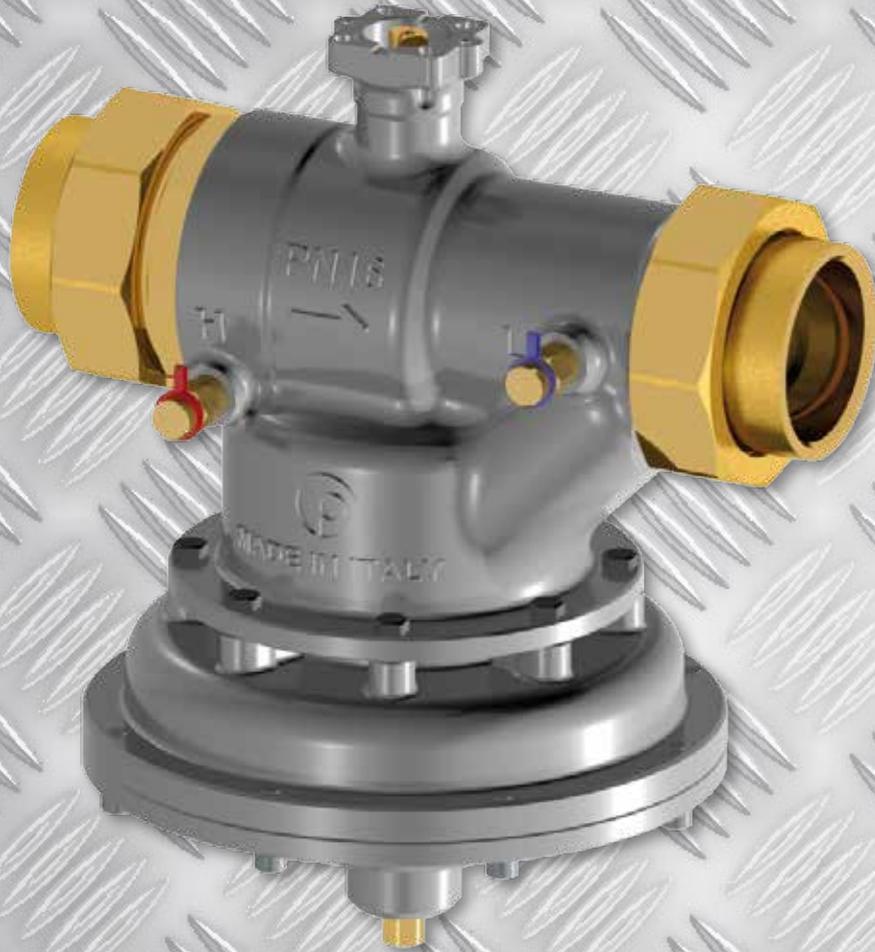




# EVOPICV



Pettinaroli Pressure Independent Control Valves



## Pressure Independent Control Valve

1/2"

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 a constant flow limiter in constant volume systems (without an actuator head) or as a true PICV in variable volume systems.

### Operating principles

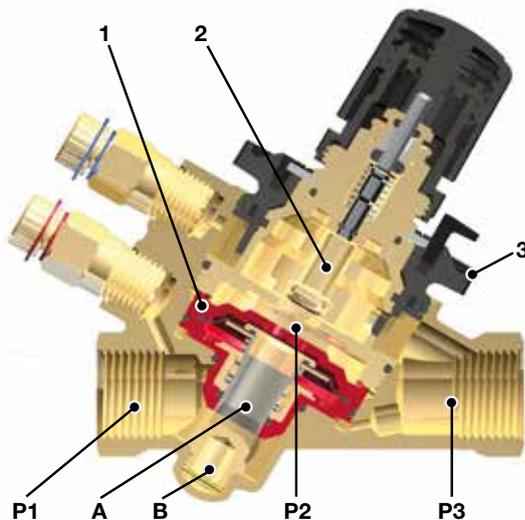
**EvoPICV** valve is made up of three main parts:

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

### 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.



### Regulation valve

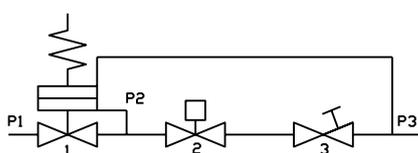
Water flow through a valve varies as a function of the area of passage and the pressure differential across that valve. Due to the incorporation of the differential pressure regulator the differential across the valve seats P2 – P3 is constant meaning that flow is now only a function of area of passage.

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

### 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 stops the valve set values from being changed inadvertently.

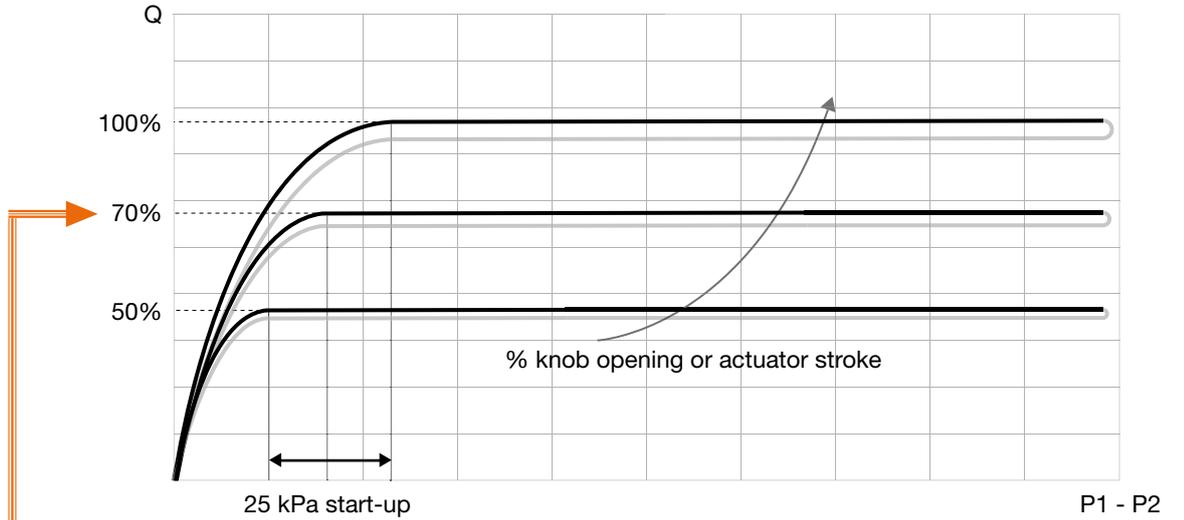


Functional schematic

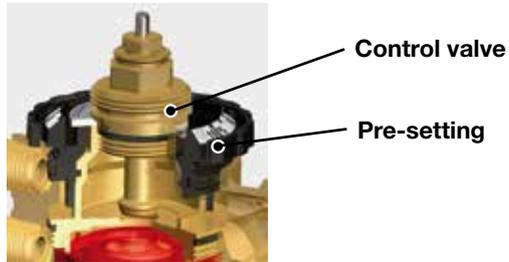
A PICV replaces a traditional control valve on a terminal unit (FCU, CB, AHU). It limits flow rate irrespective of pressure and offers the possibility to modulate the flow rate (according to room temperature) by using a proportional thermostat or BMS system.

**Dynamic curve**

Provides constant flow at any pump head

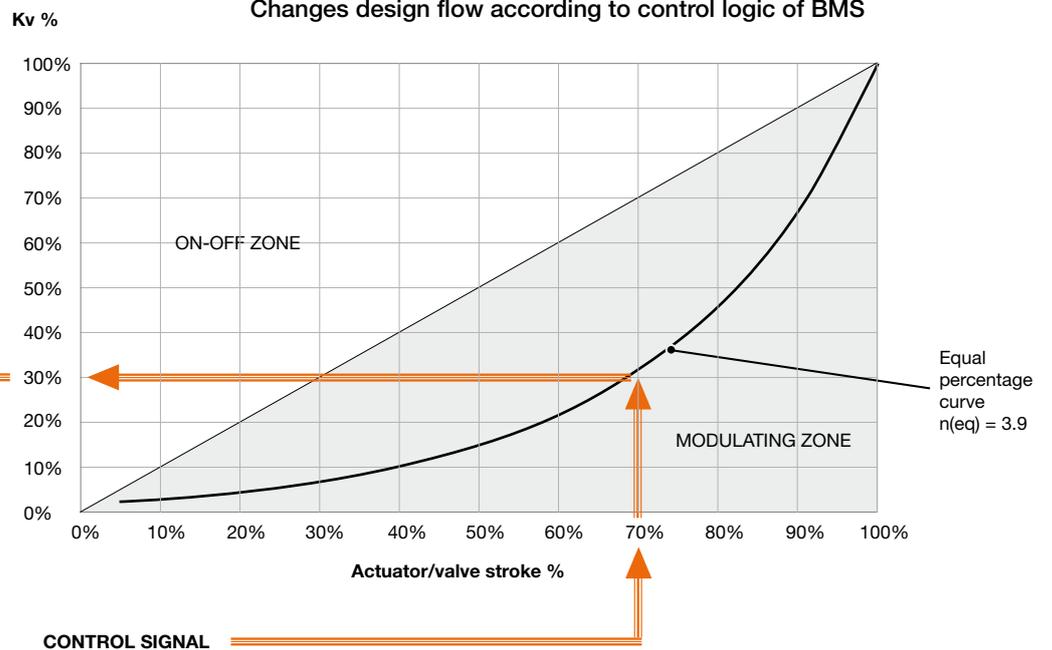


The dynamic curve can be initially limited using a graduated pre-setting device; then the flow can be further adjusted by means of the control valve, which is positioned by the actuator.



**Control curve**

Changes design flow according to control logic of BMS



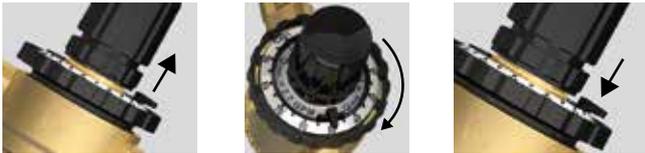
# 91 Series

1/2" thru 1"



### Compact version

Available with female/female threads



Manual flow setting device

# 93 Series

3/4" thru 1 1/4"



### Flexible version

Available with double union ends (male or female)



Removable diaphragm for flushing, maintenance and trouble shooting

### FLOW RATE

Flow rate can be adjusted without taking actuator off the valve.



### DIAPHRAGM

Diaphragm made in one solid piece, resulting in easier handling and maintenance.



### Actuator compatibility chart



Thermal electric	Electromotive
On/Off	Floating
Proportional	Proportional
24V	24V
220V	220V

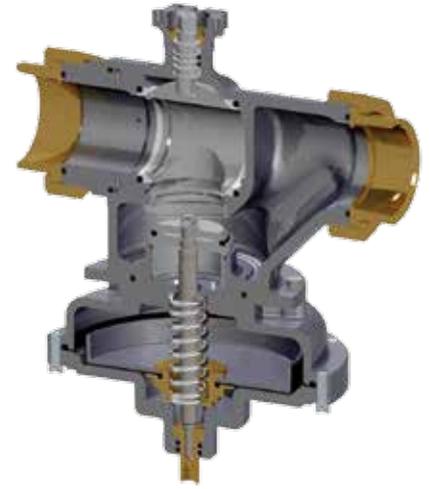
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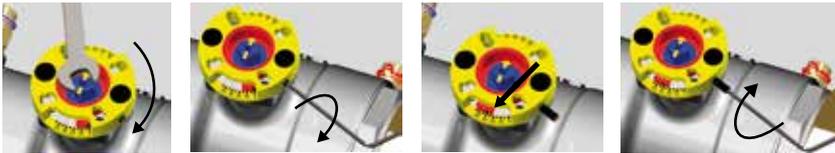
# 83 Series

1 1/4" thru 2"



## Unique in the world: integrated flushing by-pass mode

Solid and reliable characterized control ball valve  
Double union end connection for total flexibility



Manual flow setting device



Characterized profile / full port profile

### OPERATION MODE

Control valve fully open, controlling the flow through profiled ball and a 90° rotating actuator.



### FLUSHING MODE

Control valve rotated by 180°, profiled opening outside flow path. The valve has now full port passage, allowing twice maximum flow, for proper flushing and cleaning.

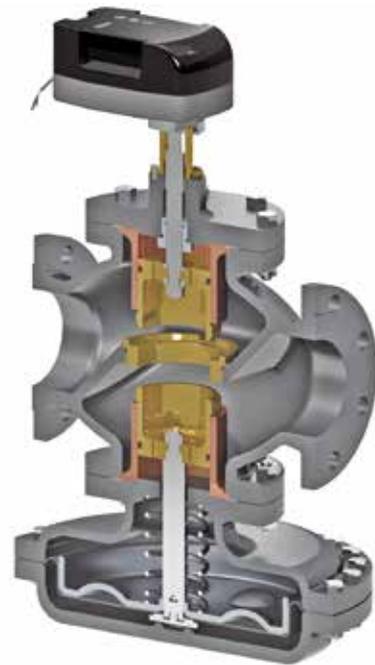


## Actuator compatibility chart

<b>90° Rotary actuator</b> 24V Proportional	<b>90° Rotary actuator floating</b> 24V 230V 110V	<b>90° Rotary actuator spring return</b> 24V 230V 110V

# 94F Series

2" thru 6"



## FEATURES

- Intelligent actuator with user-friendly interface for flow setting.
- Selectable linear or equal percentage control characteristic.
- Ductile Iron body.
- Flanged connections to ISO/ANSI standards.
- Maximum flow up to 150.000 l/h.



## Pettinaroli's SMART actuator



Flow rate can be easily set from the on-board user interface.  
Compatible with most used control signals:

Proportional (current or voltage control)

3 point floating

ON/OFF

4 – 20 mA position feedback signal as default option, for a total remote management.



PRODUCT		91/93/83 SERIES						94F SERIES					
Size	<i>mm</i>	15	20	25	32	40	50	50	65	80	100	125	150
	<i>in</i>	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2"	2 1/2"	3"	4"	5"	6"
Flow range (l/h)	<i>Q<sub>min</sub></i>	45	100	220	270	900	3300	2000	2000	3000	5500	9000	9000
	<i>Q<sub>max</sub></i>	780	2200	2700	6000	9000	18000	20000	30000	30000	55000	120000	150000
Fluid		Cold/hot water											
Temp. (fluid)		5 ~ 120 °C											
Differential pressure range		20 ~ 600KPa						30 ~ 600KPa					
Material	<i>Body</i>	Brass / Ductile iron						Ductile Iron					
	<i>Diaphragm</i>	EPDM											
Connection		Threaded / union end						Flanged					
Max operating static pressure		PN 25						PN 16					



Fully automatic assembling machine. Extreme precision and high reliability eliminate human error. Every valve goes through three different pressure tests and is then marked with a unique product code.



Fratelli Pettinaroli Spa reserve the right to change the described products and the relative technical data at any time and without prior notice. Please check the latest update on our web site [www.pettinaroli.com](http://www.pettinaroli.com)



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