer to "Valve sizing charts", or table with  $k_v$ -values), the preadjustment required for a VDN210 3/8" valve is 2.

**Tips**

- Noiseless operation is ensured by a pump that provides no more pressure than is needed to transport the required amount of water.
- To keep the valve free from dirt particles, it is recommended to install a strainer.

**k<sub>v</sub>-values**

The k<sub>v</sub>-value gives the volumetric water flow  $\dot{V}_{100}$  in m<sup>3</sup>/h at a pressure drop  $\Delta p_{v100}$  across the valve of 1 bar.

**k<sub>v</sub>-values [m<sup>3</sup>/h] at the different preset positions**

Control range of thermostatic actuators RTN..	✓	✓	✓	✓	✓	✓
<b>Reference numbers for preadjustment</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>N</b>
VDN210 / VEN210 XP 2K	0.072	0.17	0.24	0.28	0.37	0.43
VDN210 / VEN210 XP 1.5K	0.057	0.135	0.19	0.23	0.29	0.33
VDN210 / VEN210 XP 1K	0.037	0.089	0.13	0.145	0.19	0.22
VDN215 / VEN215 XP 2K	0.07	0.17	0.28	0.36	0.45	0.50
VDN215 / VEN215 XP 1.5 K	0.058	0.14	0.23	0.28	0.35	0.40
VDN215 / VEN215 XP 1K	0.038	0.09	0.15	0.18	0.24	0.27
VDN220 / VEN220 XP 2K	0.22	0.35	0.44	0.52	0.60	0.71
VDN220 / VEN220 XP 1.5K	0.17	0.27	0.35	0.42	0.46	0.55
VDN220 / VEN220 XP 1K	0.11	0.18	0.23	0.28	0.31	0.36
VUN210 XP 2K	0.14	0.26	0.34	0.39	0.40	0.43
VUN210 XP 1.5K	0.12	0.22	0.29	0.33	0.34	0.37
VUN210 XP 1K	0.08	0.14	0.19	0.21	0.22	0.24
VUN215 XP 2K	0.13	0.22	0.30	0.39	0.45	0.50
VUN215 XP 1.5K	0.11	0.19	0.26	0.33	0.38	0.43
VUN215 XP 1 K	0.07	0.12	0.16	0.22	0.25	0.28

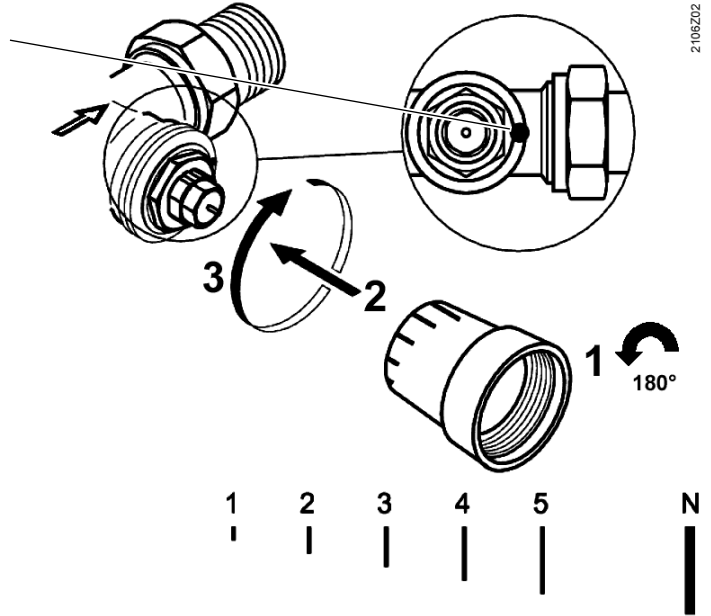
Control range with actuators SSA.., STA..40.. und STS61..	✓	✓	✓	✓	✓	✓
<b>Reference numbers for preadjustment</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>N</b>
VDN210 / VEN210	0,09	0,18	0,26	0,33	0,48	0,63
VDN215 / VEN215	0,10	0,20	0,31	0,45	0,69	0,89
VDN220 / VEN220	0,31	0,41	0,54	0,83	0,91	1,41
VUN210	0,14	0,28	0,38	0,49	0,53	0,60
VUN215	0,13	0,23	0,34	0,52	0,66	0,77

## Setting the kv-values

The  $k_v$ -values can be set on the valve's head in 5 steps + N (fully open) using the protective cover, which can be turned through 180°.



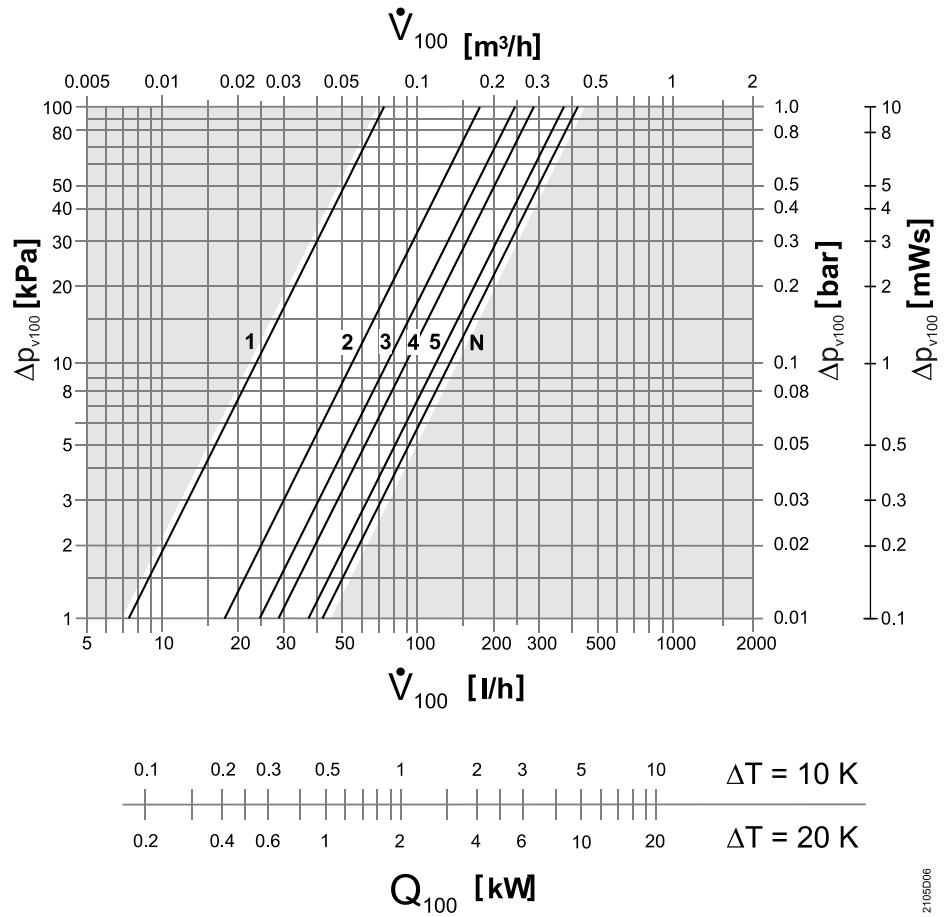
Observe marking on the valve's outlet side!



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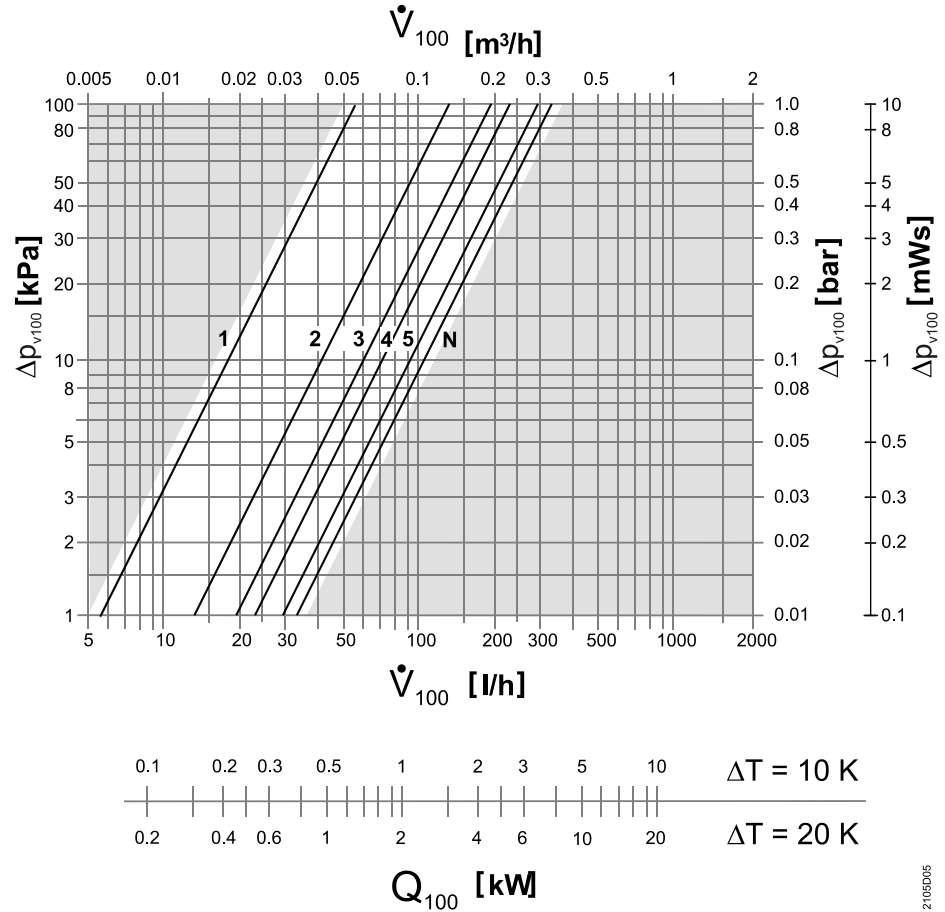
Valve sizing charts

**VDN210**  
**VEN210**  
 Xp Band 2 K



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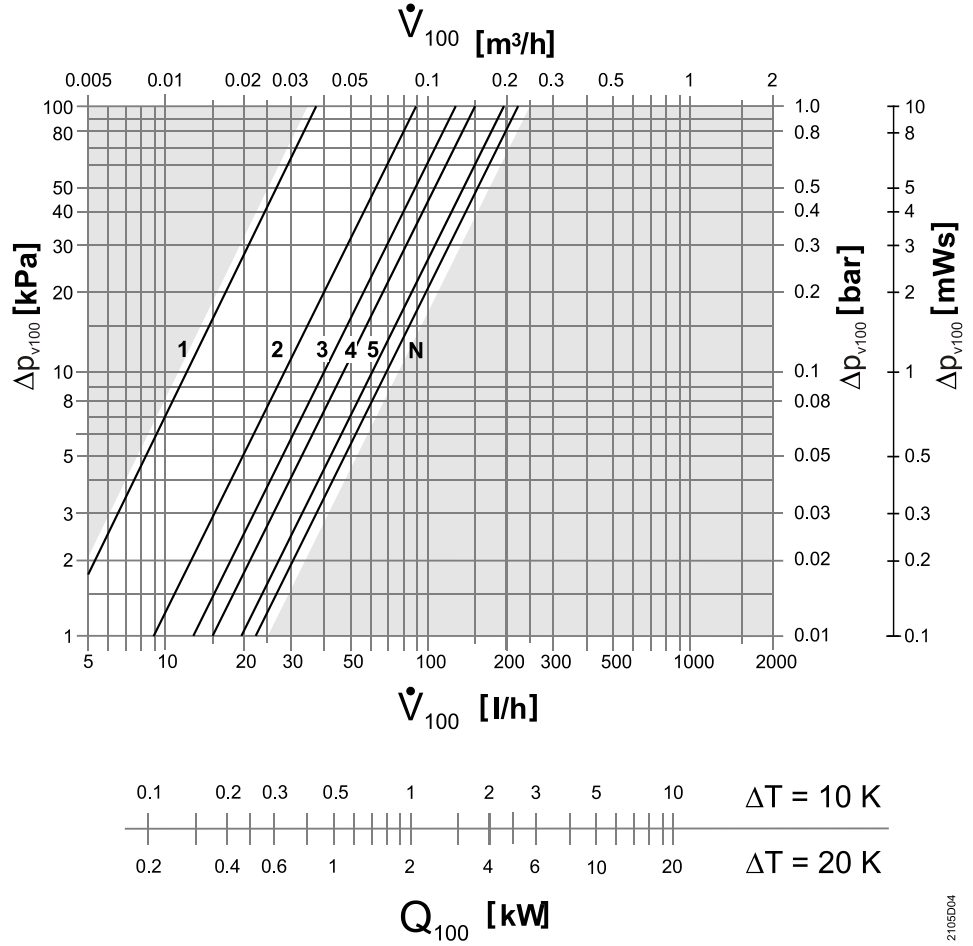
**VDN210**  
**VEN210**  
 Xp Band 1.5 K



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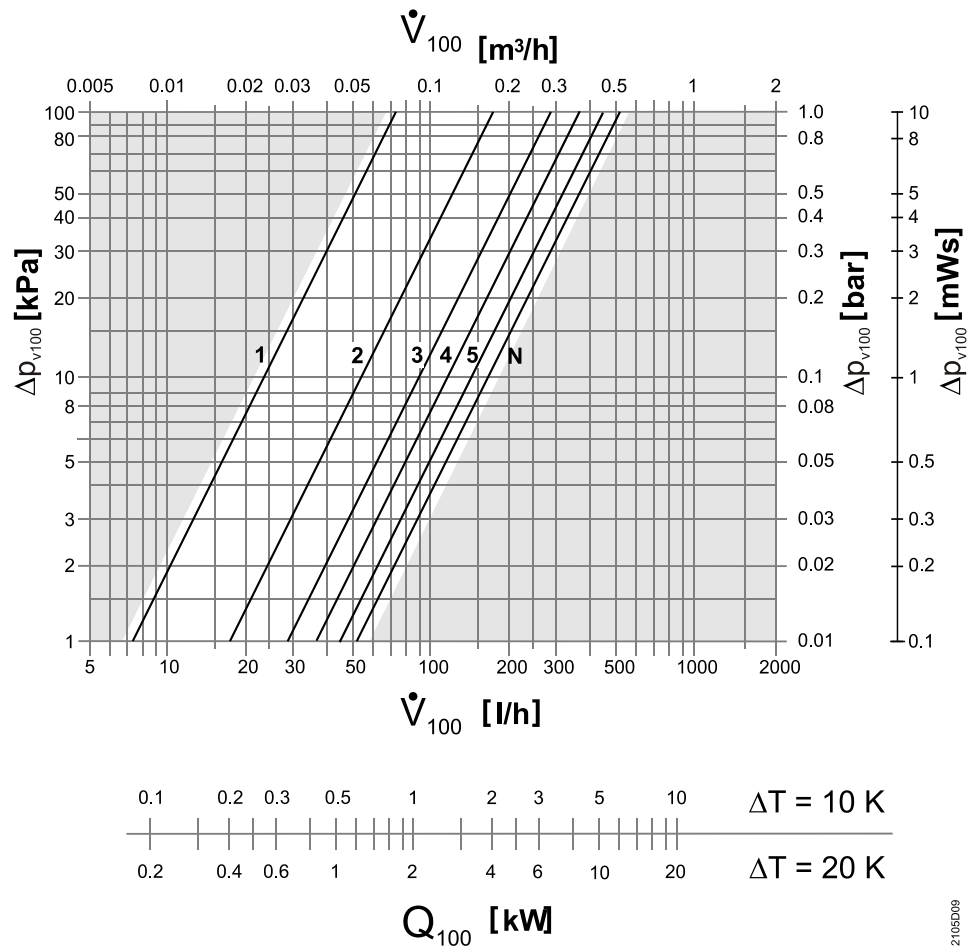


VDN210  
 VEN210  
 Xp Band 1 K



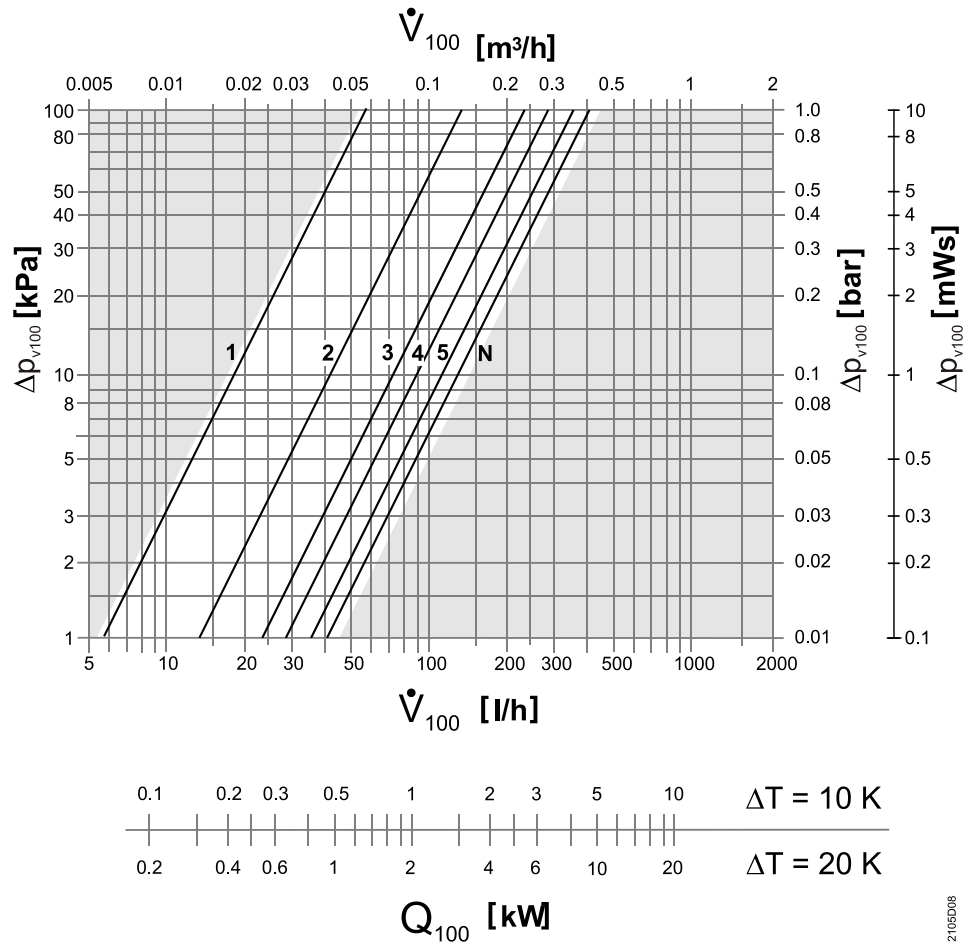
2105D04

VDN215  
 VEN215  
 Xp Band 2 K



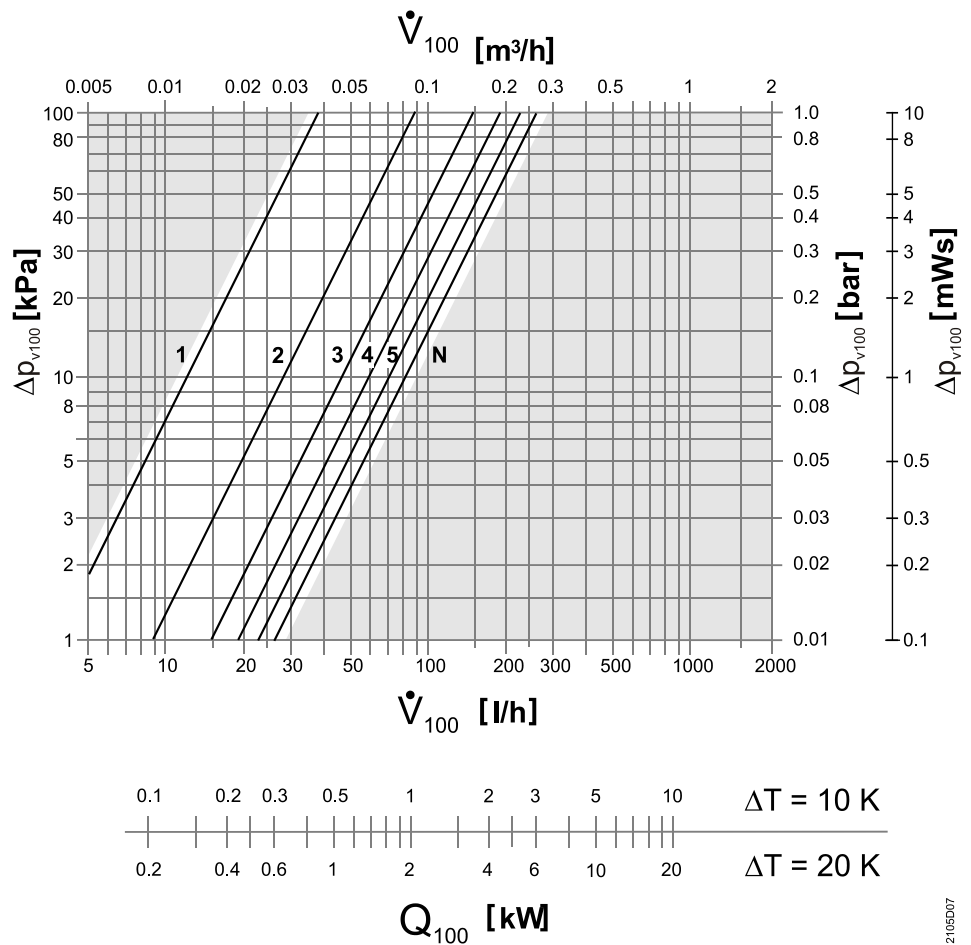
2105D09

VDN215  
 VEN215  
 Xp Band 1.5 K



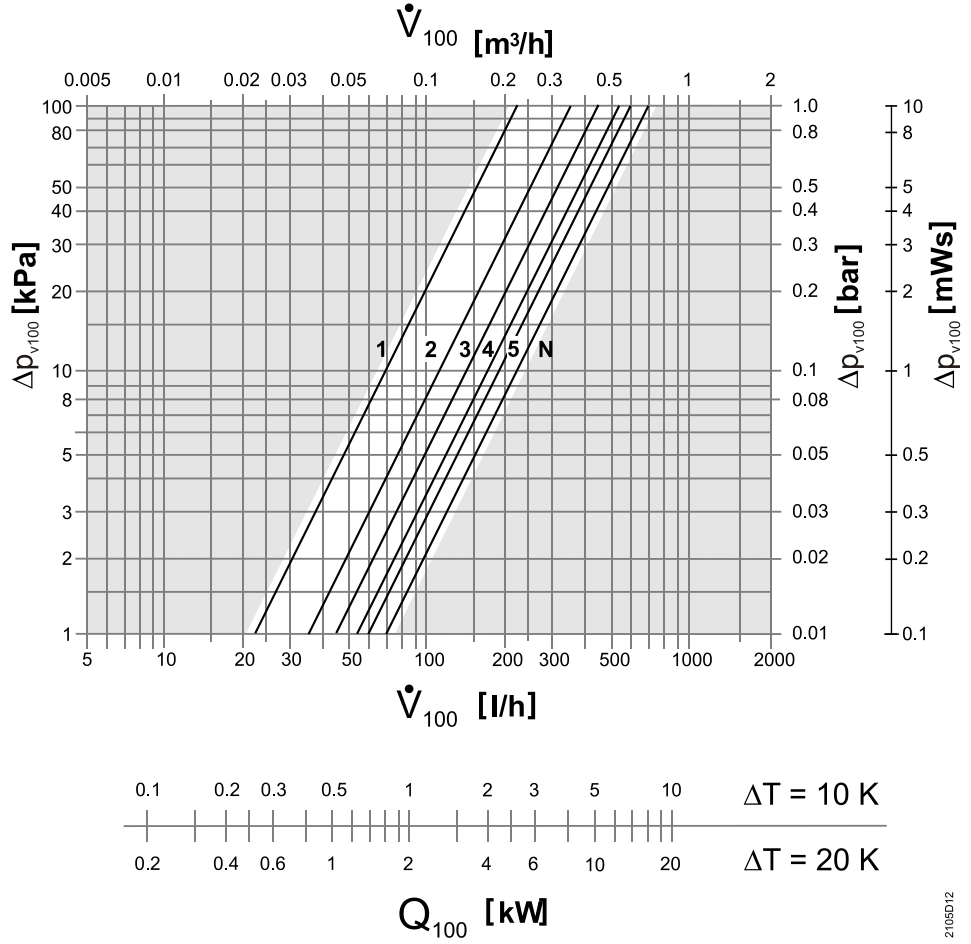
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VDN215  
 VEN215  
 Xp Band 1 K



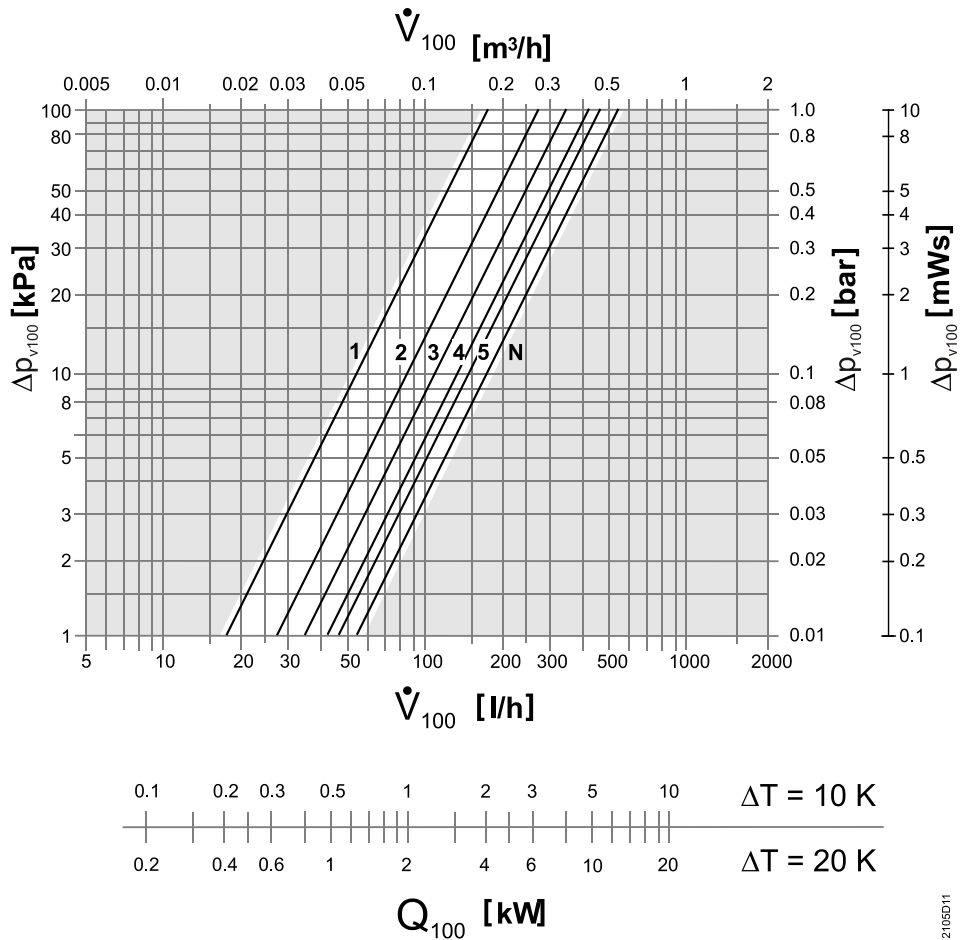
2105D07

VDN220  
 VEN220  
 Xp Band 2 K



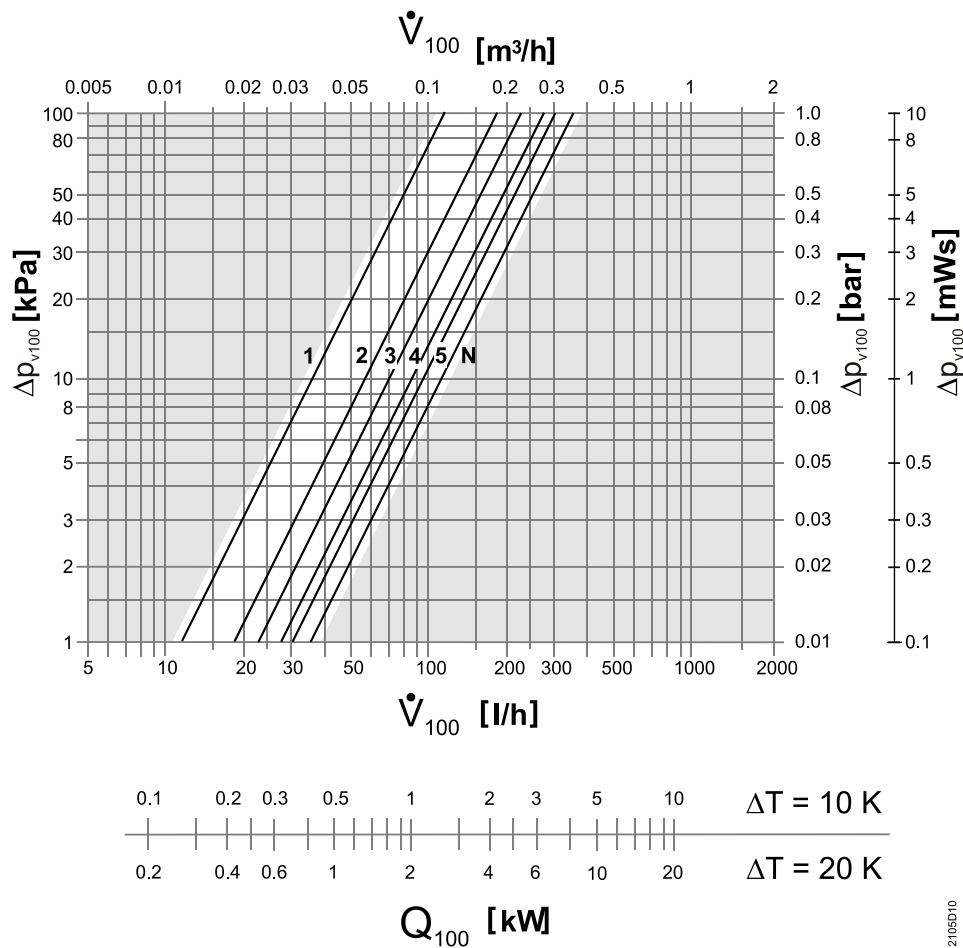
2105D12

VDN220  
 VEN220  
 Xp Band 1.5 K



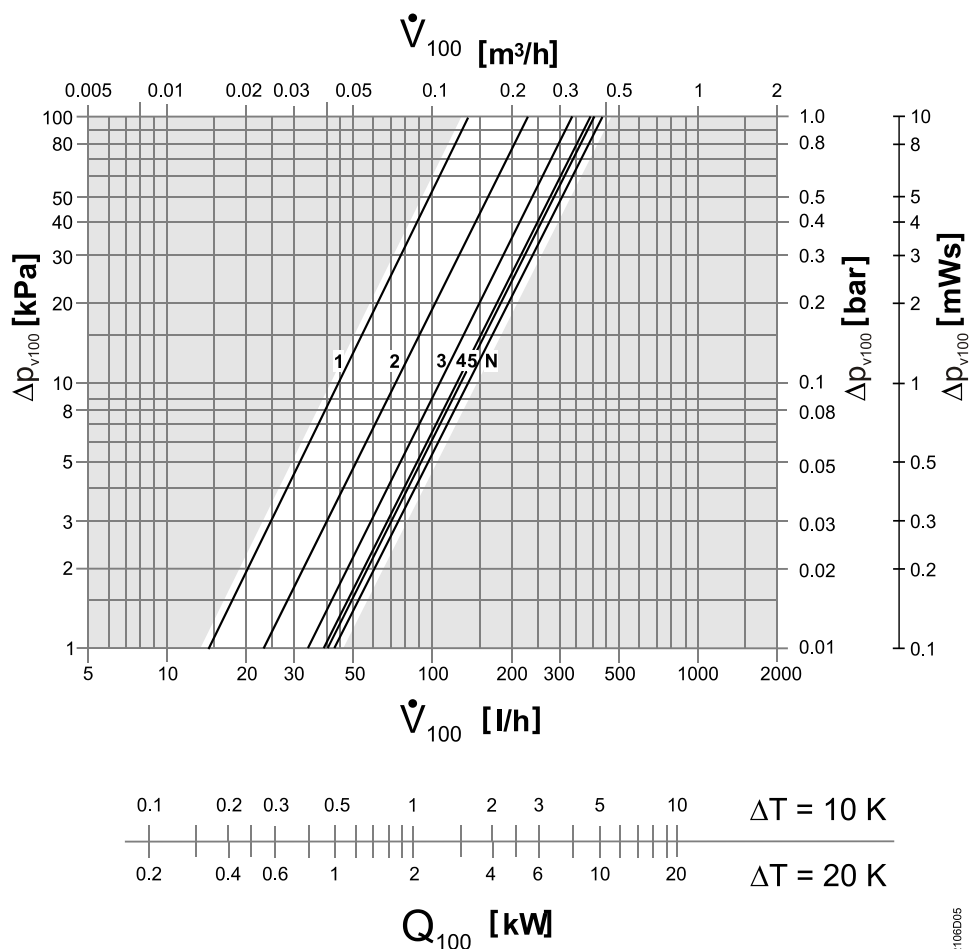
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**VDN220**  
**VEN220**  
 Xp Band 1 K



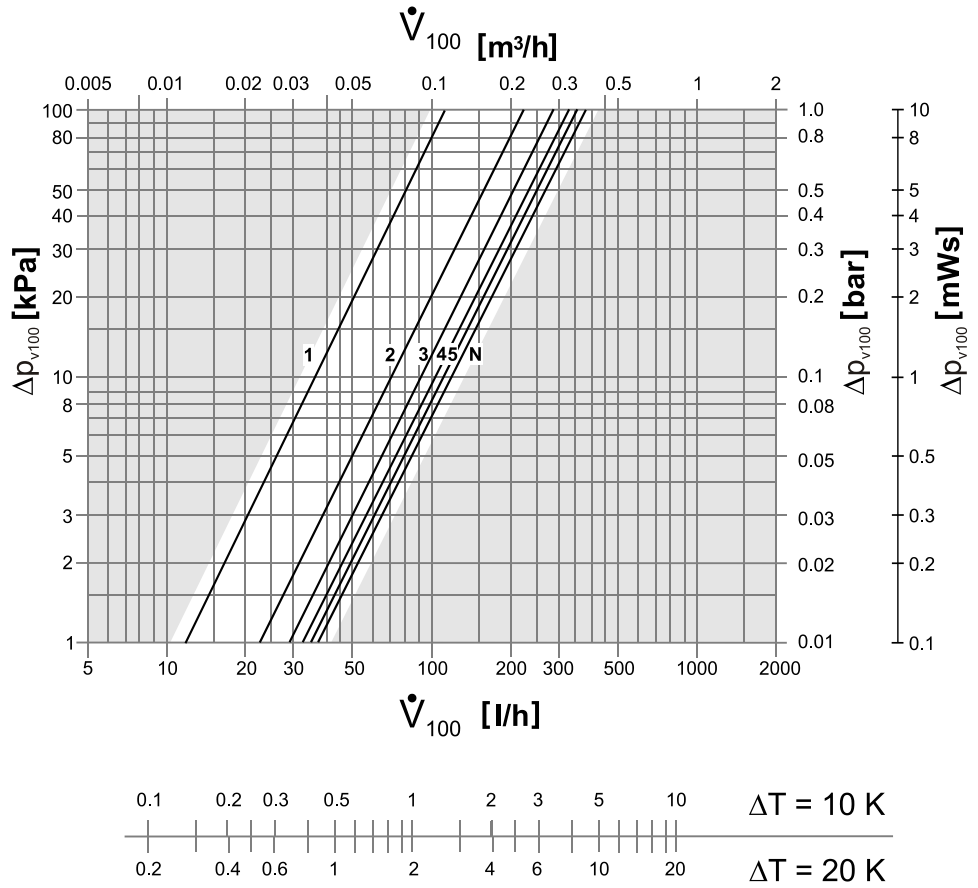
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**VUN210**  
 Xp Band 2 K



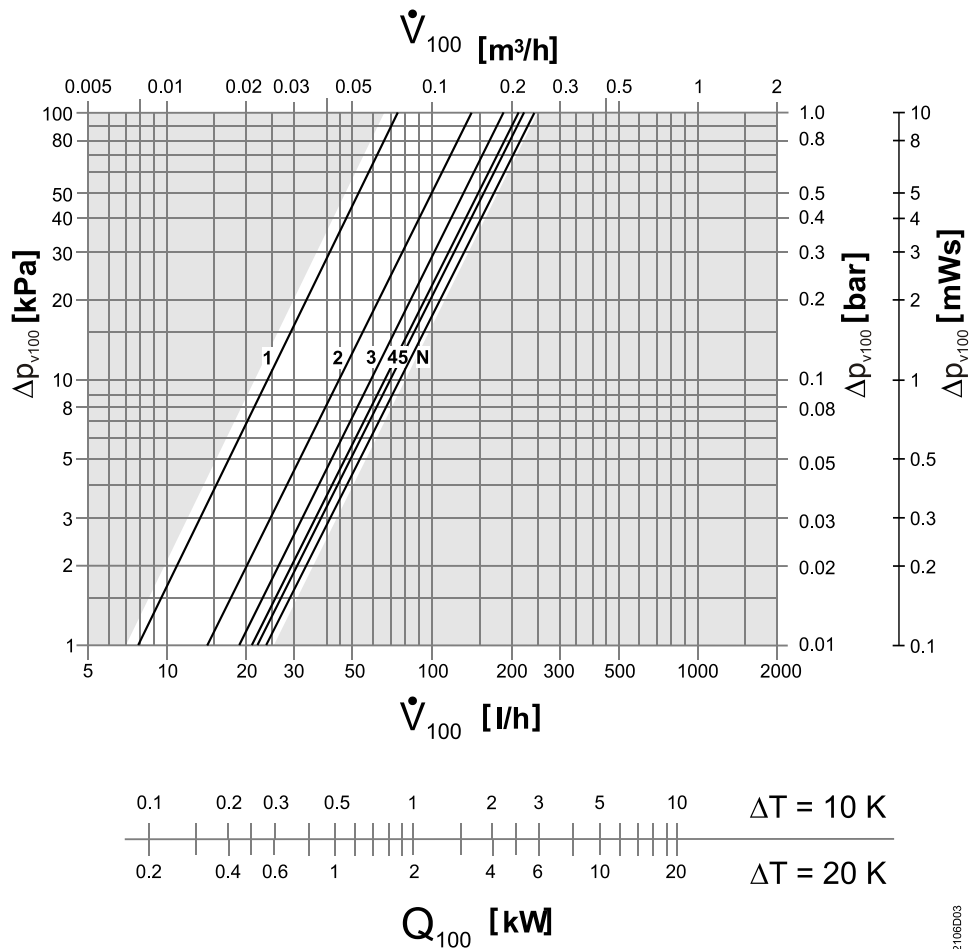
2106D05

**VUN210**  
Xp Band 1.5 K



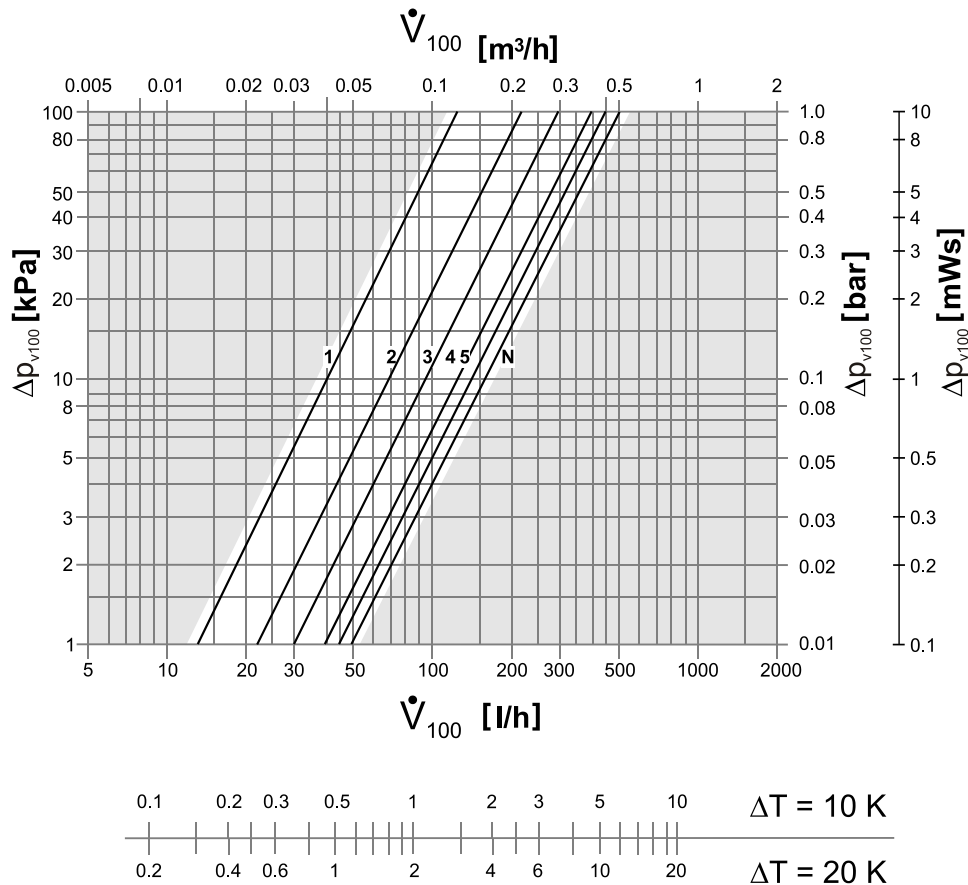
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**VUN210**  
Xp Band 1 K



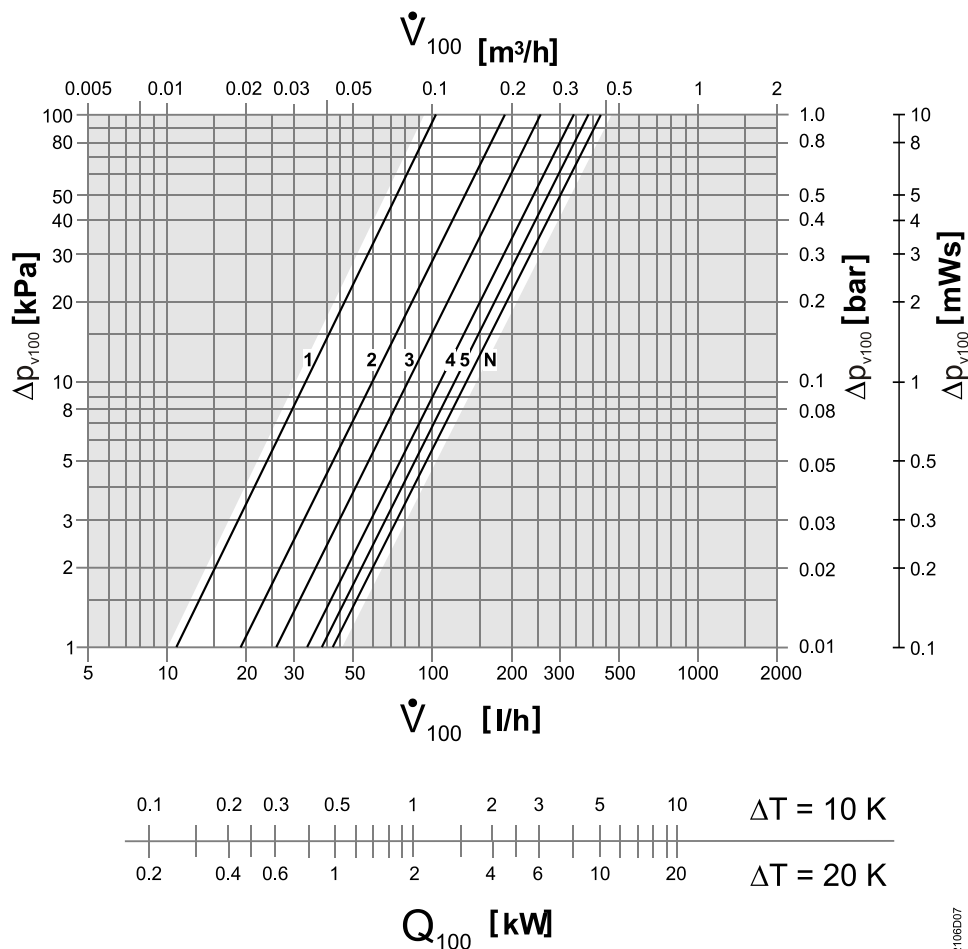
2106003

**VUN215**  
Xp Band 2 K

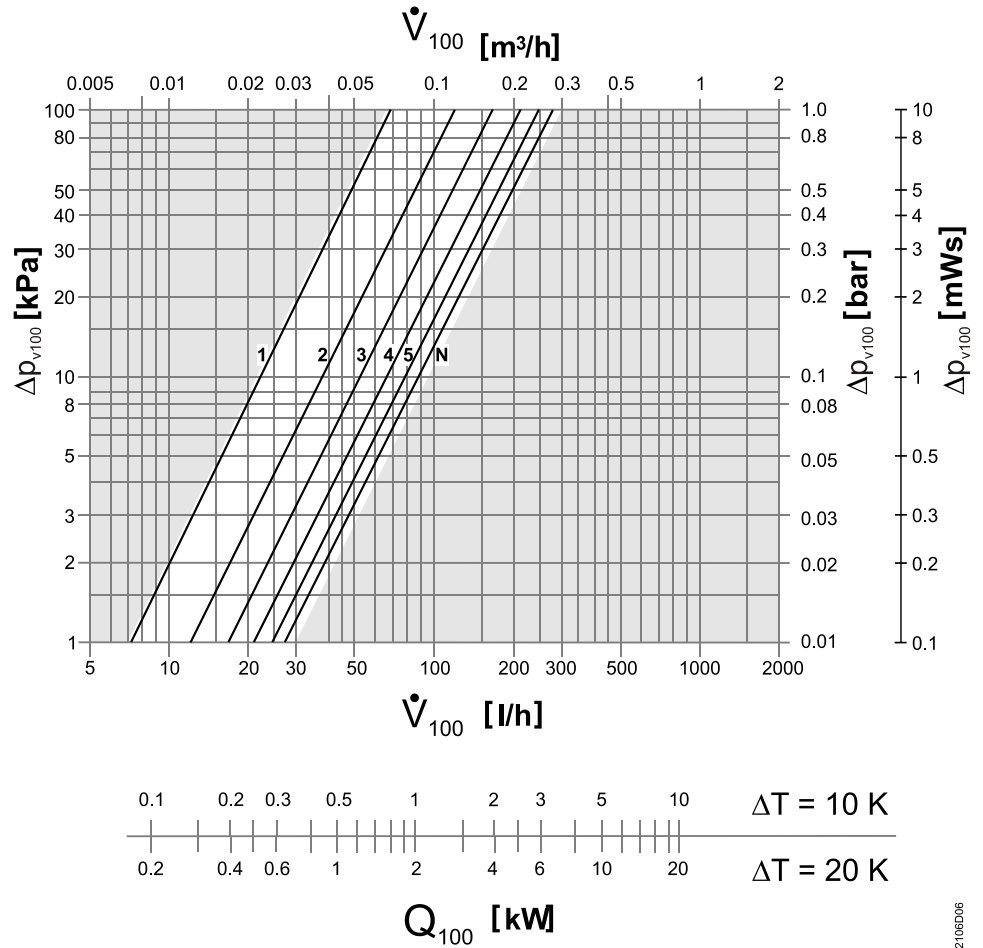


2106D06

**VUN215**  
Xp Band 1.5 K



2106D07



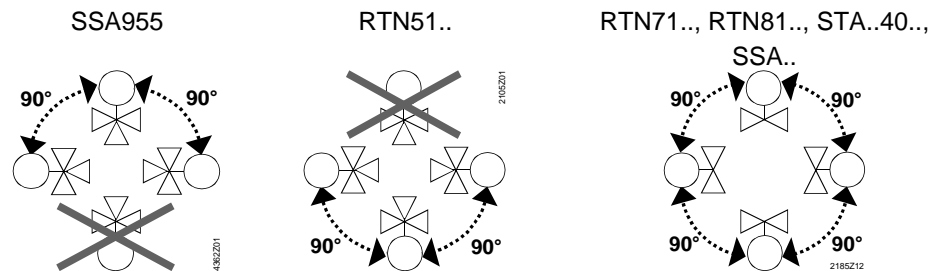
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## Notes

### Mounting

- Mounting Instructions are printed on the package. Mounting orientation depends on selected actuator.
- The valves are supplied preadjusted to N (fully open).
- To ensure correct functioning of the thermostatic heads and electronic actuators, observe the available mounting choices and mounting conditions.

### Orientation



### Maintenance

The valves are maintenance-free.

### Repair

In the event of leakage, the valve's sealing gland can be replaced.  
The valves cannot be repaired; the complete unit must be replaced.

### Disposal

Do not dispose of the device as household waste.

- Special handling of individual components may be mandated by law or make ecological sense.
- Observe all local and currently applicable laws and regulations.

## Warranty

Application-related technical data are only warranted when used in connection with the Siemens controllers and actuators listed under "Equipment combinations", page 2.

When using the valves with actuators of other manufacture proper functioning must be ensured by the user. Any warranty by Siemens becomes void.

## Technical data

<b>Functional data</b>	PN class	PN 10
	Suitable media <sup>1)</sup>	cold and low-temperature hot water, water with propylene-glycol, water with ethylene-glycol < 30%; recommendation: water treatment to VDI 2035
	Medium temperature	1...120 °C
	Perm. operating pressure	1000 kPa (10 bar)
	Differential pressure $\Delta p_{\max}$	max. 60 kPa (0.6 bar)
	Differential pressure $\Delta p_{v100}$	5...20 kPa (0.05...0.2 bar): recommended range
<b>Materials</b>	Stroke	min 1.2 mm
	Valve body	brass, mat nickel-plated
	Fitting	brass, mat nickel-plated
	Protective cover	polypropylene
<b>Dimensions / weight</b>	O-ring	EPDM, NBR
	Refer to "Dimensions", page 17	
	Mounting length	EN 215
	Thread	Rp internally threaded to ISO 7-1 R externally threaded to ISO 7-1 G-thread to ISO 228-1
<b>Standards, directives and approvals</b>	Pressure Equipment Directive	PED 2014/68/EU
	Pressure Accessories	Scope: Article 1, section 1 Definitions: Article 2, section 5
	Fluid group 2: ≤ DN 40	without CE-marking as per article 4, section 3 (sound engineering practice) <sup>2)</sup>
	RoHS conformity	compliant
	EAC Conformity	Eurasia Conformity
	Environmental compatibility	The product environmental declaration CE1E2105en <sup>3)</sup> contains data on environmentally compatible product design and assessments (RoHS compliance, materials composition, packaging, environmental benefit, disposal).

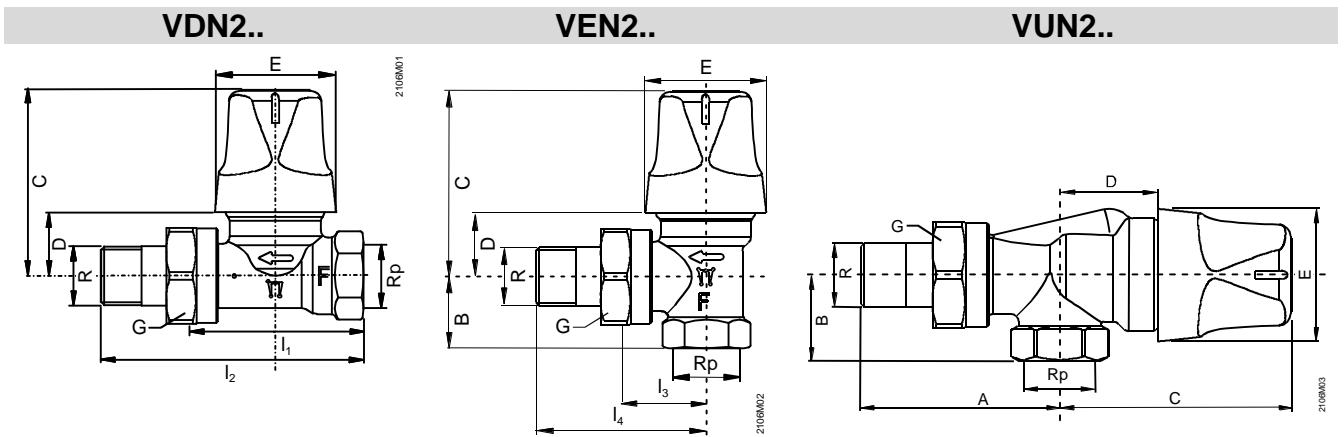
<sup>1)</sup> Prefer propylene-glycol for environment protection reasons.

<sup>2)</sup> Valves where PS x DN < 1000, do not require special testing and cannot carry the CE label.

<sup>3)</sup> The documents can be downloaded from <http://siemens.com/bt/download>.



## Dimensions



Prod. no.	DN	Dimensions [mm]								Thread [inch]			Weight [kg]	
		l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	A	B	C	D	E	Rp	R		G
VDN210	10	50	75					53	18	35	3/8	3/8B	5/8	0.220
VDN215	15	55	82					53	18	35	1/2	1/2B	3/4	0.265
VDN220	20	65	98					53	18	35	3/4	3/4B	1	0.385
VEN210	10			24	49		20	53	18	35	3/8	3/8B	5/8	0.215
VEN215	15			26	53		23	53	18	35	1/2	1/2B	3/4	0.260
VEN220	20			30	63		26	53	18	35	3/4	3/4B	1	0.360
VUN210	10					51	22	60	25	35	3/8	3/8B	5/8	0.285
VUN215	15					57	27	61	26	35	1/2	1/2B	3/4	0.330

Prod. no.	DN	Compression fittings					
		for copper and soft steel pipes			for plastic pipes with aluminum foil		
		Type	Connection valve side [Inch]	Connection pipe side pipe Ø [mm]	Type	Connection valve side [Inch]	Connection pipe side pipe Ø [mm]
VDN210	10						
VDN215	15	AVN15-15	1/2	15	AVN15-A16	1/2	16 x 2
VDN220	20						
VEN210	10						
VEN215	15	AVN15-15	1/2	15	AVN15-A16	1/2	16 x 2
VEN220	20						
VUN210	10						
VUN215	15	AVN15-15	1/2	15	AVN15-A16	1/2	16 x 2

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 Switzerland  
 Tel. +41 58-724 24 24  
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