Balancing valve PVM

Areas of use

MMA PVM is used to distribute the flow within different areas in heating and cooling systems.

Description

PVM is a dynamic valve unit developed to regulate pressure drop. A fully open STV mounted on the intake, and a PV differential pressure valve on the return. The pressure-compensating mains control valve ensures problem-free setting of the various mains. The PVM valve is equipped with a signalling circuit, cut-off valve, drain valve and measurement socket as standard.
The PVM valve guarantees 100% differential pressure regulation under all conditions, regardless of whether changes are made in the system.
The valve regulates the system and removes noise problems due to high pressure drop. After setting the valve no further adjustment to the valves is necessary.

Technical data

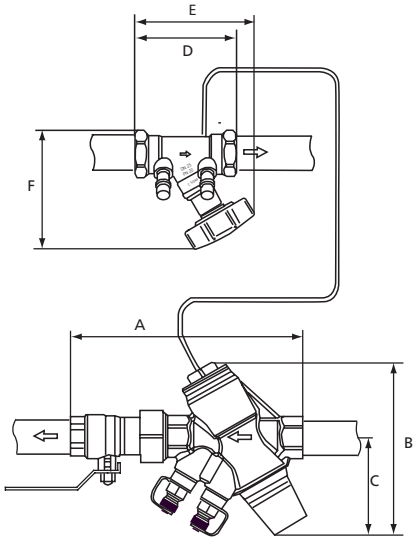
Max. temperature
120°C
Min. temperature
-10°C
Material
Brass CW617N
Gaskets EPDM

DN15	DN20	DN25	DN32	DN40	DN50
Flow range. l/h					
50-600	100-1000	600-2500	1000-5000	3000-8000	5000-15000

Speed presetting on delivery

DN 15-20	5 turns
DN 25	8 turns
DN 32-50	2 turns

Max. pressure kPa
400 kPa
Min. pressure kPa
5-30 kPa DN15-DN25, 20-80 kPa DN32-DN50
Pressure class
PN16



Dimensions

	Dim	A	B	C	D	E	F	Weight/kg
PVM	15	167	148	96	86	111	95	2,636
PVM	20	173	151	98	90	114	95	1,991
PVM	25	202	155	102	102	120	96	2,669
PVM	32	235	188	115	120	127	96	4,545
PVM	40	257	206	119	132	139	108	6,055
PVM	50	286	219	126	154	148	111	8,615

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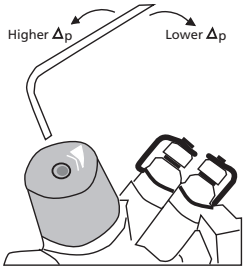
Setting

The valve is easy to set on the knob using a 4 mm Allen key. The setting is read off the pressure drop diagram for each dimension.
When presetting the valve, start by screwing the setting to minimum. Then open the valve to the required value according to the diagram.
The STV valve is used solely for shutting off and flow measurement, it must not be set in any position other than open.



Presetting

The PVM valve is preset according to the diagram.
The curves (the oblique lines that indicate the pressure in the main line) are shown in intervals of 5 kPa to make it simple to take a reading. The curves can be moved so that the valve setting can be produced if, for example, 12 kPa is selected in a pipe instead.
Example: We decide to maintain 12 kPa differential pressure in the main at a flow of 500 l/h (500 l/h comes from the presetting on the radiators). From the point where 12 kPa cuts the horizontal line (flow 500 l/h) a vertical line is taken down to the x-axis.
It is then easy to read off that the valve should be set at approx. 7 turns. The minimum pressure drop will then be 1.9 kPa over the valve.
Total pressure drop:
To dimension the pump it will be:
$\Delta P = \Delta Ps + \Delta Pv = 12 + 1.9 = 13.9$ kPa
Also include the pipe pressure drop from the valve to the pump.
The pump can subsequently be adjusted optimally by measuring the differential pressure from PF to P- (Δ P pump). To verify the secondary pressure drop calculated, it can be checked by measuring PF to P+ and the result should then be 12 kPa.

Ordering codes

RSK no.	Art.no.	Name	Description
	9001124	PVM DN15	G15 int. thread
	9001125	PVM DN20	G20 int. thread
	9001126	PVM DN25	G25 int. thread
	9001127	PVM DN32	G32 int. thread
	9001128	PVM DN40	G40 int. thread
	9001129	PVM DN50	G50 int. thread

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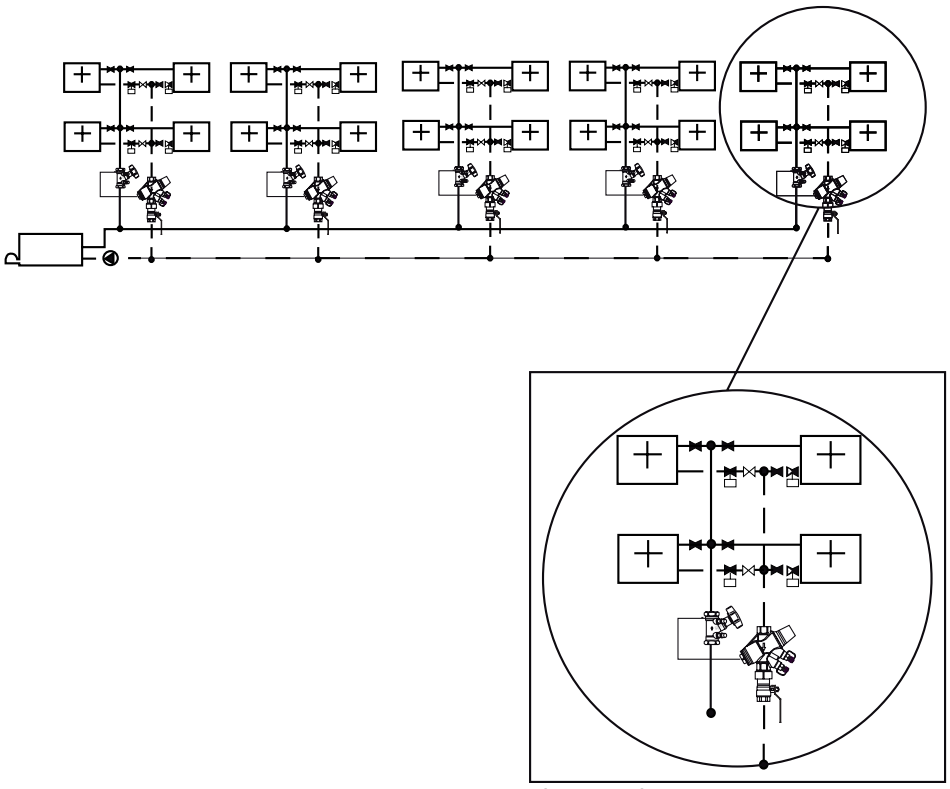
Installation example

Overview of a heating system with 5 staircases with 4 apartments on each one.
The critical valve, defined as the valve with the lowest pressure drop as a rule of thumb this will be the valve positioned furthest away from the pump, is used to lower the pump pressure so that the valve achieves the correct pressure. The lowest possible pressure is then obtained in the system. See dimensioning pump pressure.

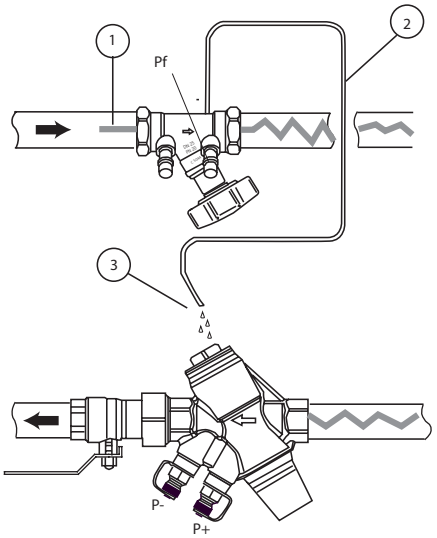


The critical point

Standard application

PVM is fitted in the intake, the signal pipe is to be connected at the low pressure side of the STV valve. The valve can be fitted irrespective of whether it is a straight length of pipe. Bends, tubes etc. can be installed immediately after the valve.

1. Flush the system before fitting signal pipe.
2. Install t-pipe with measurement socket on the STV valve.
3. Install signal pipe on the t-pipe and flush to ensure that there is no air in the signal pipe.
4. Install the signal pipe on the PVM valve on the return pipe.



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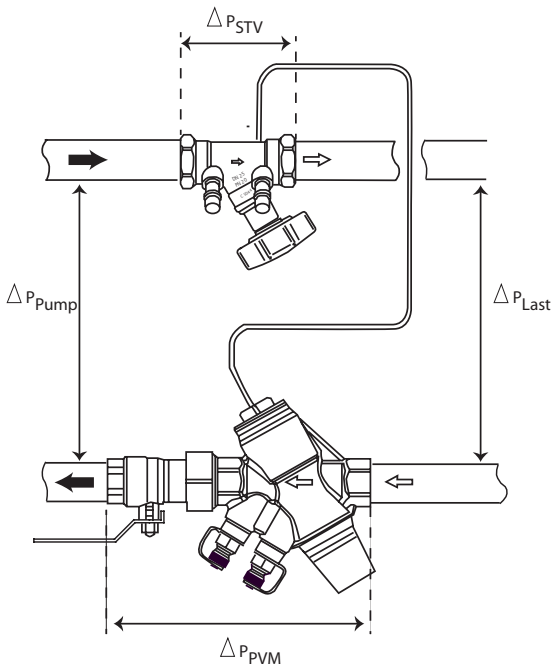
Dimensioning

Selecting the right valve in an installation requires some data about the system.

ΔP pump	available differential pressure from pump
Δ P load	differential pressure for circulation
Δ P STVP	pressure drop over valve fully open (diagram)
ΔP PVM	pressure drop over the PVM valve (diagram)

Example:
Calculated value for a valve is 0.4 l/s.
50 kPa is available differential pressure for circulation ΔP load 20 kPa is required for the main.

We find the minimum differential pressure required for the PVM valve to achieve minimum working pressure in the diagram.
Two valves can deliver 0.4 l/s DN25 and DN32.

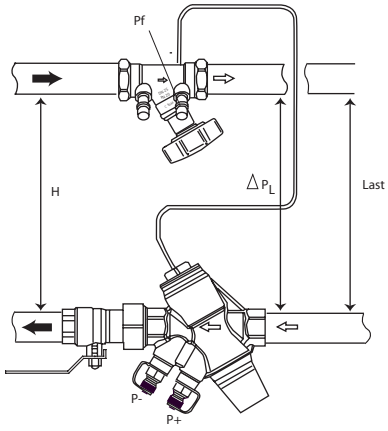


Adjustment and measuring

When adjusting, the differential pressure on the PVM valve is measured and adjusted to 10 kPa. At least one radiator valve needs to be slightly open.
When measuring of the flow use the STV valve and a measuringtool. To be able to measure the flow may the STV valves wheel be set lower to have a higher differential pressure over the STV valve. Note that the differential pressure over the STV valve will not be to high so that the min differential pressure over the PVM valve will be to low and the PVM valve stop to regulate. After the measruing of the flow open the STV valve fully again.

Optimising pump pressure

Lowering to minimum possible pump differential pressure is carried out by measuring at the PVM valve and obtaining at least 13.2 kPa, this is the pump's lowest level at which the PVM can be regulated.



kv-value the STV valve

Number of turns	DN10	DN15	DN20	DN25	DN32	DN40	DN50
1	0,11	0,18	0,34	0,48	0,79	1,20	2,00
2	0,18	0,32	0,60	0,77	1,32	2,05	3,60
3	0,27	0,45	0,83	1,03	1,80	2,80	5,20
4	0,41	0,62	1,13	1,50	2,70	4,10	7,60
5	0,65	0,86	1,55	2,30	4,10	6,20	11,90
6	1,02	1,17	2,10	3,60	5,90	8,90	16,70
7	1,78	1,62	2,90	5,00	7,80	12,00	21,20
8	2,30	2,55	3,85	6,50	9,70	14,70	25,00
9	2,60	3,15	4,50	7,90	11,50	17,10	28,60
10	2,80	3,55	5,10	8,80	13,10	19,50	31,50

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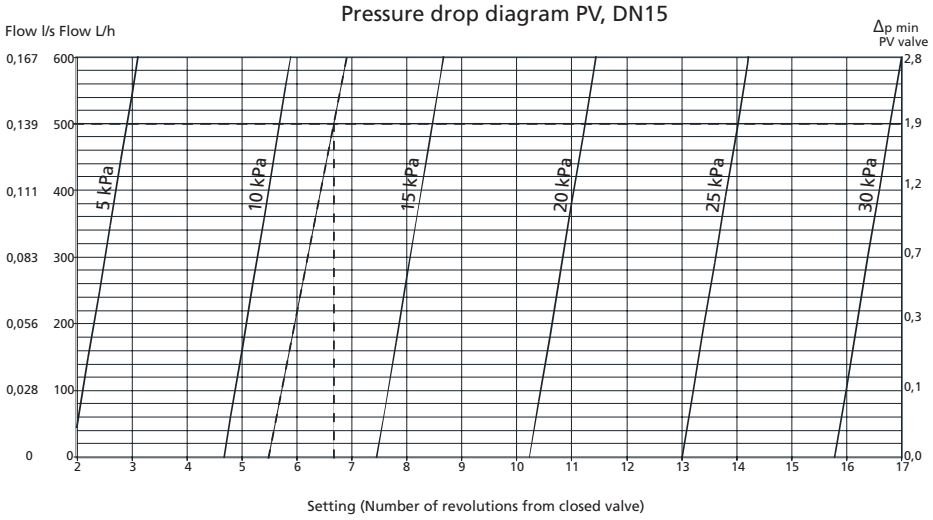
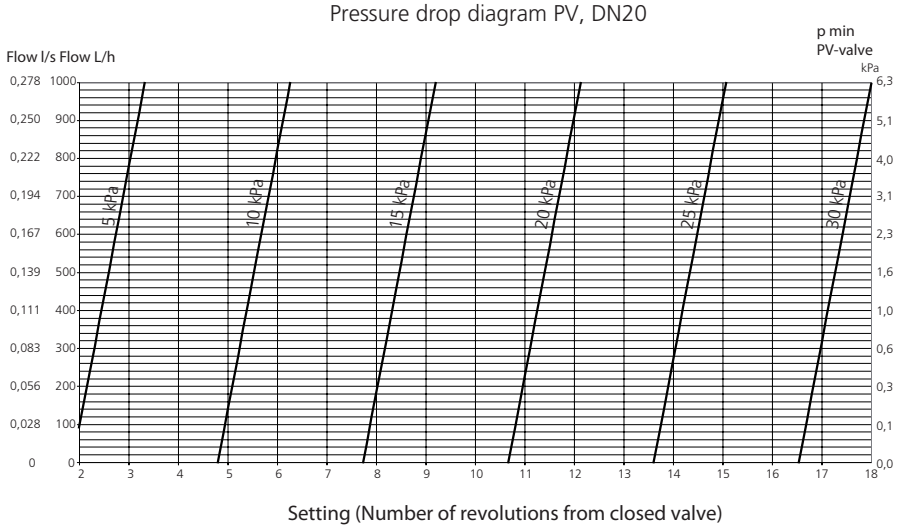
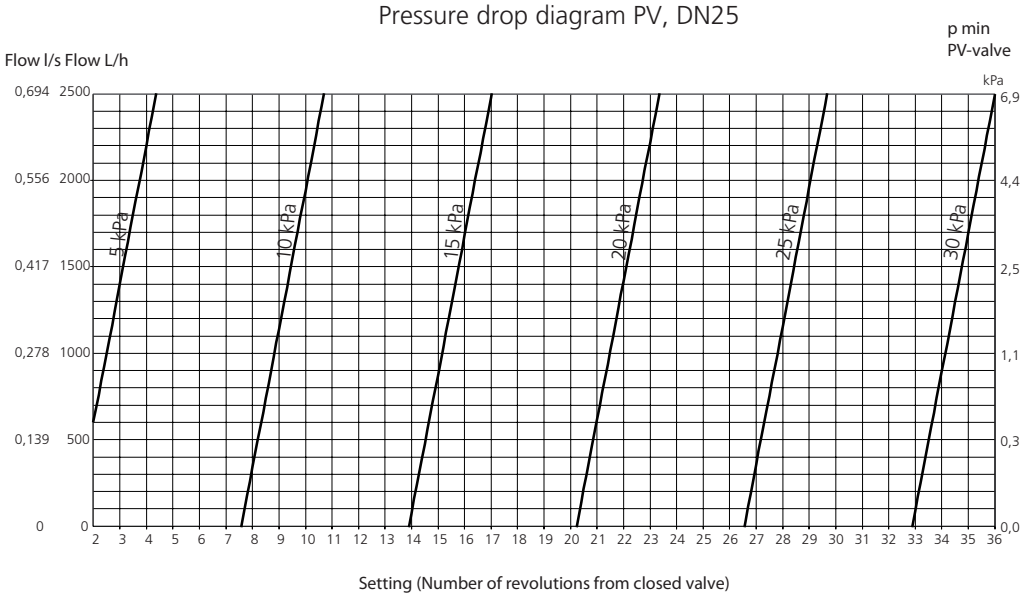
Pressure drop diagram PV, DN15



Pressure drop diagram PV, DN20



Pressure drop diagram PV, DN25



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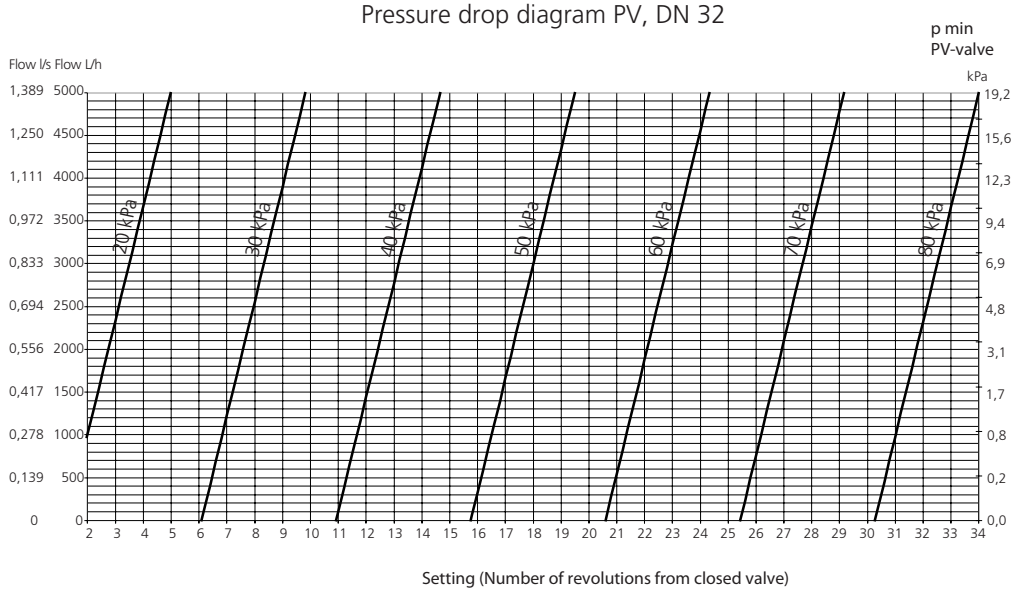
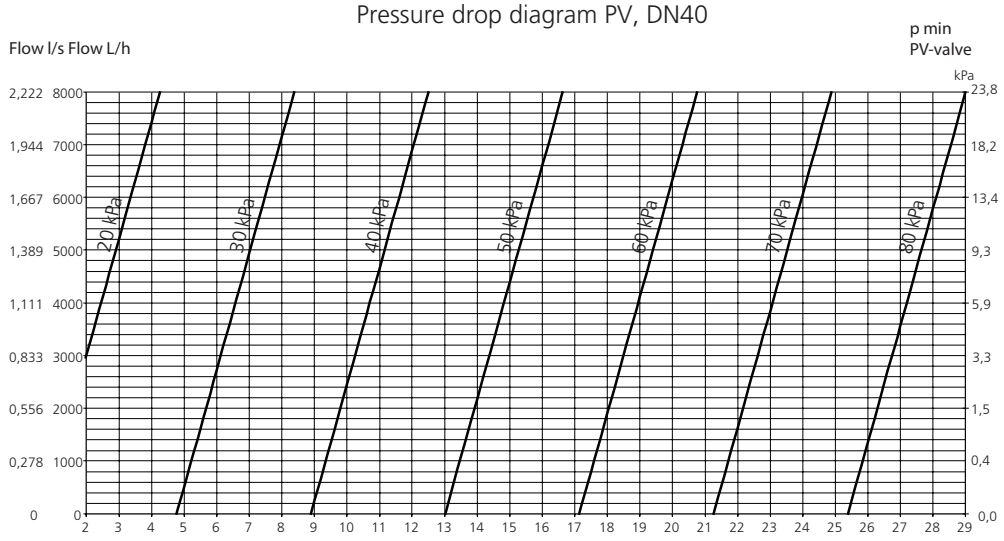
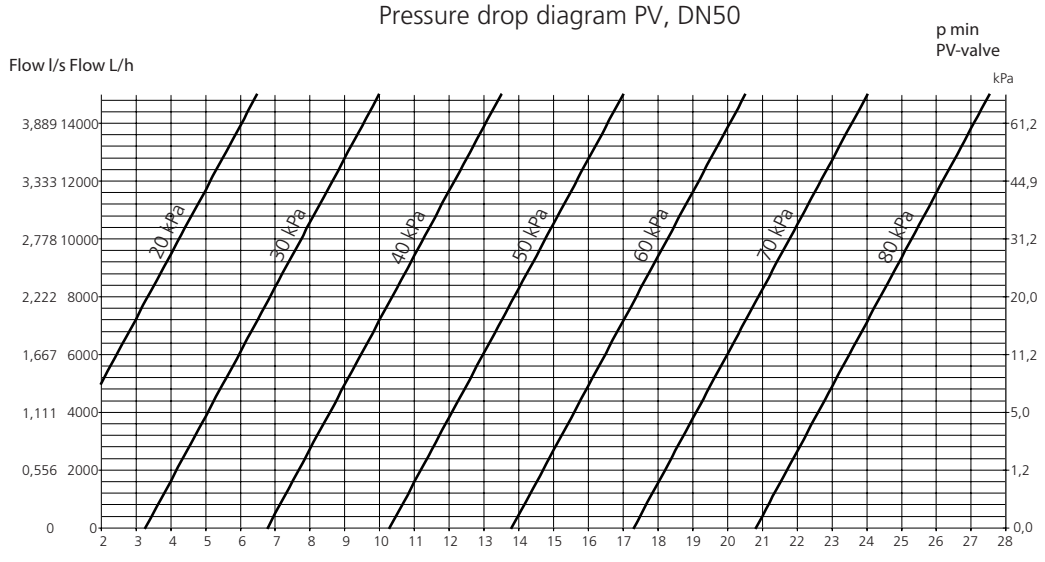
Pressure drop diagram PV, DN 32



Pressure drop diagram PV, DN40



Pressure drop diagram PV, DN50



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