



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.. electrothermal actuators or SSA955 RF-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	X _P	k _v -value [m ³ /h] 1 - N	k _{vs} -value [m ³ /h] without actuator N
VDN210	VEN210		10	X _P = 2	0.072...0.43	0.63
				X _P = 1.5	0.057...0.33	
				X _P = 1	0.037...0.22	
		VUN210		X _P = 2	0.14...0.43	0.60
				X _P = 1.5	0.12...0.37	
				X _P = 1	0.08...0.24	
VDN215	VEN215		15	X _P = 2	0.073...0.50	0.89
				X _P = 1.5	0.058...0.40	
				X _P = 1	0.038...0.27	
		VUN215		X _P = 2	0.13...0.5	0.77
				X _P = 1.5	0.11...0.43	
				X _P = 1	0.07...0.28	
VDN220	VEN220		20	X _P = 2	0.22...0.70	1.41
				X _P = 1.5	0.17...0.55	
				X _P = 1	0.11...0.36	

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.

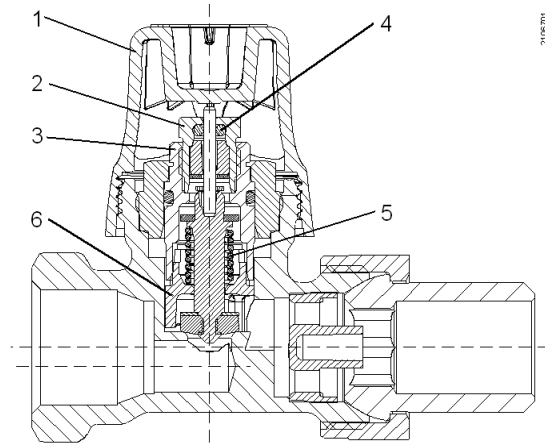
Equipment combinations

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..	A6V12984110

Mechanical design / technical design

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



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

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 7 – 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]
 ΔT = temperature differential [K]
 1.163 = constant of water
 f_1 = correction factor = 1 for water

2. Define the pressure drop Δp_{v100} across the fully open valve

In most types of plant, a differential pressure Δp_{v100} of 0.05 to 0.2 bar is adequate.

3. Calculation of the nominal flow value k_v

$$k_v = \frac{\dot{V}_{100}}{\sqrt{\Delta p_{v100}}} \text{ [m}^3\text{/h]}$$

Δp_{v100} = differential pressure across the valve [bar]

Example:

Heat demand	Q_{100}	= 1.2 kW
Temperature differential	ΔT	= 20 K
Water volume	$\dot{V}_{100} = \frac{1.2}{1.163 \times 20}$	= 0.052 m ³ /h
		= 52 l/h
Required differential pressure across the valve	Δp_{v100}	= 0.1 bar
Flow	$k_v = \frac{0.052}{\sqrt{0.1}}$	= 0.17 m ³ /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_v-values

The k_v-value gives the volumetric water flow \dot{V}_{100} in m³/h at a pressure drop Δp_{v100} across the valve of 1 bar.

k_v-values [m³/h] at the different preset positions

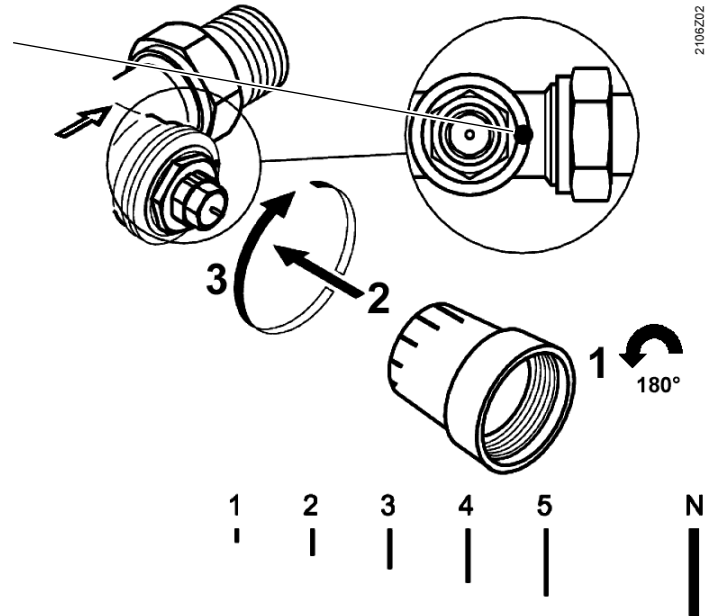
Control range with actuators SSA.. and STA..	✓	✓	✓	✓	✓	✓	✓
Control range of thermostatic actuators RTN..	✓	✓	✓	✓	✓	✓	
Reference numbers for preadjustment	1	2	3	4	5	N	N(k_{vs})
VDN210 / VEN210 XP 2K	0.072	0.17	0.24	0.28	0.37	0.43	0.63
VDN210 / VEN210 XP 1.5K	0.057	0.135	0.19	0.23	0.29	0.33	
VDN210 / VEN210 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	0.89
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	1.41
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	0.60
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	0.77
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	

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°.



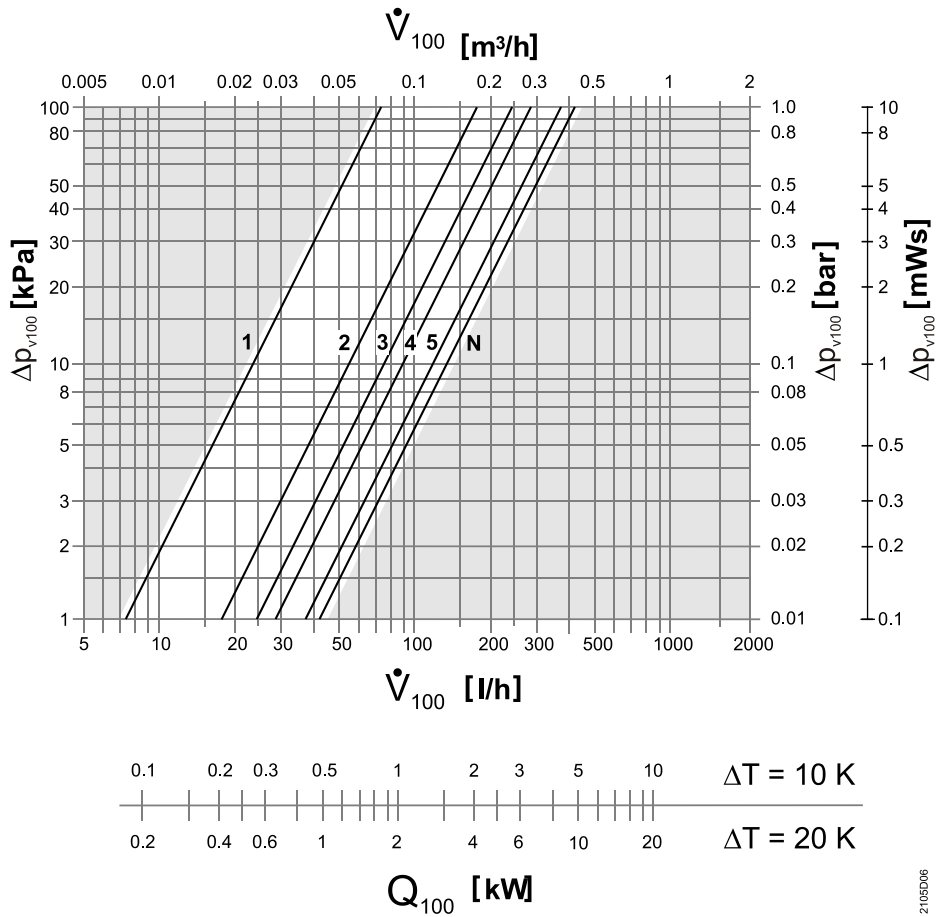
Observe marking on the valve's outlet side!



2106Z02

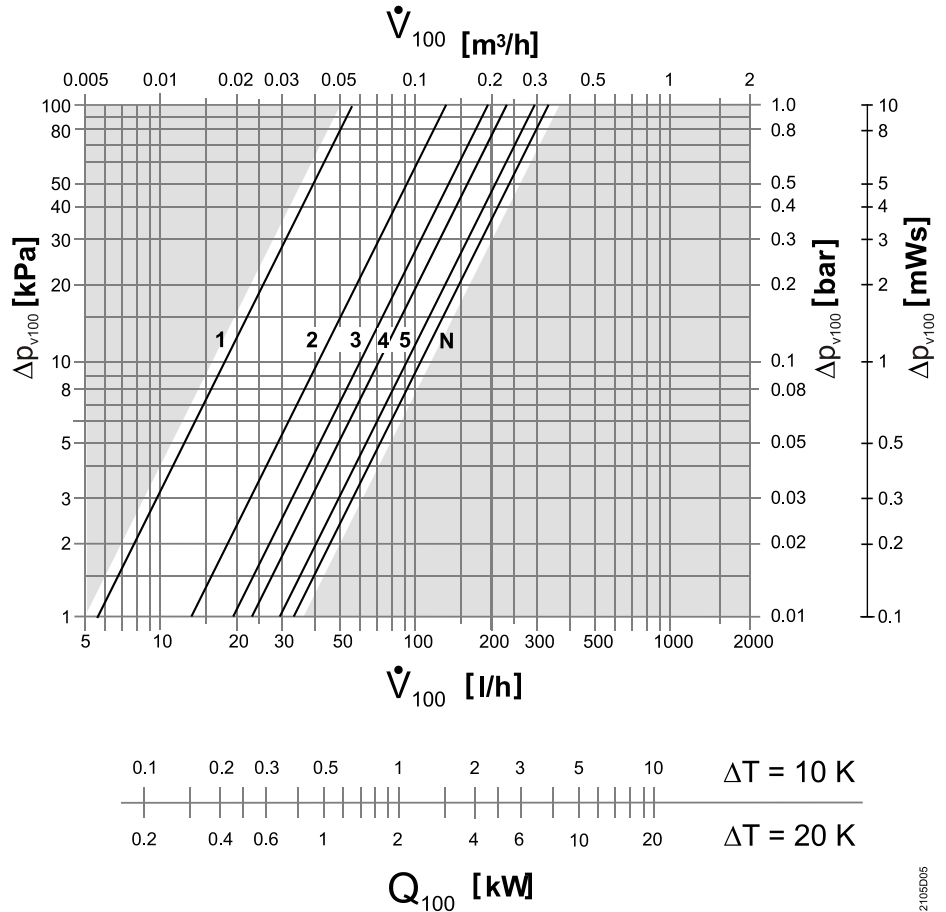
Valve sizing charts

VDN210
VEN210
 Xp Band 2 K



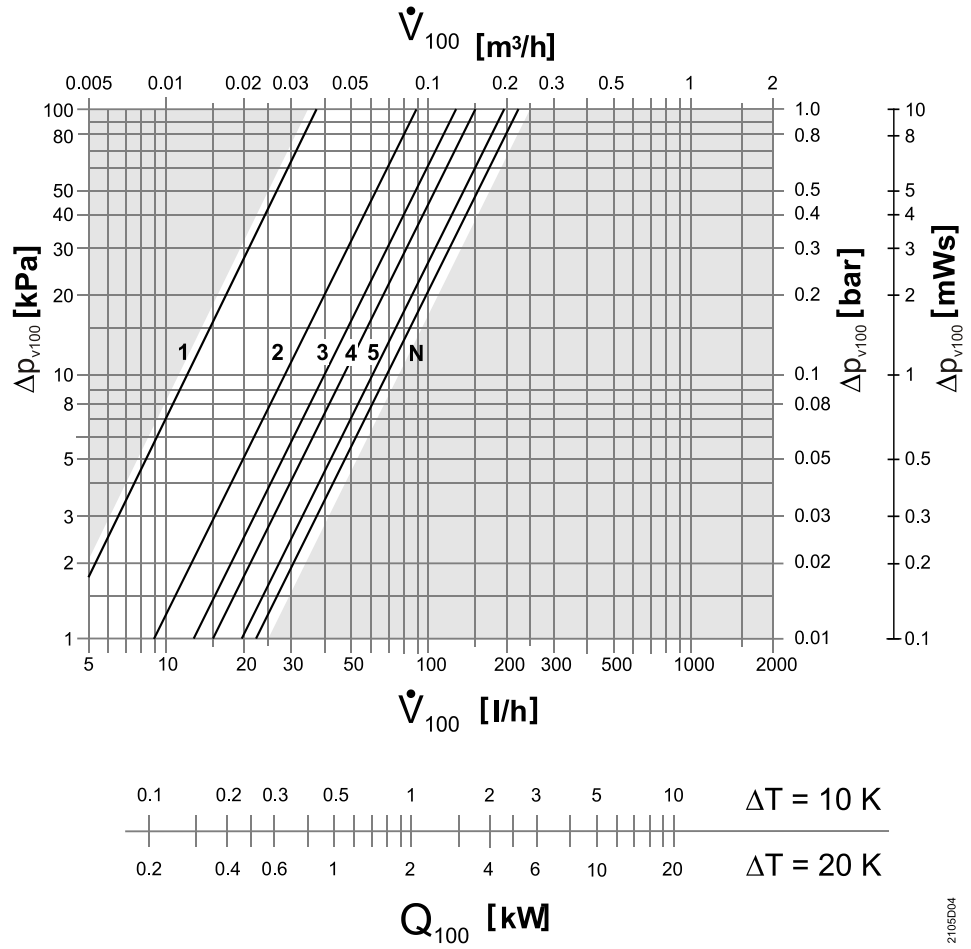
2106D06

VDN210
VEN210
 Xp Band 1.5 K

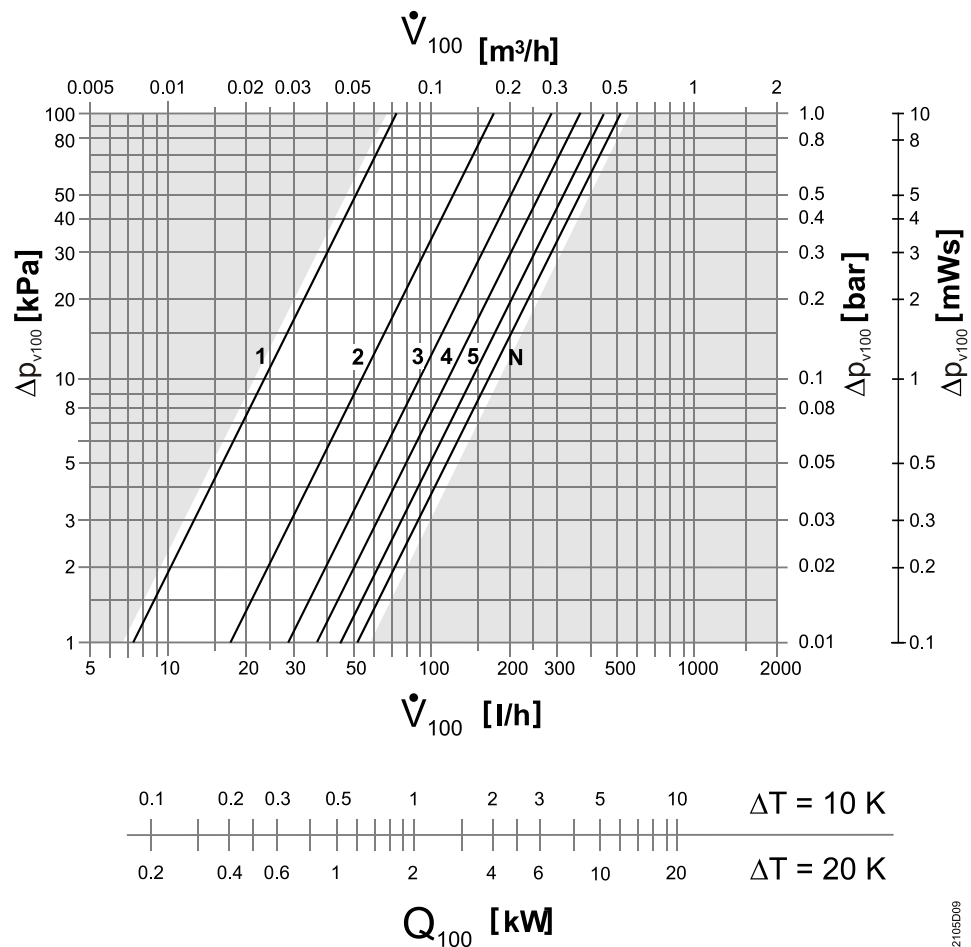


2106D05

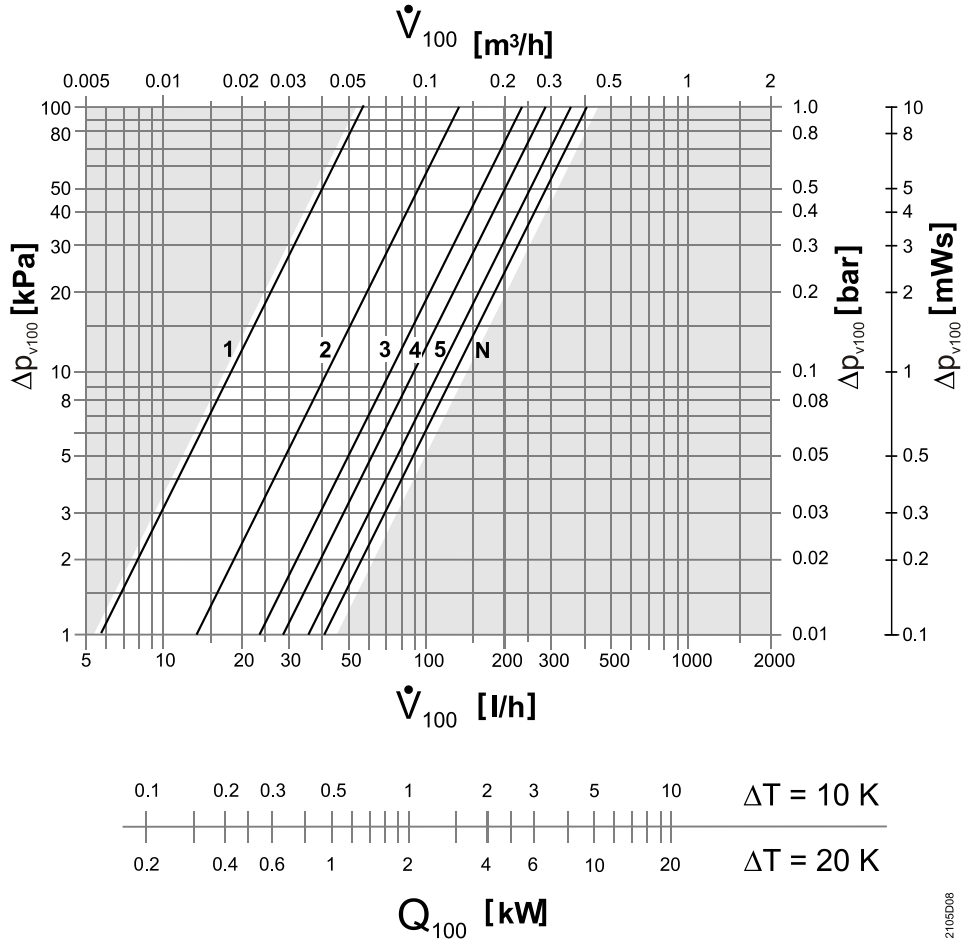
VDN210
VEN210
 Xp Band 1 K



VDN215
VEN215
 Xp Band 2 K

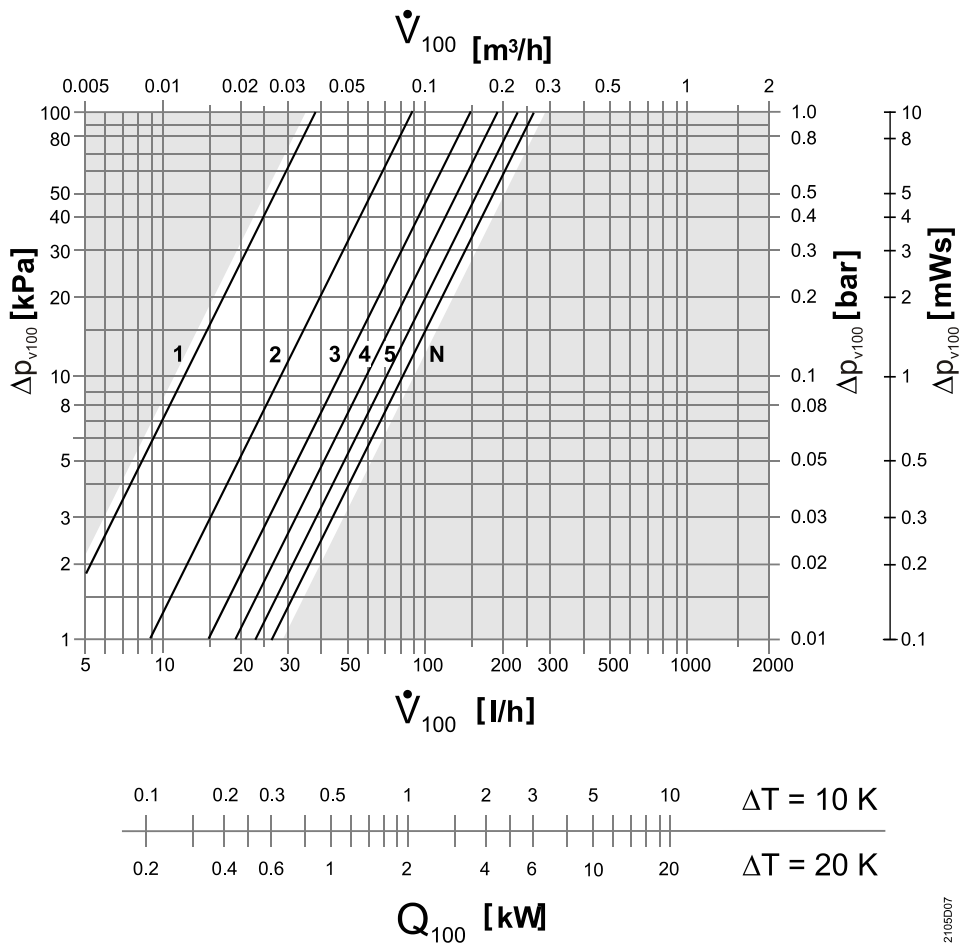


VDN215
VEN215
Xp Band 1.5 K



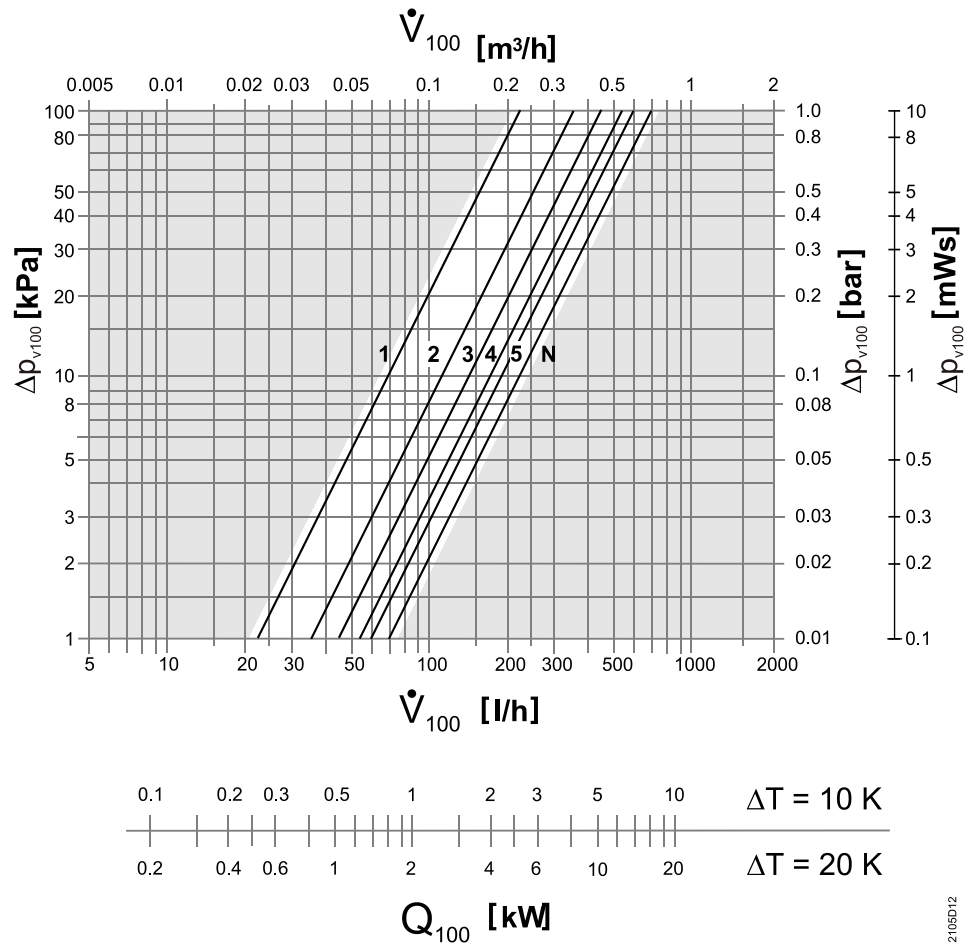
2105D08

VDN215
VEN215
Xp Band 1 K



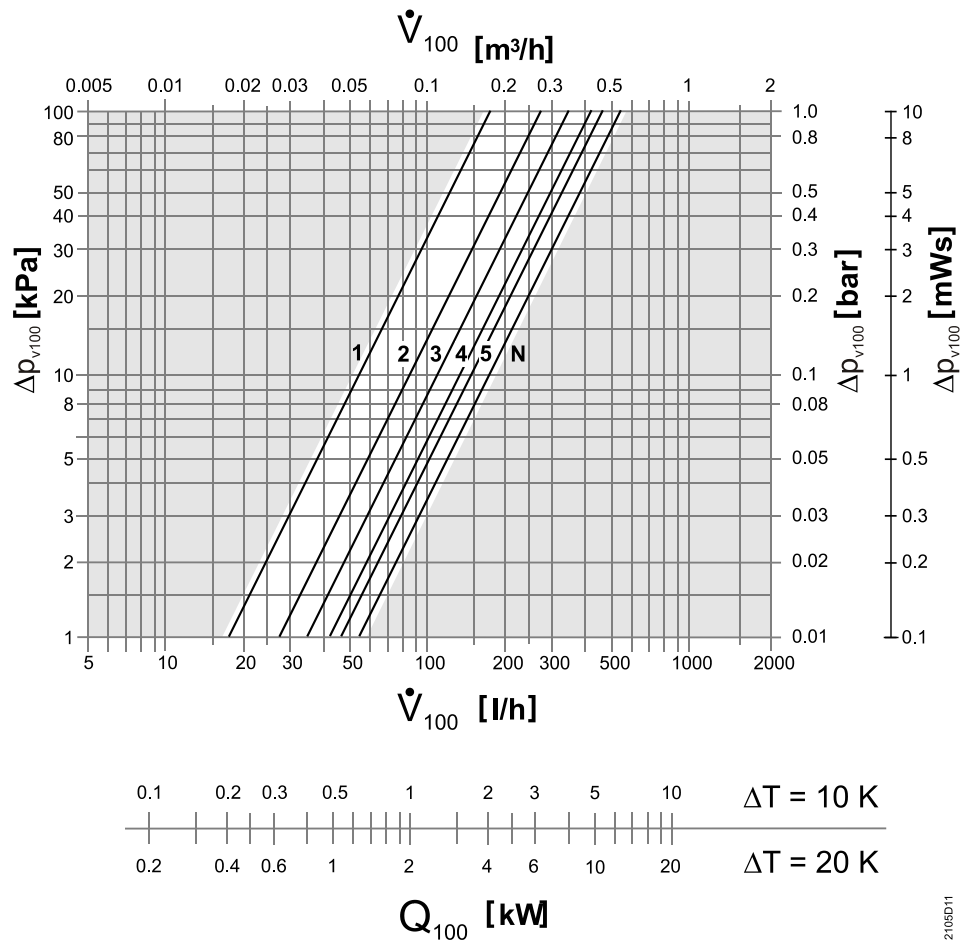
2105D07

VDN220
 VEN220
 Xp Band 2 K



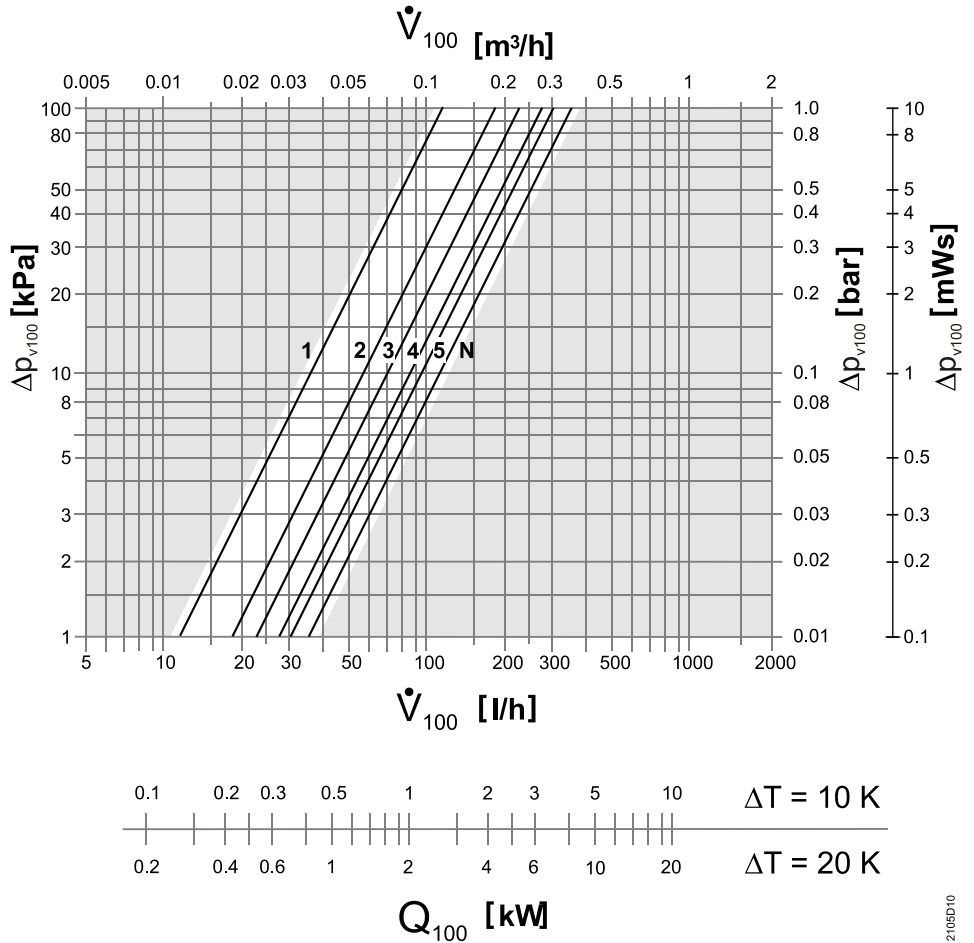
2105BD12

VDN220
 VEN220
 Xp Band 1.5 K



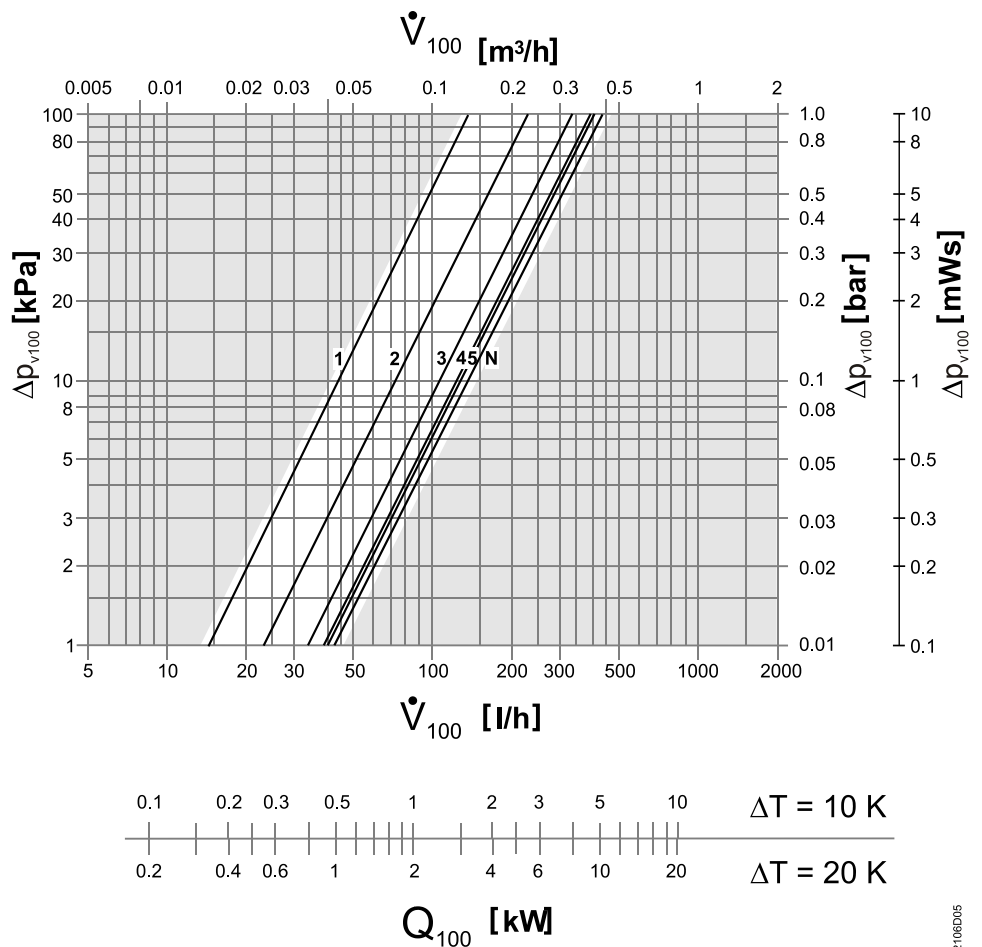
2105BD11

VDN220
VEN220
 Xp Band 1 K



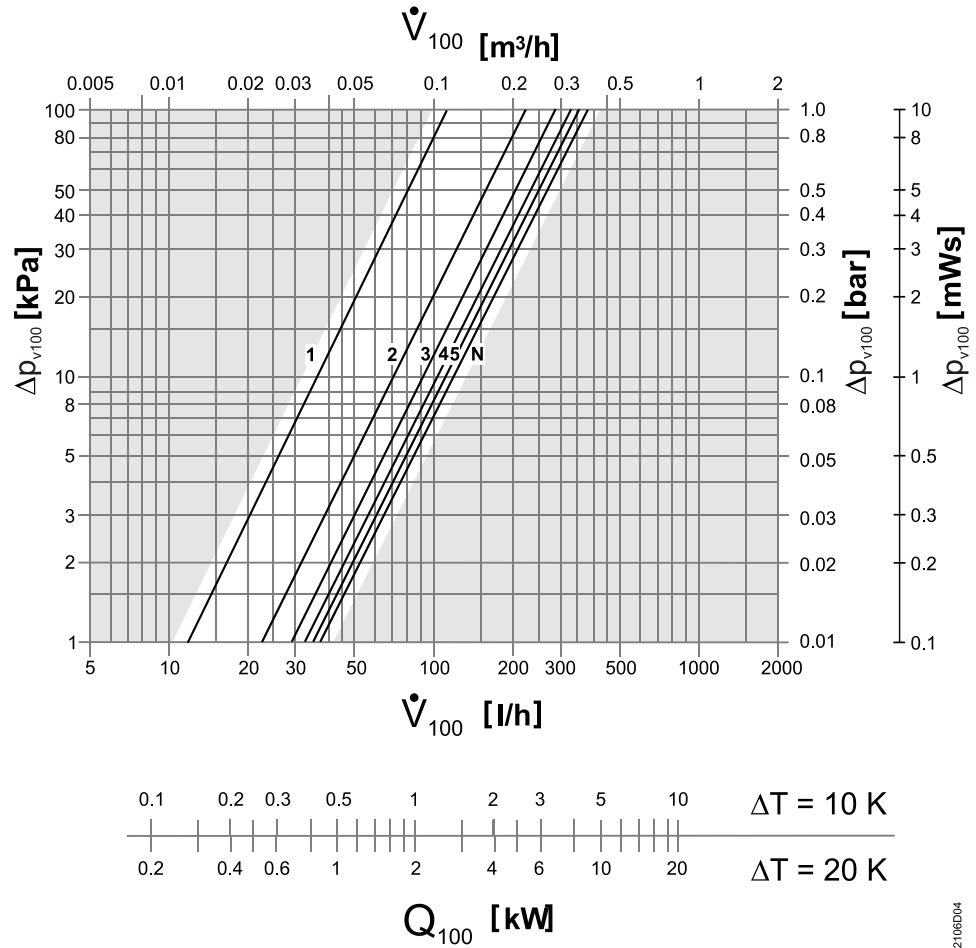
2105D10

VUN210
 Xp Band 2 K



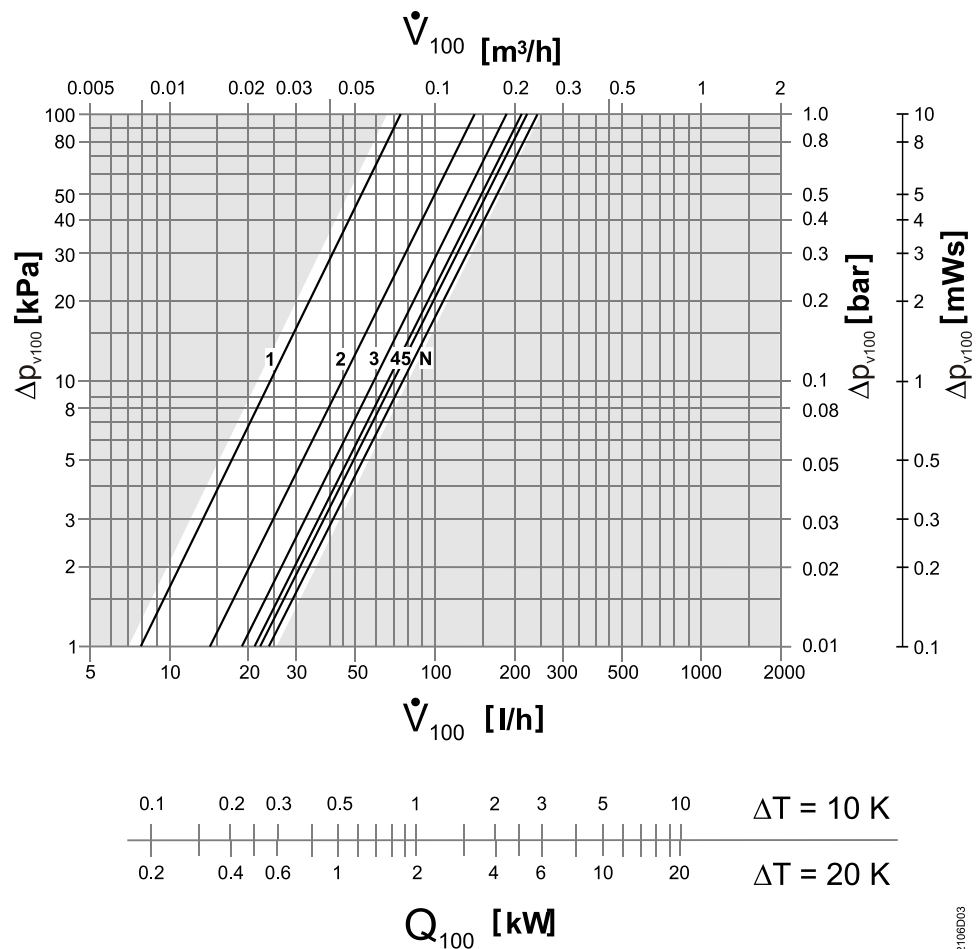
2106D05

VUN210
Xp Band 1.5 K



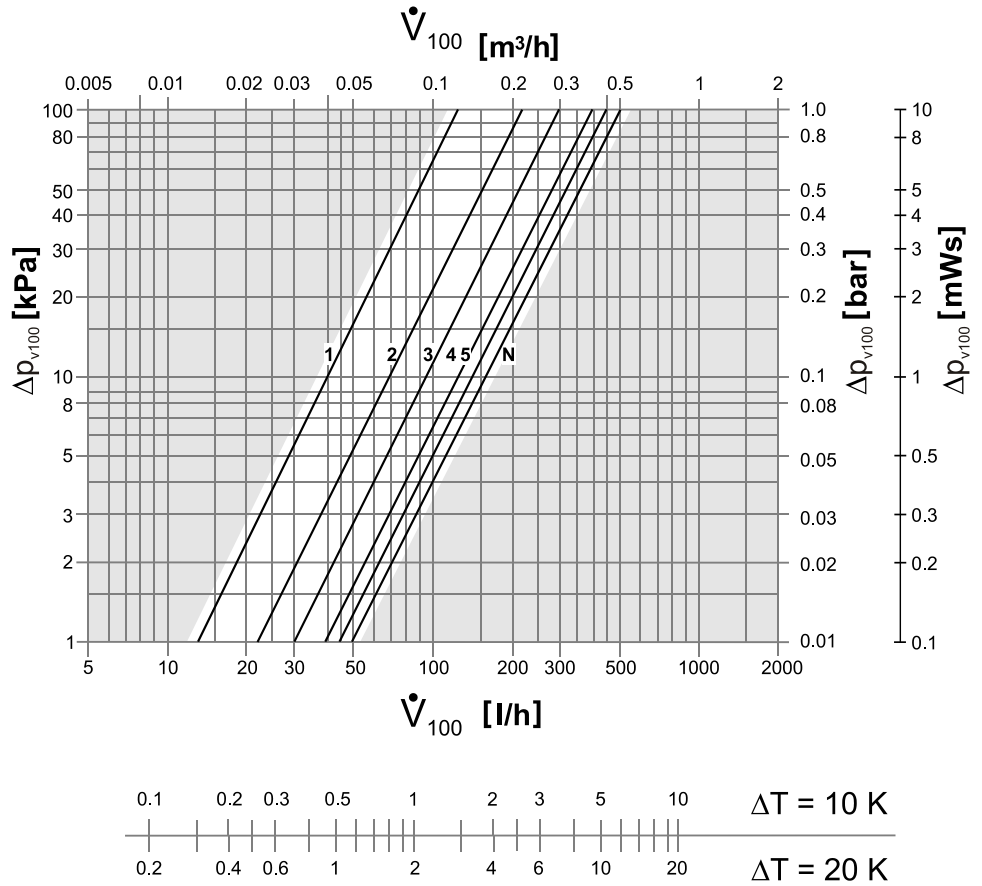
2106D04

VUN210
Xp Band 1 K



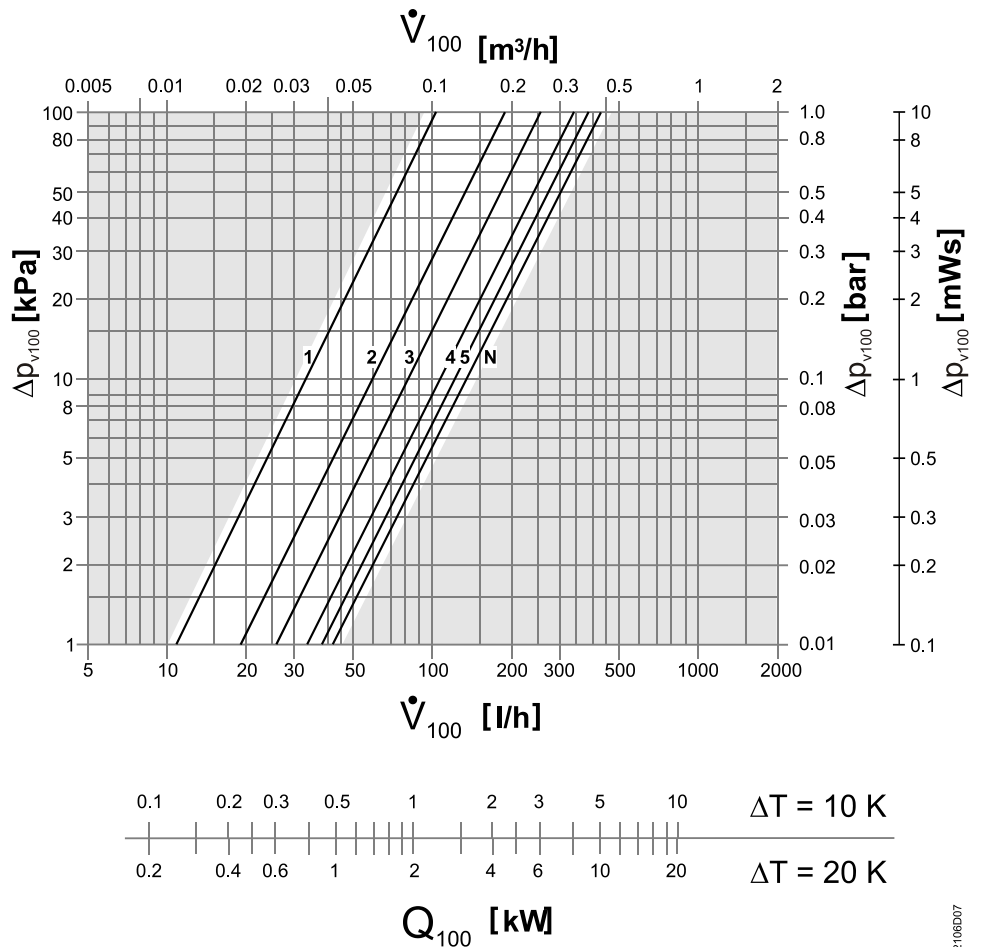
2106D03

VUN215
Xp Band 2 K

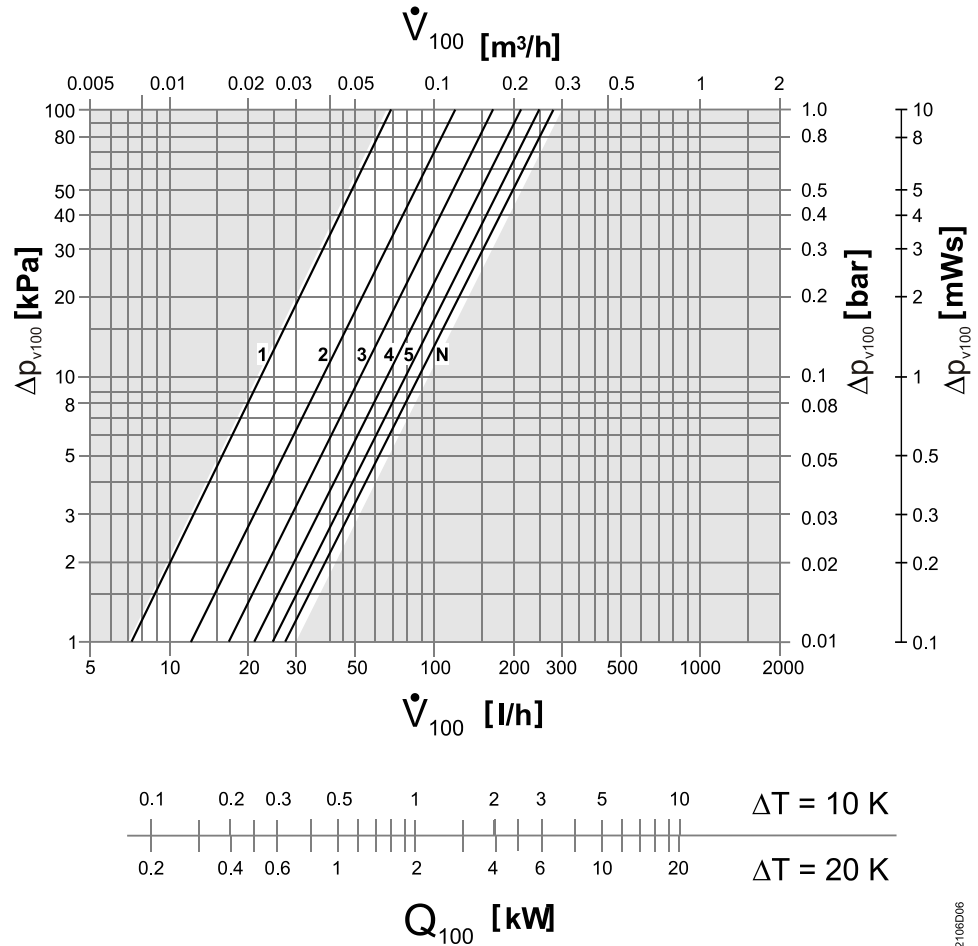


2106B08

VUN215
Xp Band 1.5 K



2106B07



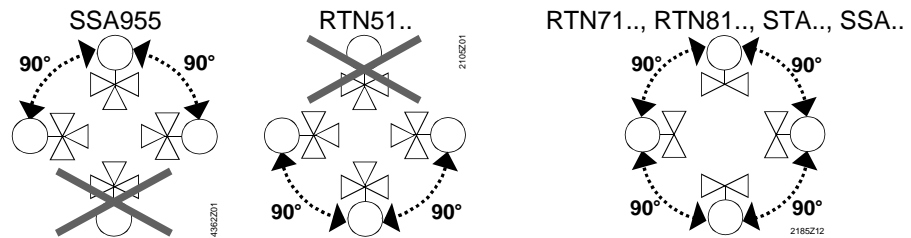
2106D06

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

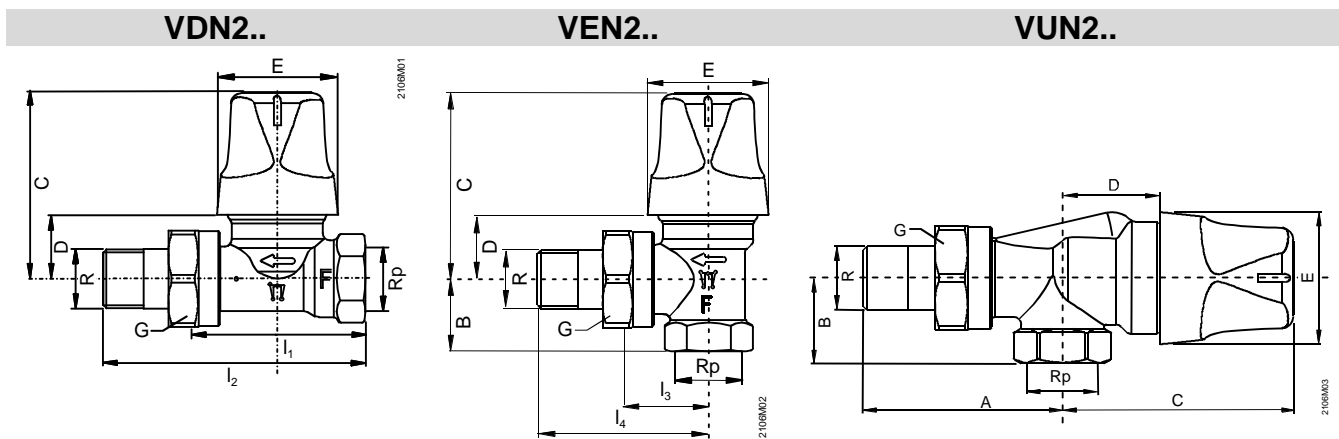
Functional data	PN class	PN 10		
	Suitable media ¹⁾	cold and low-temperature hot water, water with propylene-glycol, water with ethylene-glycol < 30%; recommendation: water treatment to VDI 2035		
	Medium temperature	1...120 °C		
	Perm. operating pressure	1000 kPa (10 bar)		
	Differential pressure Δp_{\max}	max. 60 kPa (0.6 bar)		
	Differential pressure Δp_{v100}	5...20 kPa (0.05...0.2 bar): recommended range		
	Stroke	min 1.2 mm		
Materials	Valve body	brass, mat nickel-plated		
	Fitting	brass, mat nickel-plated		
	Protective cover	polypropylene		
	O-ring	EPDM, NBR		
Dimensions / weight	Refer to "Dimensions", page 16			
	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		
Standards, directives and approvals	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) ²⁾	
	RoHS conformity	compliant		
	EAC Conformity	Eurasia Conformity		
	Environmental compatibility	The product environmental declaration CE1E2105en ³⁾ contains data on environmentally compatible product design and assessments (RoHS compliance, materials composition, packaging, environmental benefit, disposal).		

¹⁾ Prefer propylene-glycol for environment protection reasons.

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

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

Dimensions



Prod. no.	DN	Dimensions [mm]								Thread [inch]			Weight [kg]	
		l ₁	l ₂	l ₃	l ₄	A	B	C	D	E	R _p	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

Published by:
 Smart Infrastructure
 International Headquarters
 Theilerstrasse 1a
 6300 Zug
 Switzerland
 Tel. +41 58-724 24 24
www.siemens.com/buildingtechnologies

© Siemens Switzerland Ltd 2006
 Delivery and technical specifications subject to change