

CASTLE

Dynamic Pressure Independent Balancing Valves



Salient Features :-

- ❖ Pressure Independent Control of Flow.
- ❖ Total Valve Authority.
- ❖ BMS Compatible.
- ❖ No Calculations Required.
- ❖ With Belimo Actuators(Sweden).

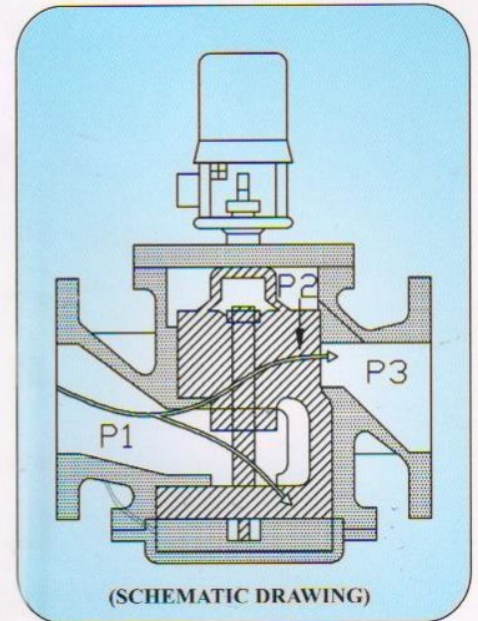
Dynamic Pressure Independent Balancing Valve (DPIBV) is a new generation product different from the manual balancing valve. It is a combined product of dynamic balancing and 2-way control function.

As shown, when the system pressure changes in the variable flow system with larger system load fluctuations, the pressure differential(P1-P3) between two ends of the (DPIBV) will also change.

The electric valve core is calibrated variable orifice adjusted by electrical actuators according to the signal from thermal sensors, this results in increase or decrease in pressure at P1. The diaphragm which is counteracted by helical spring which regulates the pressure differential between P1 and P3, thus maintaining the differential pressure across P1 and P3. This ensures that the differential pressure and flow are maintained according to pre-set range of the valve.

Working Principle

The actuator can be pre-set to limit the working range of the valve which limits the maximum flow rate through the valve. Consequently, hydronic balance is achieved automatically without the use of additional balancing valves. *CASTLE* DPIBV ensures more accurate controls due to long strokes of the actuators.



The control signals, i.e. input signals and feedback automatically adapt to the pre-set working range of the valve. This means the maximum signal is equal to the maximum pre-set design flow limit. The digital control system is allowed to work throughout the full range of the signal independent of the working range. The valve is a dynamic control valve which means the valve automatically keeps a constant differential pressure across the internal controlling orifice of the valve. Consequently, pressure drop fluctuations across the internal controlling orifice of the valve will not affect the set flow through the valve. Castle DPIBV can be set to limit the maximum design flow which removes over-sized equipments. The dynamic flow characteristics keep the Castle DPIBV in constant authority and automatically balanced, eliminating the requirement of a separate balancing valve in the circuit. Castle DPIBV are designed for an automatic temperature control for coils and AHU's, as a two-way regulation valve in HVAC installation. It is designed to control the rate of fluid flow to a specific terminal unit or coil. This includes an innovative self adjustment feature which enables each valve continuously to self balance. This ensures delivery of precisely the flow rate required by each terminal unit, independent of pressure fluctuation in the hydronic system. It can also be adjusted to set an accurate maximum flow rate limit to each circuit.

| Product Type | Size | Pressure Differential Range (Kpa) | Flow Range (m ³ /h) | Working Pressure | Temp. (°C) |
|--|-------|-----------------------------------|--------------------------------|------------------|------------|
| Dynamic Pressure Independent Balancing Valve | DN32 | 30-300 | 1.2-8.4 | PN-1.0 & PN 1.6 | 0-100 |
| | DN40 | 30-300 | 1.0-7.7 | | |
| | DN50 | 30-300 | 2.0-12.1 | | |
| | DN65 | 30-300 | 3.0-20.4 | | |
| | DN80 | 30-300 | 13.7-35 | | |
| | DN100 | 30-300 | 18-47 | | |
| | DN125 | 30-300 | 15-70.7 | | |
| | DN150 | 30-300 | 20-101.8 | | |

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C-51, MAYAPURI INDUSTRIAL AREA, PHASE-II, NEW DELHI-110064.

Email : castlevalves@hotmail.com Website : www.castlevalves.com

Phone : +91-11-28111712, 28113713, 28115714,