

Introduction

The **EvoPICV** Pressure Independent Control Valve “PICV” is a combined constant flow limiter and full stroke, full authority equal percentage temperature control valve.

The **EvoPICV** is suitable for use in variable and constant temperature systems and may be used as constant flow limiter in constant volume systems (without an actuator head) or as a true PICV in variable volume systems.

Operating principle

EvoPICV valve is made by three main parts:

1. differential pressure regulator
2. regulating valve for flow adjustment
3. flow pre-setting knob

1. Differential pressure regulator

The differential pressure regulator is the heart of the pressure independent control valve. By keeping a constant differential pressure across the valve seats constant flow and full authority temperature control can be achieved.

Incoming pressure P1 is transmitted to the top face of the diaphragm, outgoing pressure P3 is transmitted to the underside of this same diaphragm. A constant effective differential pressure is maintained between P2 and P3. As P1 increases relative to P3 it acts on the diaphragm closing the shutter (A) against a seat (B) thereby lowering the effective differential pressure. As P1 decreases relative to P3 the diaphragm acts to open the shutter (A) from the seat (B) thus increasing the effective differential pressure. The diaphragm acts against a spring in order to balance the pressure control and stop the diaphragm oscillating.

2. Regulation valve

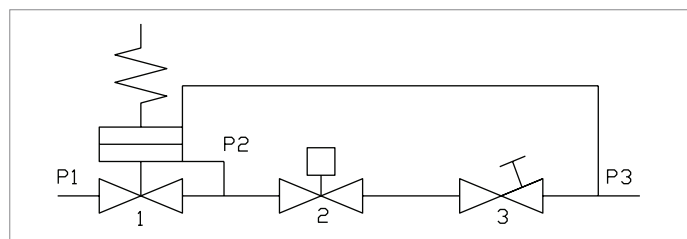
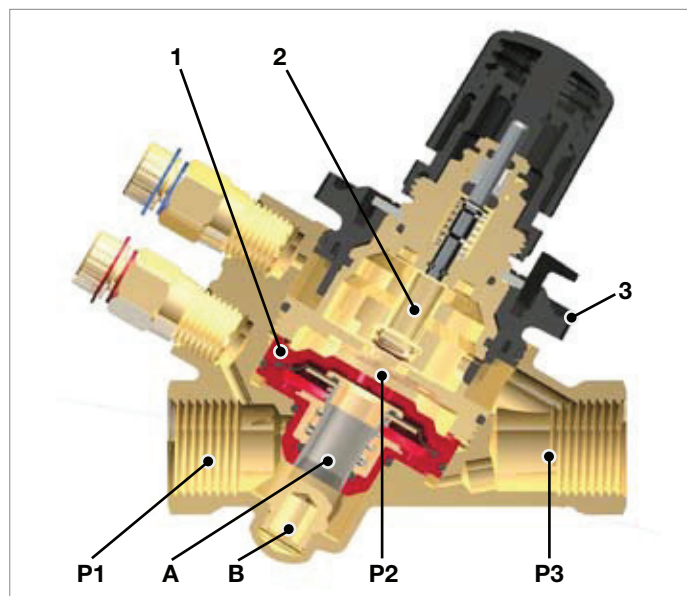
Water flow through a valve varies as a function of the area of passage and the pressure differential across that valve. Due to the incorporation of the differential pressure regulator the differential across the valve seats P2 – P3 is constant meaning that flow is now only a function of area of passage.

Setting any flow rate value and maintaining it stable is also possible. The regulation valve presents an equal percentage characteristic.

Advantages and user-friendliness

1. Advantages

- **EvoPICV** is a full authority temperature control valve. This means that each individual terminal receives on the flow required even in part load conditions..
- The regulator corrects any differential pressure variation. This leads to a considerable reduction in temperature variations and adjustment movements and to the extension of the life of the moving devices connected to it.
- **EvoPICV** valves offer a remarkable adjustment flexibility. They can be accurately set to a specific flow rate value and they allow precise modulating control.
- The valves always guarantee a suitable flow rate, therefore avoiding too high energy consumption.
- Since **EvoPICV** valve performs the functions of two valves (balancing and adjustment), the installation costs are considerably reduced.
- The automatic flow rate limitation eliminates system commissioning costs.
- Since commissioning is very easy to perform, design flow rates can be modified at any time and at low costs.
- Since it is not necessary to commission the valve after its installation, the valve can work immediately after it has been assembled, for example, on the floors where works are already



Functional schematic

3. Adjustment knob

The maximum value of the flow can be preset, choking the outlet section of the control valve, using the graduated adjustment knob.

The percentage value, indicated on the scale, matches the maximum flow rate percentage. This value can be changed turning the adjustment knob until it reaches the selected position (matching the percentage indicated on the scale). A locking mechanism avoids the valve set values from being changed inadvertently.

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2. User-friendliness

In order to adjust the flow rate, just set the selected value using the adjustment knob.

Since flow rate is the only parameter to be considered, choosing the suitable valve is easy and fast.

EvoPICV valve maximum adjustment matches the maximum flow rate allowed by the pipe size, on the basis of the values established by international standards.

- Setting ratio calculation is not necessary.
- Valve authority calculation is not required.
- Specific devices or knowledge are not necessary.
- Compact design that allows installing the valve also in small spaces such as fan-coils or narrow supply spaces.
- The special adjustment knob allows the flow rate to be set without disassembling the actuator.