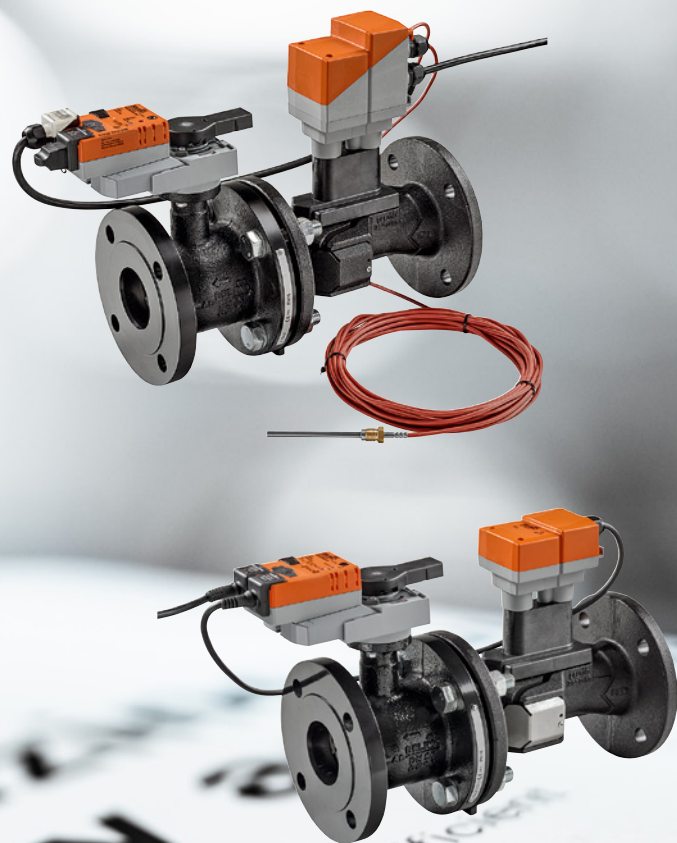


Application information

3-way mixing circuit with 2-way Energy Valve / EPIV

Edition 2024-05/A



3-way mixing circuit with 2-way control valves

The 3-way control valve redefined

With the innovative electronic pressure-independent control valves from Belimo, 3-way mixing circuits can be solved with 2-way control valves. The flexible combination of Energy Valve (EV) and electronic pressure-independent characterised control valve (EPIV) opens up new possibilities in mixing and distribution applications and offers full transparency with respect to energy and flow rates.



Wide field of application

Heating and cooling systems, automatic detection of glycol concentration, glycol compensation



Modern control functions

Power and flow control, parametrisable flow rates



Hydronic balancing

Automatic hydronic balancing ensures operation according to the design case

Type overview

Standard version 3-way Energy Valve

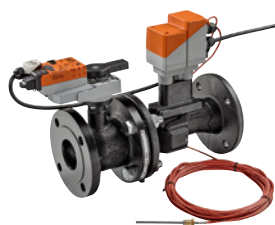


Belimo Energy Valve™
(MID certification optional)

DN	V' _{nom} [m³/h]	Energy Valve
15	1.5	EV015R3+BAC
20	2.5	EV020R3+BAC
25	3.5	EV025R3+BAC
32	6	EV032R3+BAC
40	10	EV040R3+BAC
50	15	EV050R3+BAC

BAC also available with fail-safe (K..)

Combination 2-way Energy Valve with 2-way EPIV



Belimo Energy Valve™
(MID certification optional DN 15...50)

DN	V' _{nom} [m³/h]	Energy Valve		EPIV
15	1.5	EV015R2+BAC	+	EP015R2+BAC
20	2.5	EV020R2+BAC	+	EP020R2+BAC
25	3.5	EV025R2+BAC	+	EP025R2+BAC
32	6	EV032R2+BAC	+	EP032R2+BAC
40	10	EV040R2+BAC	+	EP040R2+BAC
50	15	EV050R2+BAC	+	EP050R2+BAC
65	28.8	EV065F+BAC	+	EP065F+MOD / +MP
80	39.6	EV080F+BAC	+	EP080F+MOD / +MP
100	72	EV100F+BAC	+	EP100F+MOD / +MP
125	111.6	EV125F+BAC	+	EP125F+MOD / +MP
150	162	EV150F+BAC	+	EP150F+MOD / +MP

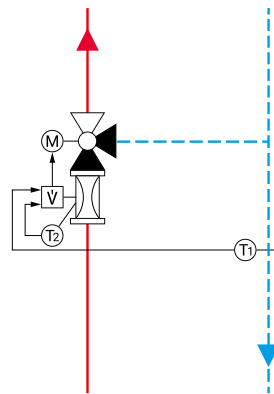
BAC and MP also available with fail-safe (K..)

Application examples

The primary task of a mixing valve is supply temperature control. The energy values can be adapted to the application by controlling the flow rates. The Energy Valve also transmits the current flow and energy values to the building management system.

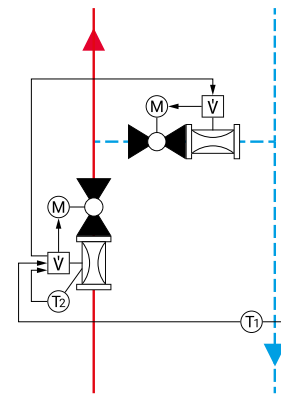
Mixing circuit – one application, two solutions

Standard version 3-way



3-way Energy Valve

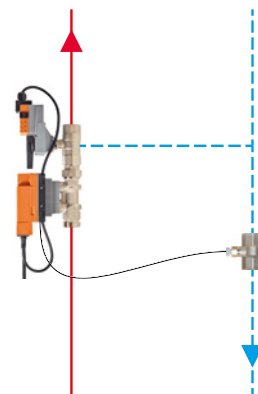
Combination of 2-way control valves



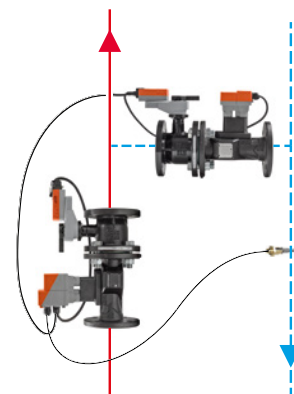
2-way Energy Valve with 2-way EPIV

Intelligent combination for all sizes (DN 15...150)

- Flexible installation in supply and bypass pipes
- Controlled flow conditions thanks to adjustable V'_{min} and V'_{max}
- Suitable for all nominal diameters of DN 15...150



3-way Energy Valve, available with thread DN 15...50



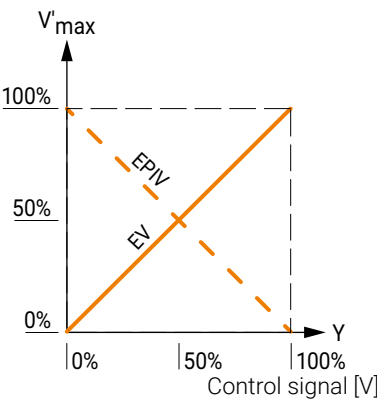
2-way Energy Valve with 2-way EPIV, available with thread DN 15...50 and flange DN 65...150

Settings

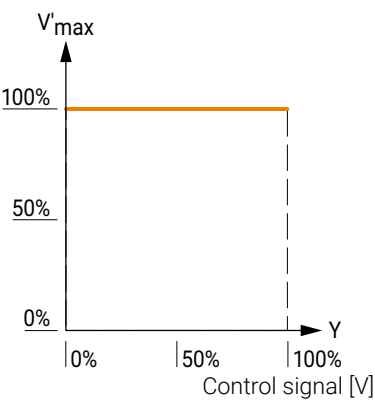
The mixing circuit with 2-way control valves can be implemented with a single data point. To ensure a constant mixing characteristic curve, the two control valves must have identical V_{nom} settings.

Flow characteristic setting EV/EPIV

- The EV (Energy Valve) is operated with linear characteristic curve
- The EPIV is operated with **inverted** linear characteristic curve
- The intelligent combination results in a 3-way mixing circuit



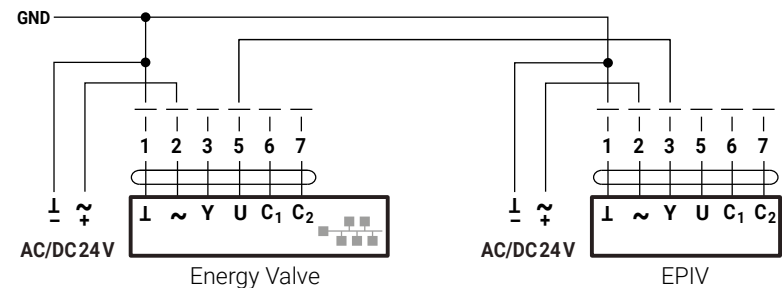
The EV operates with a linear characteristic curve (A-path), while the EPIV operates with an inverted linear characteristic curve (B-path).



The resulting mixing characteristic curve (AB-path) will be constant.

Cabling

- The 2-way Energy Valve is controlled via bus or analogue signal
- The analogue feedback from the Energy Valve (U5) is routed to the input signal of the EPIV (Y3)



Electric wiring diagram (analogue/bus control not shown)

Parametrisation

	Energy Valve	EPIV
Control settings		
Control mode	Flow control ¹⁾	Flow control
Setpoint source	Analogue or bus	Analogue
Signal characteristic	Linear	Linear
Control signal	2...10 V (or 0.5...10 V), Modbus RTU, Modbus TCP, BACnet/IP, BACnet MS/TP	2...10 V (or 0.5...10 V)
Signal inversion	Not inverted	Inverted
¹⁾ Power control optional		
Maximum and limitation		
V'_{\max}	According to the respective design case	Same as Energy Valve
V'_{\min}	0 (higher value optional)	0 (higher value optional)
Analogue feedback		
Feedback	Relative flow rate ²⁾	Relative flow rate
Range	2...10 V (or 0.5...10 V)	2...10 V (or 0.5...10 V)
Maximum	According to the respective design case (V'_{\max})	Same as Energy Valve (V'_{\max})
²⁾ also with power control		

Summary

3-way application with EV/EPIV



- Flexible parametrisation – precise control
- Hydronic balancing permanently ensured
- Transparent flow rate and energy monitoring
- Automatic performance and delta T reports from Belimo Cloud
- Perfectly tailored to every use case

All inclusive.

Belimo as a global market leader develops innovative solutions for the controlling of heating, ventilation and air-conditioning systems. Damper actuators, control valves, sensors and meters represent our core business.

Always focusing on customer value, we deliver more than only products. We offer you the complete product range for the regulation and control of HVAC systems from a single source. At the same time, we rely on tested Swiss quality with a five-year warranty. Our worldwide representatives in over 80 countries guarantee short delivery times and comprehensive support through the entire product life. Belimo does indeed include everything.

The "small" Belimo devices have a big impact on comfort, energy efficiency, safety, installation and maintenance.

In short: Small devices, big impact.



5-year warranty



On site around the globe



Complete product range



Tested quality



Short delivery times



Comprehensive support



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