# Venta V231

## Two-way Plug Valve, PN 25


The Venta V231 can be 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<br>Min. temperature of chilled<br>Max. temperature of steam | 150 °C<br>–20 °C<br>120 °C |
| Flange Connection | According to SS 335 and ISO 2084 |
| Main Construction Materials<br>Body<br>Plug and seat<br>Stem | <br>nodular iron SS 0727 (GGG40.3)<br>stainless steel SS 2346<br>stainless steel SS 2346 |
| Pressure Equipment Directive<br>DN50<br>DN15…DN40 | <br>2014/68/EE, Module A<br>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<br>DN | Kvs ($m^3/h$) | Part number | Rangeability |
|---|---|---|---|
| 15 | 0.25 | 721 3106 000 | >50 |
| | 0.40 | 721 3110 000 | |
| | 0.63 | 721 3114 000 | |
| | 1.0 | 721 3118 000 | |
| | 1.6 | 721 3122 000 | |
| | 2.5 | 721 3126 000 | |
| | 4.0 | 721 3130 000 | |
| 20 | 6.3 | 721 3134 000 | >200 |
| 25 | 10 | 721 3138 000 | |
| 32 | 16 | 721 3142 000 | |
| 40 | 25 | 721 3146 000 | |
| 50 | 38 | 721 3150 000 | |

- 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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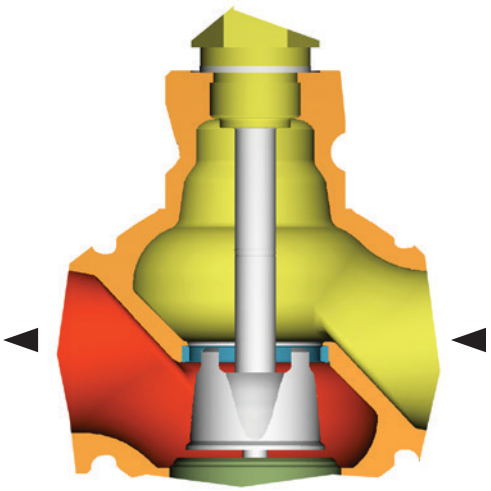
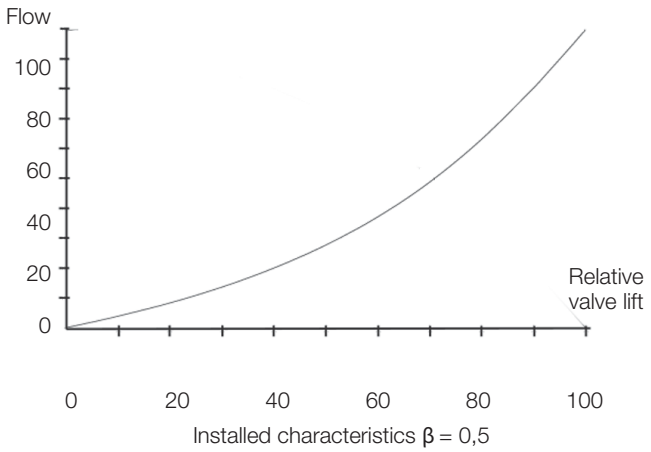
## Design and Characteristics

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

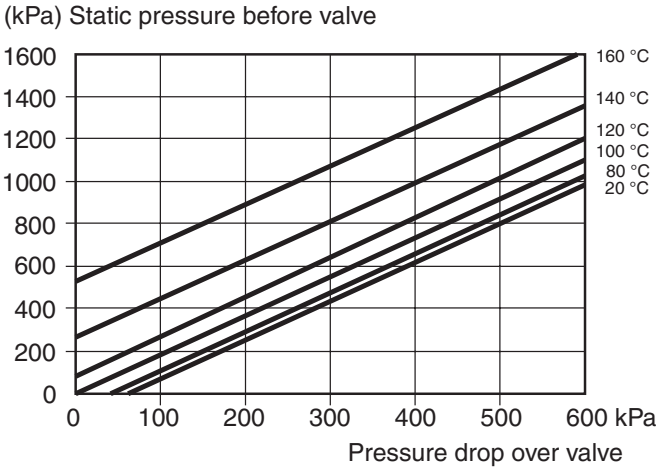
Cavitation takes place in a valve when the velocity of the fluid media over the plug and seat increases to such an extent that gas bubbles are created. As the fluid passes over the seat and the velocity decreases, these gas bubbles collapse (implode), generating considerable noise and erosion to the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



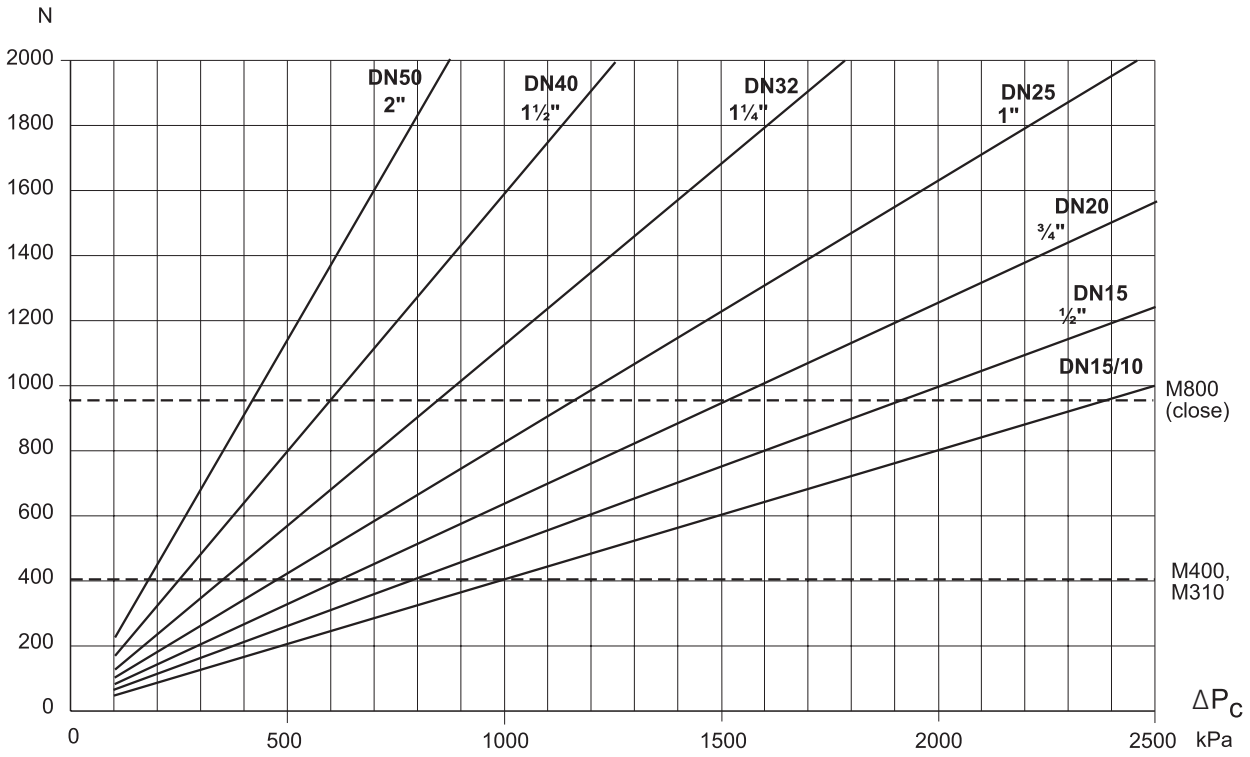



Document Number: 03-02213-04

## Actuator Selection

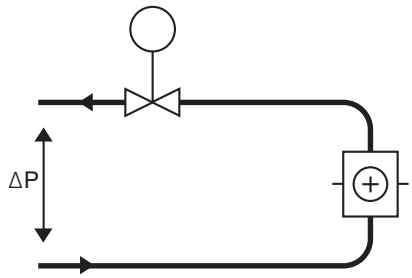
The ability to close at various differential pressures depends on valve size and available stem force. The later is determined by the selected actuator. The table shows performances for different actuator/valve combinations.

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

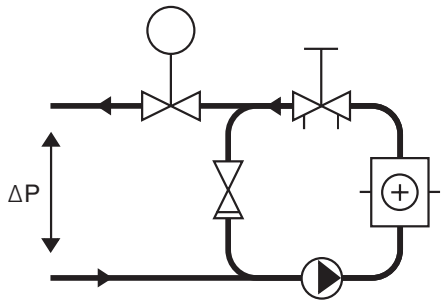



## Installation

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.

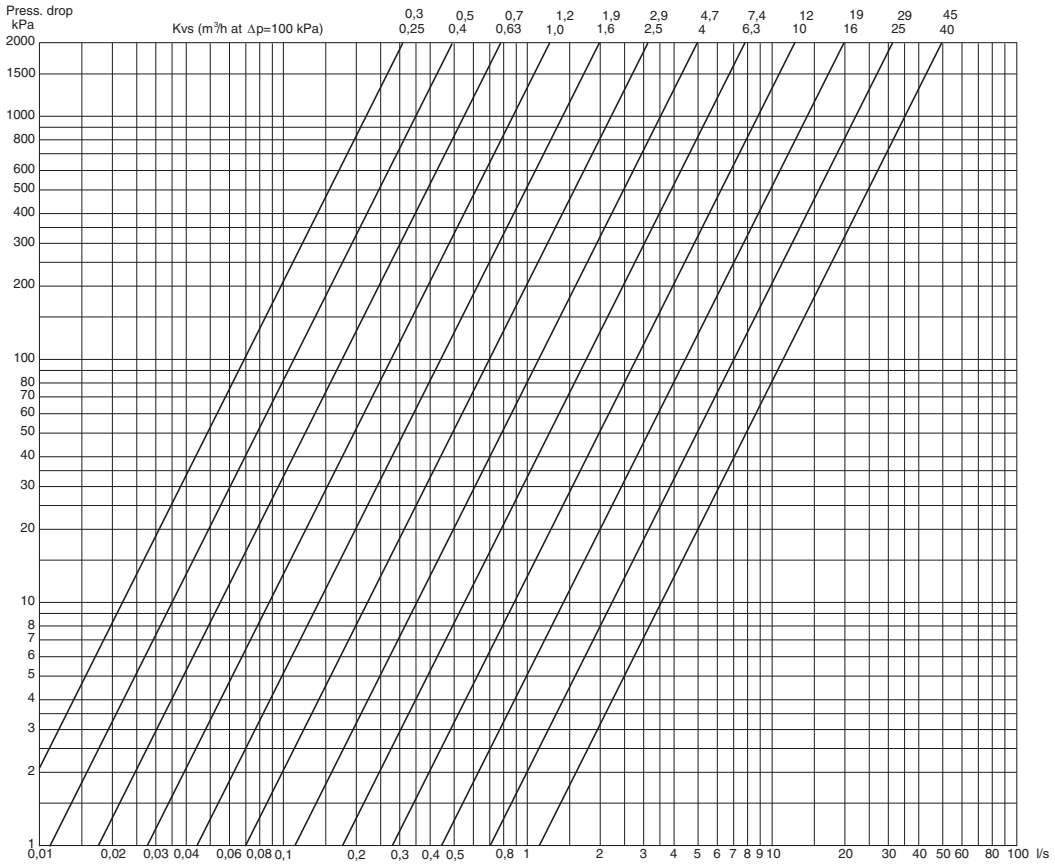



A. Typical installation without local circulating pump. To provide a good function, the pressure drop across the valve should be no less than half of the available pressure (ΔP). This corresponds to a valve authority of 50%.

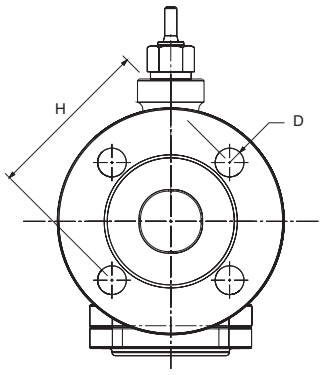


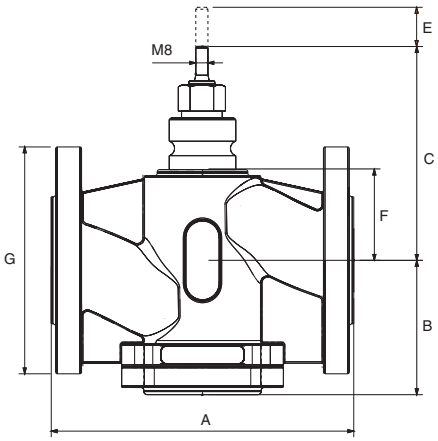

B. Typical installation with local circulating pump. The Kvs value of the valve is to be selected so that the entire available pressure drop (ΔP) falls across the control valve.

## 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 | |
| 721 3106 000 | 15 | 130 | 81 | 121.5 | 4x14 | 20 | 37 | 95 | 65 | 3.6 |
| 721 3110 000 | | | | | | | | | | |
| 721 3114 000 | | | | | | | | | | |
| 721 3118 000 | | | | | | | | | | |
| 721 3122 000 | | | | | | | | | | |
| 721 3126 000 | | | | | | | | | | |
| 721 3130 000 | | | | | | | | | | |
| 721 3134 000 | 20 | 150 | 92 | 124.5 | | | 40 | 105 | 75 | 4.4 |
| 721 3138 000 | 25 | 160 | 96 | 129.5 | | | 45 | 115 | 85 | 5.6 |
| 721 3142 000 | 32 | 180 | 100.5 | 143 | 4x19 | | 58.5 | 140 | 100 | 7.7 |
| 721 3146 000 | 40 | 200 | 99 | 144.5 | | | 60 | 150 | 110 | 8.8 |
| 721 3150 000 | 50 | 230 | 111 | 159.5 | | | 75 | 165 | 125 | 12.6 |



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