

PRESSURE INDEPENDENT CONTROL VALVE



The pressure independent control valve allows adjusting and keeping the flow rate constant to the desired value, within a wide differential pressure range upstream and downstream. Therefore, it encloses the functions of a automatic flow control valve and a control valve in a single product.

The flow rate value is adjusted in the following ways:

- Through a cartridge adjustable from outside (manual operation to be carried out using a special accessory spanner) so as to limit the maximum set value.
- Through an electrothermal or electrical motor (automatic operation) according to the thermal loads required by the system.

During these operations/adjustments the valve does not need to be shut off.



USE

It is particularly indicated in the following cases:

- Adjustment for pumping stations in central thermal fluid systems.
- Terminal balancing and adjustment on customer junctions.
- Third way adjustment and balancing on thermoregulation units.

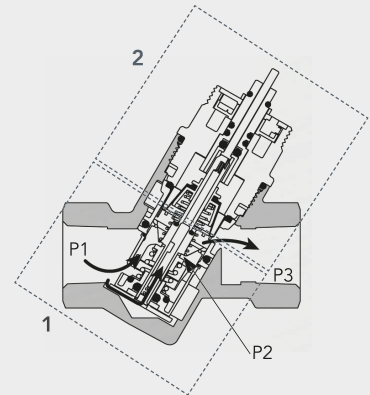
CHOICE

It is advisable to choose the pressure independent control valve, the pressure adjustment degree corresponding to about half the cartridge flow rate range.

In this way, with the design nominal flow rate, a sufficient calibration margin is preserved so as to cope with any corrections due to inevitable route changes during work.

OPERATING PRINCIPLE

Pressure P2 is determined by the membrane reacting to pressure P1 acting on the membrane upper chamber. Interacting with the spring, the difference (P1-P2) remains constant, while maintaining a steady ΔP through the orifice. As a result, a **constant flow rate through the valve is obtained regardless of variations in the pressure difference between upstream and downstream, which can be adjusted by the motor depending on the system thermal requirements.**



KEY:

- 1 Control device ΔP
- 2 Flow rate adjustment device
- P1 and P3: Circuit pressure values
- P2: Pressure determined by membrane
- $\Delta P = (P1 - P3) =$ Total pressure difference between upstream/downstream

POSSIBLE APPLICATIONS

Pressure independent control valves are mainly used on the hydraulic circuit return pipe. Below are some typical application examples:

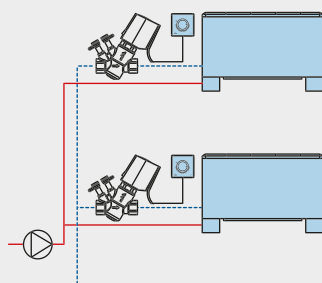


Figure 1

Pressure independent control valve with the function of serving in-line terminal elements (radiators, convectors, fancoils, etc.). Each valve provided with an thermoelectric motor is controlled by a thermostat/chronothermostat.

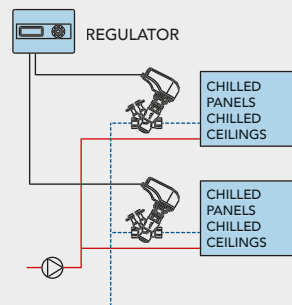


Figure 2

Pressure independent control valve with the function of serving terminal elements (chilled panels, chilled beams, etc.). Each valve provided with an electrical motor is managed by a controller (signal 0÷10V / 230V / 24V).