V231

Two-way Plug Valve, PN 25

The V231 is a high pressure valve used in a wide range of applications, such as heating, district heating and air handling systems. The valve can handle the following types of media:

- Hot and chilled water.
- Water containing phosphate or hydrazine additives.
- Water with antifreeze additives such as glycol (50%).
- Low temperature saturated steam

Specifications

Design	2-way plug valve
Pressure class	PN 25
Flow characteristic	EQM
Stroke	20 mm
Rangeability Kv/Kv_{min}	see table
Leakage	up to 0.02% of Kvs
ΔPm	max. 800 kPa, water
Max. temperature hot water/glycol Min. temperature of chilled Max. temperature of steam	150 °C –20 °C 120 °C
Flange Connection	According to SS 335 and ISO 2084
Main Construction Materials	
Body	nodular iron SS 0727 (GGG40.3)
Plug and seat	stainless steel SS 2346
Stem	stainless steel SS 2346
Pressure Equipment Directive	
DN50	2014/68/EE, Module A
DN15…DN40	2014/68/EE, Article 4 (3)

Note: It is the responsibility of the installer or product specifier to verify media compatibility of the valves construction materials with the supplier of water treatment/heat transfer solution.

Available Part Numbers

Size DN	Kvs (m^3/h)	Part number	Rangeability
15	0.25	7213106000	>50
	0.40	7213110000	
	0.63	7213114000	
	1.0	7213118000	
	1.6	7213122000	
	2.5	7213126000	
	4.0	7213130000	
20	6.3	7213134000	>200
25	10	7213138000	
32	16	7213142000	
40	25	7213146000	
50	38	7213150000	

- The rangability is the ratio of Kvs and Kv_{min}.
- Kv is the flow through the valve in m^3/h at the specified valve lift and at a pressure drop of 100 kPa across the valve.
- Kv_{min} is the minimum controllable flow (m^3/h) at a pressure drop of 100 kPa within the range in which the valve characteristics conform to the slope requirements of IEC 60534-1.

Recommendations

- If the valve is used for media at temperatures below 0 °C, it should be equipped with a stem heater in order to prevent ice formation on the valve stem.

Spare Parts

Description	Part Number
Stuffing box, Standard type S max 150 °C	1 001 0800 0

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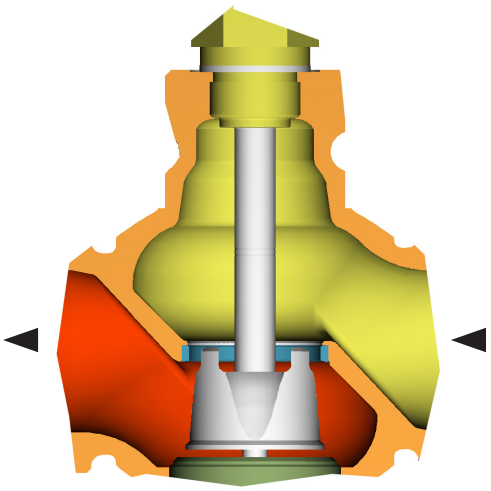
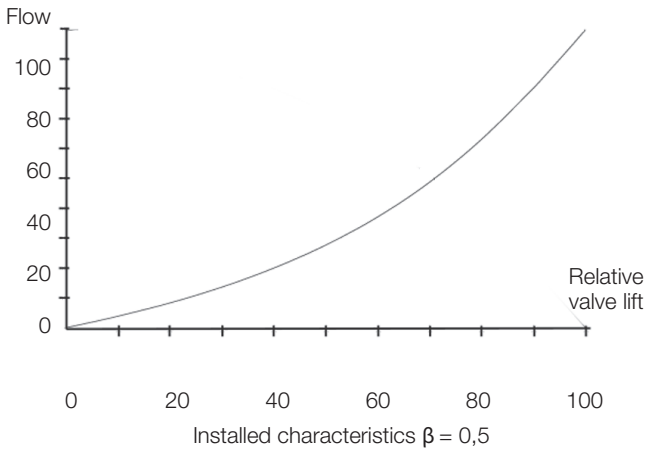
Design and Characteristics

The design of the V231 gives good resistance against solid particles in the fluid.

The plug is guided throughout the lift, which reduces the risk for vibrations. The valve closes with the stem up.

The flow characteristics of the V231 is equal percentage modified. This characteristic makes it possible to control low flow rates down to almost closed position. This is particularly important for achieving good control performance in systems with wide load variations.





Cavitation

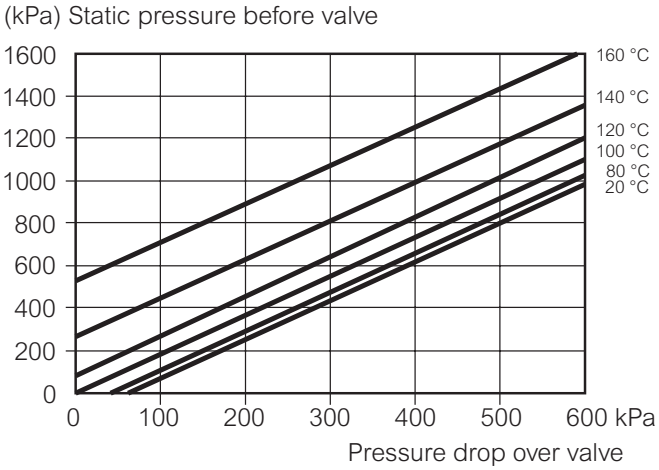
Cavitation takes place in a valve when the velocity of the fluid media over the plug and seat increases to such an extent that gas bubbles are created. As the fluid passes over the seat and the velocity decreases, these gas bubbles collapse (implode), generating considerable noise and erosion to the valve trim.

The cavitation chart provides guidance as to the cavitation zone where this phenomena will exist.

Chart usage:

1. Using the y-axis, static pressure before the valve (e.g. 1000 kPa), plot the horizontal line to the line for the temperature of the liquid (e.g. 120 °C).
2. From the intersection point, plot a vertical line downwards and read off the max. permissible pressure drop across the valve.
3. If the computed pressure drop exceeds the value from the diagram, there is risk for cavitation.
4. As a rule of thumb, to ensure the cavitation zone is not reached, the fluid velocity must be below 2 m/s.

Pressure drop chart at the beginning of cavitation



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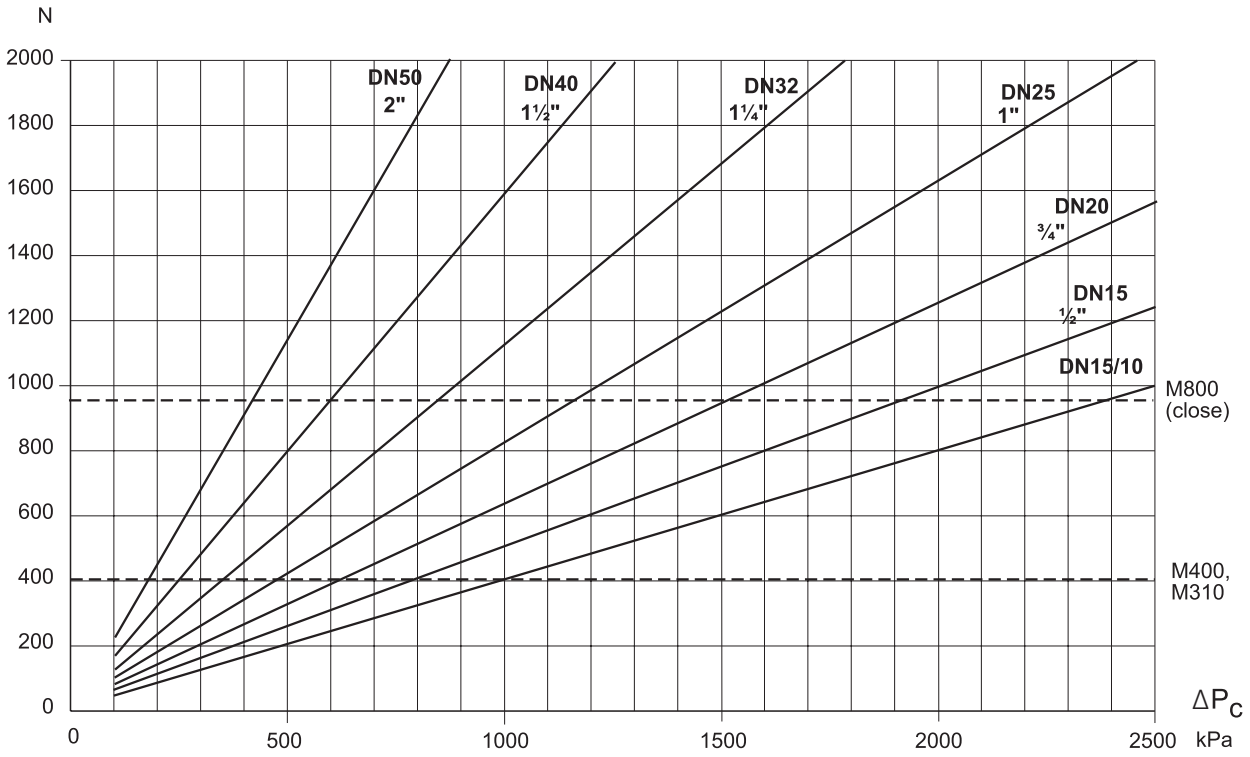
Actuator Selection

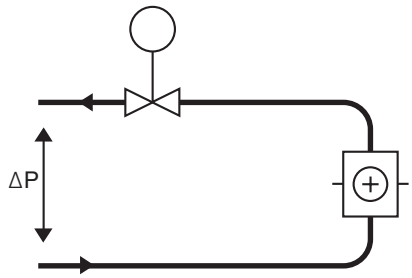
The ability to close at various differential pressures depends on valve size and available stem force. The later is determined by the selected actuator. The table shows performances for different actuator/valve combinations.

ΔPc = Permissible pressure differential when the valve is closed. Use the diagram below to select the actuator to close against the required ΔPc.

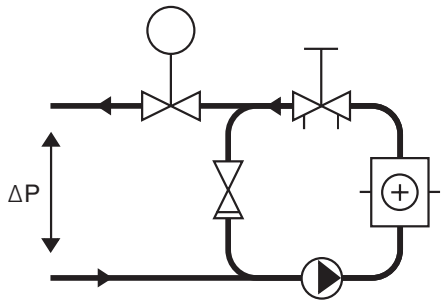


Installation

The valve should be mounted with flow direction in accordance with the valve marking. It is recommended to install the valve in the return pipe, in order to avoid exposing the actuator to high temperatures. The valve must not be installed with the actuator mounted below the valve. To ensure that suspended solids will not become jammed between the valve plug and seat, a filter should be installed upstream of the valve, and the pipe system should be flushed before the valve is installed.

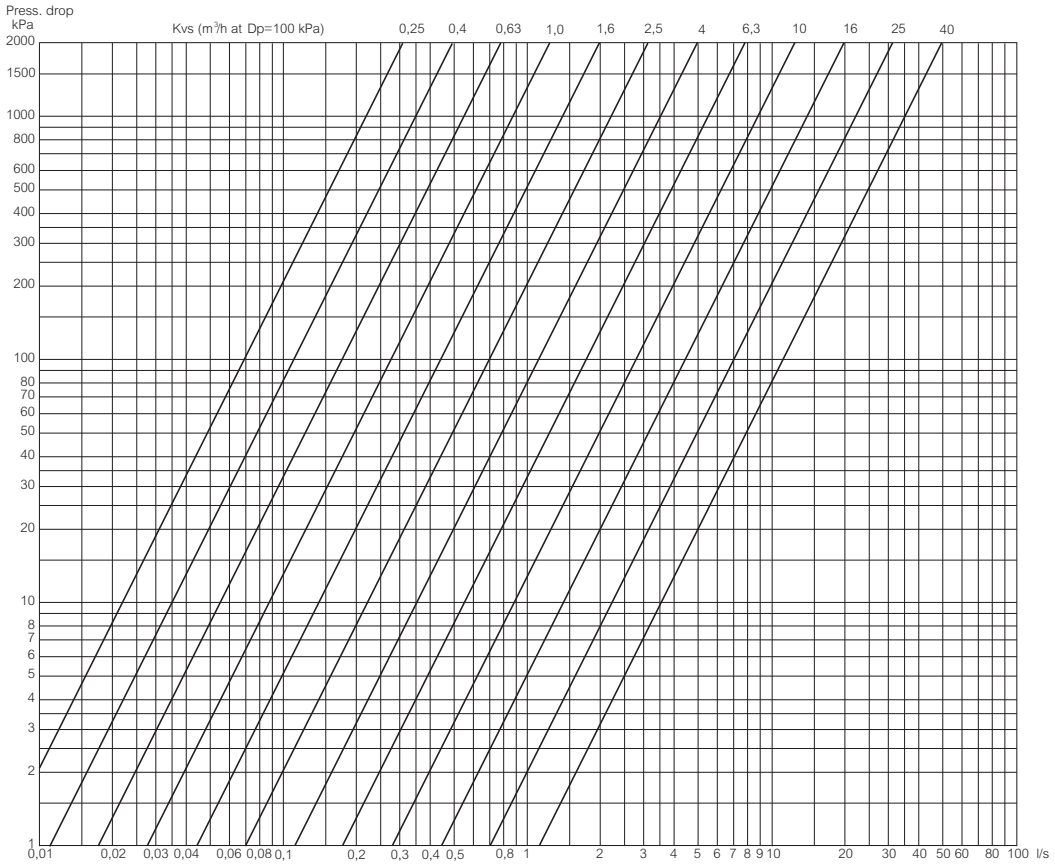


A. Typical installation without local circulating pump. To provide a good function, the pressure drop across the valve should be no less than half of the available pressure (ΔP). This corresponds to a valve authority of 50%.

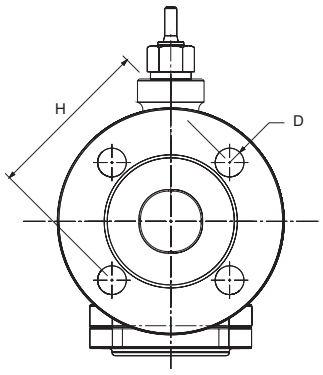


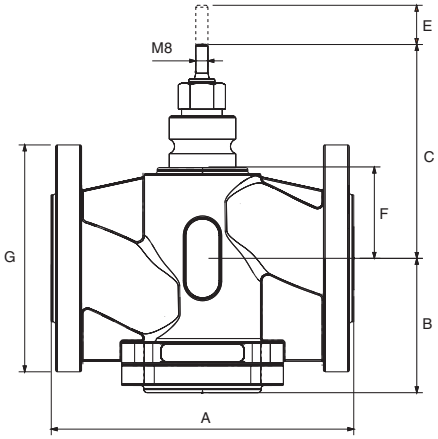
B. Typical installation with local circulating pump. The Kvs value of the valve is to be selected so that the entire available pressure drop (ΔP) falls across the control valve.

Flow and Pressure Drop Chart, Water



Dimensions and Weight





Part No	Conn (DN)	Dimensions (mm)								Weight (kg)
		A	B	C	D	E	F	G	H	
7213106000	15	130	81	121.5	4x14	20	37	95	65	3.6
7213110000										
7213114000										
7213118000										
7213122000										
7213126000										
7213130000										
7213134000	20	150	92	124.5			40	105	75	4.4
7213138000	25	160	96	129.5			45	115	85	5.6
7213142000	32	180	100.5	143	4x19		58.5	140	100	7.7
7213146000	40	200	99	144.5			60	150	110	8.8
7213150000	50	230	111	159.5			75	165	125	12.6

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