

ACVATIX™

Pressure independent control valves (PICV)

VPD..-135, VPE..-135, VPU..-135



Radiator valves featuring integrated differential pressure control for 2-pipe heating systems (radiators)

- Automatic dynamic balancing
- Simple design of the system
- No disruptive flow noise
- Integrated presetting for volume flow
- Available in DIN versions D and F, nominal sizes DN 10, DN 15 and DN 20
- Flow of 20...135 l/h
- Equippable with **thermostatic** RTN.., **electrothermal** STA..40.., STP..40.. and electromotive SSA.. actuators

Use

These pressure independent control valves (PICV) are designed for use in 2-pipe heating systems (radiators) to provide individual room control.

The PICVs with integrated differential pressure control ensure that the amount of heat emitted by the radiator is well defined regardless of operating conditions; line balancing valves normally used for hydraulic balancing are no longer required.

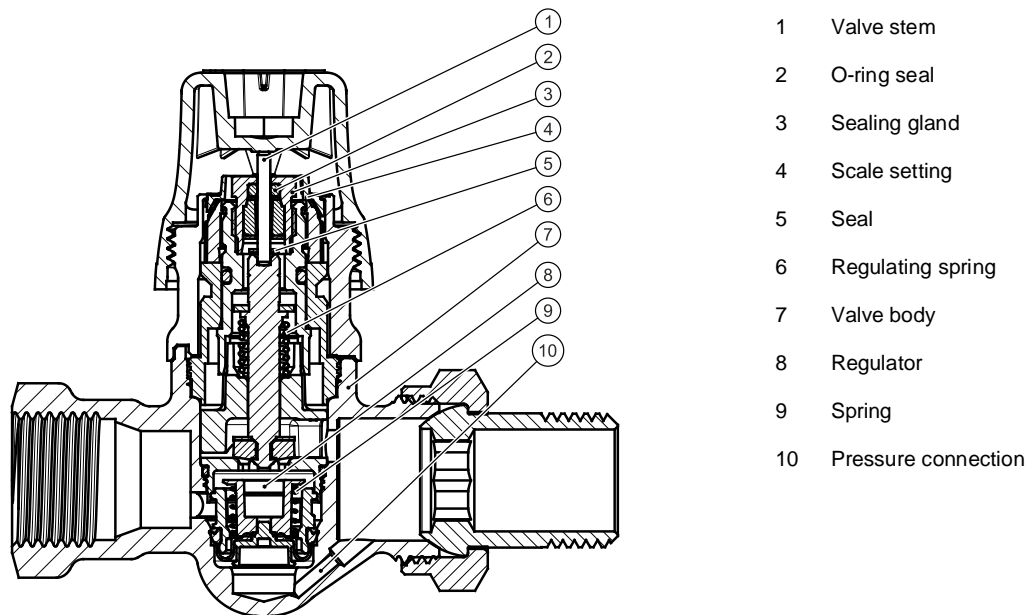
Due to the integrated differential pressure control, PICVs are extremely well suited for new houses and buildings, or for upgrading plants impaired with hydraulic problems.

Technical and mechanical design

- Control valve for influencing the volume flow and at the same time pressure controller for automatic balancing.
- Compensation of differential pressure variations with complete hydraulic decoupling of consumers.
- Manual adjustment for shutoff and temporary operation of heating plant during the construction phase. A constant flow rate is ensured during manual operation, as well, independent of the differential pressure.
- NO valve: Valve is open with actuator ("normally open") and the valve stem is extended.
- Setting range: L ("Low"), 2, 3, 4, H ("High"), Max
 - Factory setting: Max

Design

Straightway valve
VPD..



Type summary

Valve type	Type	Stock no.	DN	Standard DIN 215	Thread	Δp_{\min}	Δp_{\max}	\dot{V}_{\max}
					[inch]	[bar]		[l/h]
Straightway valves	VPD110A-135	S55264-V165	10	D	3/8 "	0.1	0.6	135
	VPD115A-135	S55264-V166	15		1/2 "			
	VPD120A-135	S55264-V167	20		3/4 "			
	VPD210A-135	S55264-V173	10	F	3/8 "			
	VPD215A-135	S55264-V174	15		1/2 "			
	VPD220A-135	S55264-V175	20		3/4 "			
Angle valves	VPE110A-135	S55264-V168	10	D	3/8 "			
	VPE115A-135	S55264-V169	15		1/2 "			
	VPE120A-135	S55264-V170	20		3/4 "			
	VPE210A-135	S55264-V176	10	F	3/8 "			
	VPE215A-135	S55264-V177	15		1/2 "			
	VPE220A-135	S55264-V178	20		3/4 "			
Axial valves	VPU110A-135	S55264-V171	10	D	3/8 "			
	VPU115A-135	S55264-V172	15		1/2 "			

Δp_{\min} = Minimum required differential pressure across the valve

Δp_{\max} = Maximum permissible differential pressure across the valve

\dot{V} = Volume flow range 20...135 l/h, see "Volume flow [► 5]"

Ordering example


Type	Stock no.	Designation	Quantity
VPD115A-135	S55264-V166	Straightway radiator PICV	1

Delivery

Valves, actuators, and accessories are supplied in separate packages.

Accessories/Spare parts

Accessories

Type	Stock no.	Designation	Quantity	Picture
ALE10	BPZ:ALE10	Electronic Δp manometer, 7 bar	1	
ALE12	S55264-V188	Tool for measuring differential pressure, adapter with tube	1	-

Spare parts

Type	Stock no.	Designation	Quantity
ATN6	S55264-V187	Manual adjuster	1 (10 pcs. per pack)

Equipment combinations

Designation	Types	Datasheet
Electrothermal actuators	STA..40.., STP..40..	A6V14028280
Electric actuators	SUA21/3..	A6V10446174
Electric actuator	SSA118.09HKN	A6V11858280
Electric actuators	SSA131.., SSA331..	A6V11858276
Electric actuators	SSA151.., SSA161..	A6V11858278
Wireless actuator (battery powered)	SSA911.02ZB	A6V13722083
Electromotive actuators	SFA../18	N4863
Thermostatic actuators	RTN..	N2111

Product documentation

Topic	Type	Document ID
Mounting instructions	Pressure independent control valves (PICV) VPD..-135, VPE..-135, VPU..-135	A6V13089945
Mounting instructions	Tool for measuring differential pressure ALE12	A6V13414524

Notes

Engineering

The pressure independent control valves (PICV) have presettings to select the required volume flow \dot{V} .

The set \dot{V} value represents the maximum flow rate. The integrated pressure controller maintains the volume flow at a constant level, even if the differential pressure varies between 0.1 and 2 bar. This eliminates the need for a central precontrol and setting the valve's authority.

Water must be free of organic substances.

Volume flow

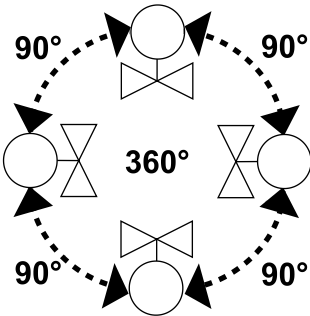
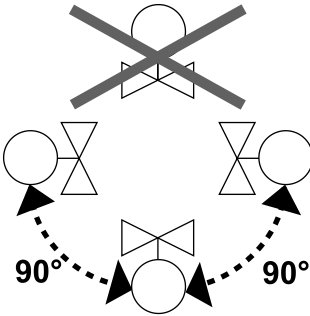
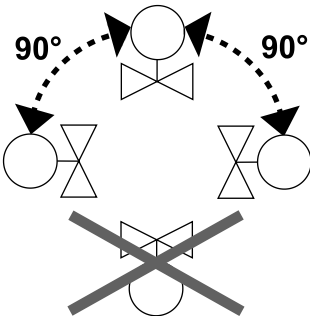
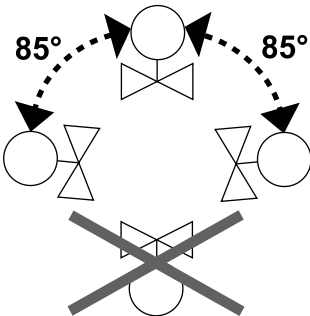
Volume flow \dot{V} K _v [l/h] für STA..40.., STP..40.., SUA21/3.., SSA.. and SFA../18													
Valve type		In relation to the reference number for presetting											
		[l/h]	K _v	[l/h]	K _v	[l/h]	K _v	[l/h]	K _v	[l/h]	K _v	[l/h]	K _v
VP..-135	¾" (DN 10)	20	0.06	30	0.09	50	0.16	70	0.22	95	0.30	135	0.43
	½" (DN 15)												
	¾" (DN 20)												
Reference number		L		2		3		4		H		MAX	

Volume flow \dot{V} for RTN51.., RTN71 and RTN81													
Actuator type		In relation to the reference number for presetting											
		[l/h]											
		Xp1	XP2	Xp1	XP2	Xp1	XP2	Xp1	XP2	Xp1	XP2	Xp1	XP2
RTN51.., RTN71		18	20	27	30	30	48	51	65	57	85	65	110
RTN81		19	20	28	30	40	49	53	66	60	88	70	115
Reference number		L		2		3		4		H		MAX	

Sizing example

Required heat output		700 W	
Cooling (radiator)		ΔT 20 °C	
Flow (radiator)		$\dot{V} = \frac{700}{20 \times 1.16} = 30 \text{ l/h}$	
Min. pressure for constant flow		0.1 bar	
Valve setting		2	
Factory setting		Make presetting (see "Setting [▶ 7]")	Valve setting "2"

Mounting

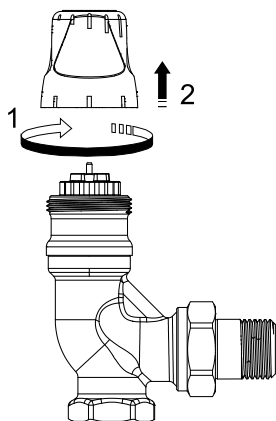
Mounting positions	
RTN71..., RTN81..., SSA..., STA..40..., STP..40..	RTN51..
	
SUA21/3..	SFA../18
	

Commissioning

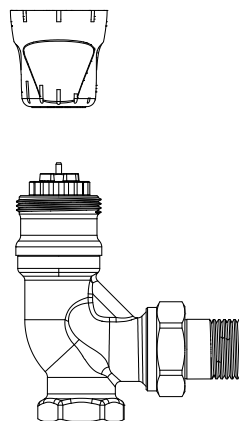
Pressure independent valves (PICV) must be open when flushing or pressure testing the system. Strong pressure impacts can damage closed PICVs.

Setting

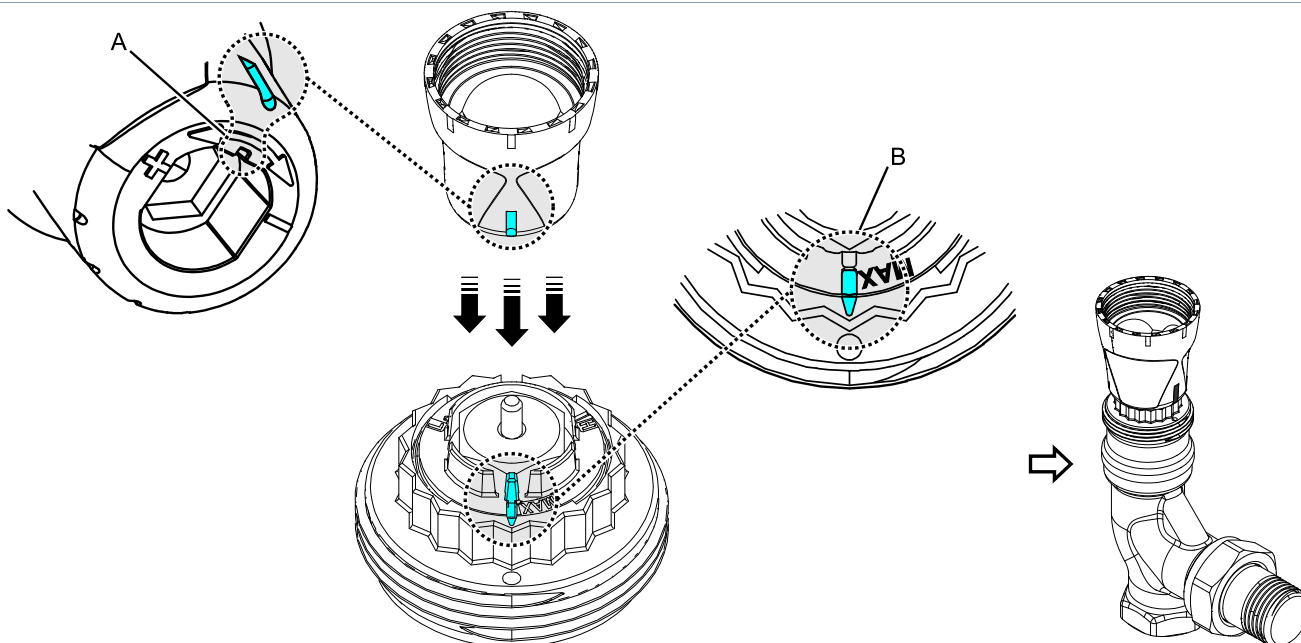
1. Take off manual adjuster.



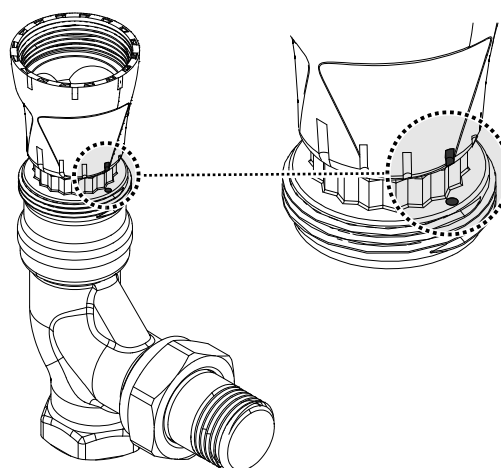
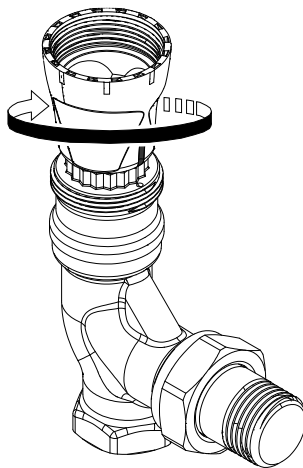
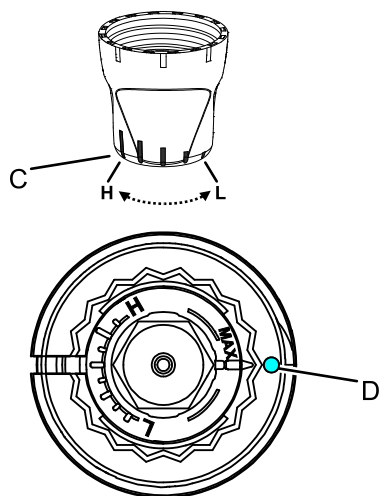
2. Flip manual adjuster 180°.



3. Put manual adjuster on the valve: Notch [A] aligned with prong on the valve [B]; press down firmly.



4. Make setting: Turn manual adjuster until the desired reference mark [C] is aligned with the notch on the valve [D] (Example: "2").



Maintenance

The PICVs VP..-135 are maintenance-free.

Repair

The valves cannot be repaired, they must be replaced as complete units.

Disposal

Do not dispose of the device as part of domestic waste.

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

Warranty

The technical data relating to specific applications are valid only in conjunction with the actuators listed under "Equipment combinations [► 4]".

Unauthorized manipulations or opening of PICVs void any warranty.

The user must ensure proper operation when using valves with third-party actuators.

Technical data

Functional data		
PN class		PN 10
Permissible media		Cold or low-temperature hot water <i>Recommendation:</i> Water treatment to VDI 2035
Medium temperature		2...95 °C
Permissible operating pressure		Max. 1000 kPa (10 bar)
Differential pressure	Maximum Δp_{\max}	60 kPa (0.6 bar)
	Minimum Δp_{\min}	10 kPa (0.1 bar)
Test pressure		1600 kPa (16 bar)
Spring force at the closing point		35 N
Nominal stroke		2.5 mm
Closing dimension		11.5 mm

Materials	
Valve body	Brass, nickel plated
Protective cover	Polypropylene
Diaphragm and seals	EPDM

Dimensions / Weight		
See "Dimensions [► 10]"		
Mounting length	EN 215	
Threaded connections	Rp internally threaded	to ISO 7-1
	R externally threaded	to ISO 7-1
Actuator connection	M30 x 1.5	

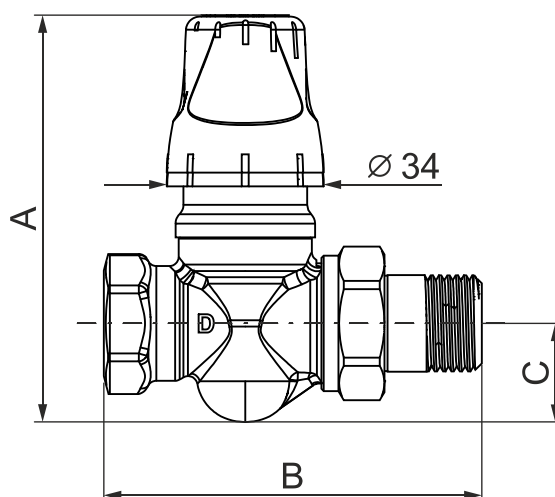
Standards, directives and approvals		
Pressure Equipment Directive		PED 2014/68/EU
	Pressure accessories	Scope: Article 1, section 1 Definitions: Article 2, section 5
	Fluid group 2	Without CE marking, as per article 4, section 3 (sound engineering practice) ¹⁾

Environmental compatibility	
The environmental product declarations A6V13089948 (DIN 215 series D) and A6V13527513 (DIN 215 series F) ²⁾ contain data on environmentally compatible product design and assessments (RoHS compliance, material composition, packaging, environmental benefit, disposal).	

¹⁾ Valves where PS x DN < 1000 do not require special testing and cannot carry the CE label.

²⁾ Documents can be downloaded at <http://www.siemens.com/bt/download>.

Straightway valves VPD..



Type	DN	A	B ¹⁾	C	Thread		Weight ²⁾
		[mm]			Rp	R	[kg]
VPD110A-135	10	88	83	21	3/8 "		0.25
VPD115A-135	15		95		1/2 "		0.30
VPD120A-135	20		107		3/4 "		0.41
VPD210A-135	10		75		3/8 "		0.23
VPD215A-135	15		82		1/2 "		0.28
VPD220A-135	20		97		3/4 "		0.39

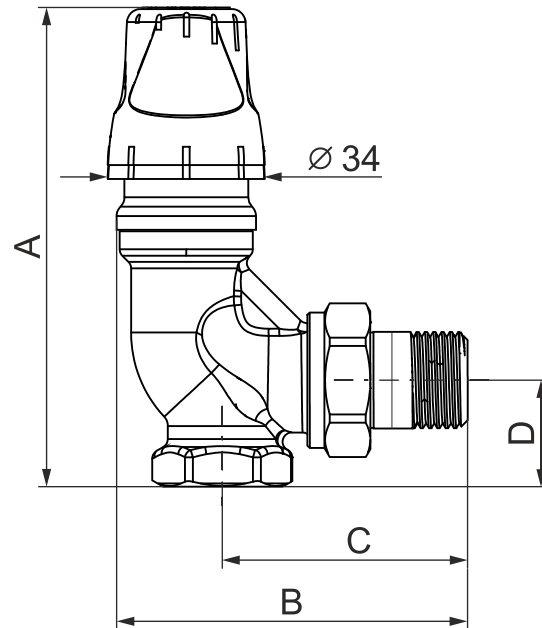
Rp = Internally threaded to ISO 7-1

R = Externally threaded to ISO 7-1

¹⁾ ± 2 mm

²⁾ Weight **with** packaging

Angle valves VPE..



Type	DN	A	B	C ¹⁾	D ¹⁾	Thread		Weight ²⁾
		[mm]				Rp	R	[kg]
VPE110A-135	10	101	76	52	22	3/8 "		0.26
VPE115A-135	15	108	83	58	26	1/2 "		0.31
VPE120A-135	20	110	92	66	29	3/4 "		0.42
VPE210A-135	10	88	75	49	20	3/8 "		0.26
VPE215A-135	15	88	82	53	23	1/2 "		0.30
VPE220A-135	20	88	97	63	26	3/4 "		0.40

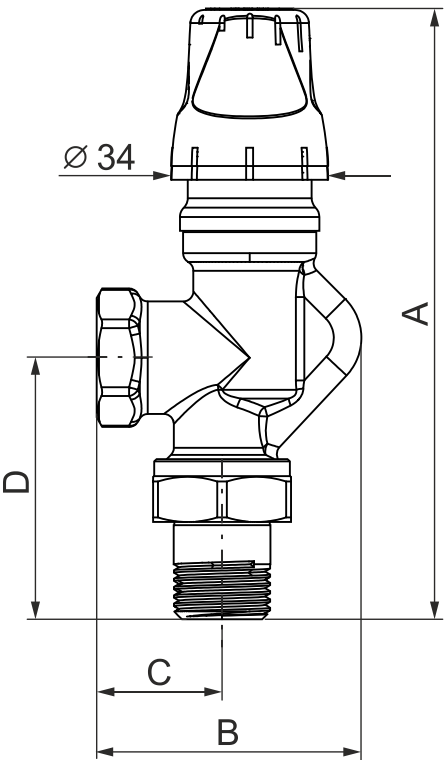
Rp = Internally threaded to ISO 7-1

R = Externally threaded to ISO 7-1

¹⁾ ± 2 mm

²⁾ Weight **with** packaging

Axial valves VPU..



Type	DN	A	B	C ¹⁾	D ¹⁾	Thread		Weight ²⁾
		[mm]				Rp	R	[kg]
VPU110A-135	10	127	51	22	52	3/8 "		0.27
VPU115A-135	15	133	58	26	58	1/2 "		0.32

Rp = Internally threaded to ISO 7-1

R = Externally threaded to ISO 7-1

¹⁾ ± 2 mm

²⁾ Weight **with** packaging

Revision numbers

	Type	Stock no.	Valid from rev no.
	VPD110A-135	S55264-V165	B
	VPD115A-135	S55264-V166	B
	VPD120A-135	S55264-V167	B
	VPD210A-135	S55264-V173	B
	VPD215A-135	S55264-V174	B
	VPD220A-135	S55264-V175	B
	VPE110A-135	S55264-V168	B
	VPE115A-135	S55264-V169	B
	VPE120A-135	S55264-V170	B
	VPE210A-135	S55264-V176	B
	VPE215A-135	S55264-V177	B
	VPE220A-135	S55264-V178	B
	VPU110A-135	S55264-V171	B
	VPU115A-135	S55264-V172	B