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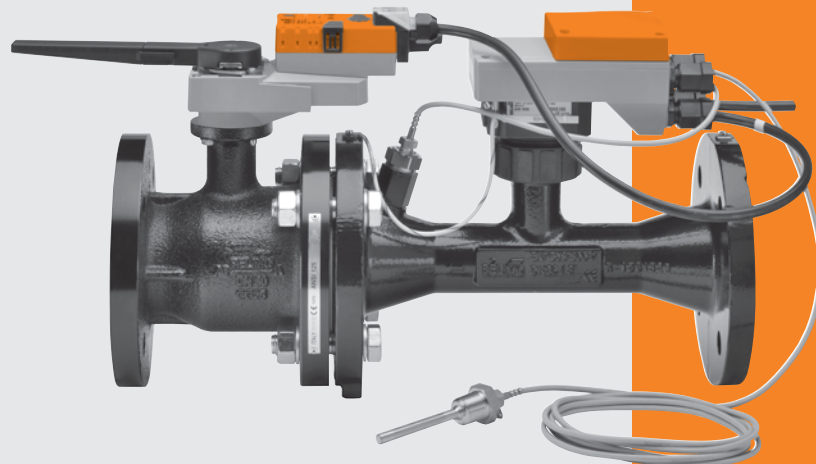
ENERGY VALVES

- Improve coil Delta T by utilizing Belimo Delta T Manager™ mode to match the installed characteristic of the coil.
- Save pump distribution energy by eliminating coil overflow.
- Improve plant performance by improving chiller or boiler efficiency.
- Reduce unwanted chiller or boiler staging by improving plant DT.
- Achieve coil performance that follows the calculated design flow rates exactly.
- Simplified valve sizing and selection, no C_v calculations required.
- Provides data to the BAS, enabling continuous commissioning of coils which allows customized control strategies. Uses diagnostics to achieve green design criteria and continuous commissioning requirements.

Applications

The Energy Valve is a two-way pressure independent valve that optimizes, documents and proves water coil performance. Using the Electronic Pressure Independent Valve (ePIV) platform, the Energy Valve measures the coil energy using an embedded electromagnetic flow sensor, water supply, and return temperature sensors.

The Energy Valve uses the Belimo Delta T Manager algorithm to monitor the coil performance and optimizes the available energy of the coil. The Energy Valve has standard analog signal and feedback wiring and communicates data to the DDC system via BACnet MS/TP, BACnet IP and TCP/IP. The actuator stores all the coil performance data such as Delta T and energy usage. All the coil performance data, stored trends, and control functions can be sent to the BAS via the data network.

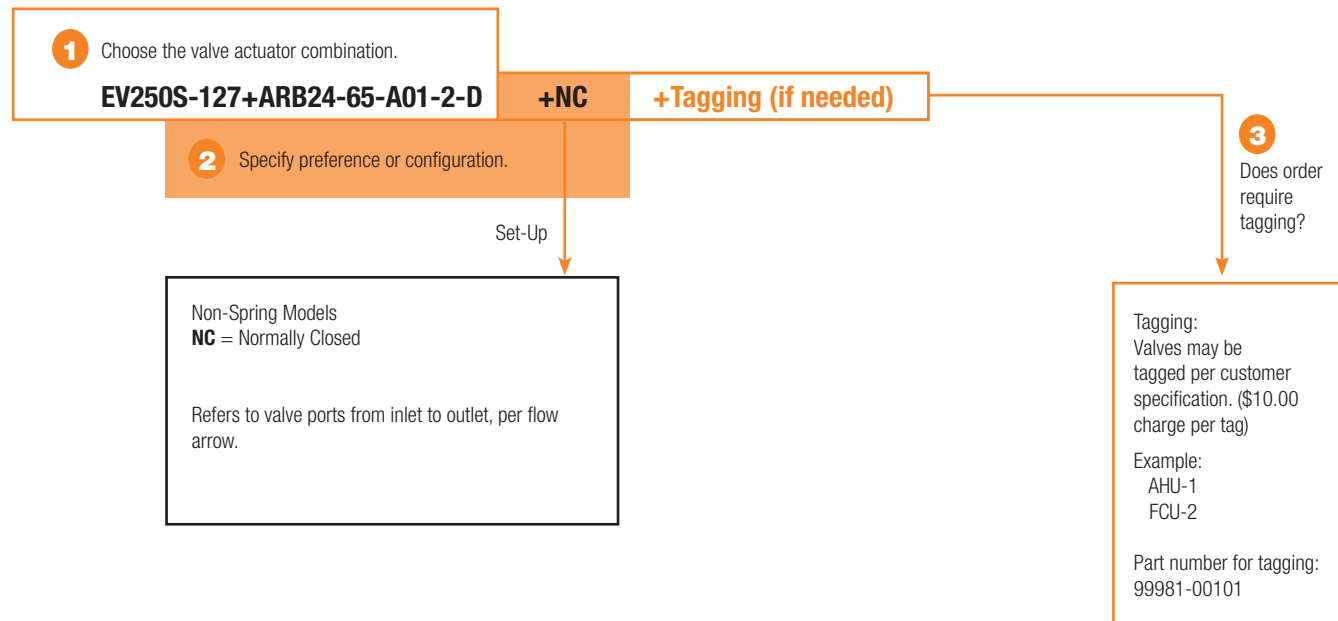


Energy Valve Nomenclature

EV	250S	-127	+ARB	24	-65-A01-2-D
Energy Valve 2-way Flanged	Valve Size 250 = 2½" 300 = 3" 400 = 4" 500 = 5" 600 = 6" S = Stainless Steel Ball and Stem	Flow Rate 127 GPM Refer to page 6-4	Actuator Type Non-Spring Return ARB GRB	Power Supply 24 = 24 VAC/DC	Valve Size 65 mm 80 mm 100 mm 125 mm 150 mm

ENERGY VALVES

Ordering Example



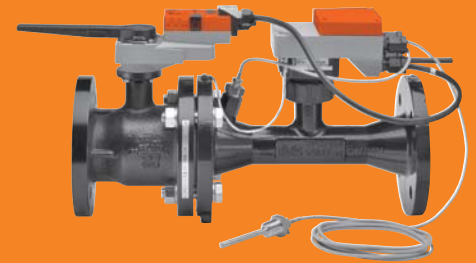
4 Complete Ordering Example: EV250S-127+ARB24-65-A01-2-D

Control Valve Product Range

Energy Valve Product Range EV..

GPM	Valve Nominal Size		Type	Suitable Actuators
	Inches	DN [mm]	Flanged	Non-Spring Return
90	2½	65	EV250S-127	ARB24-65-A01-2-D
95				
105				
110				
115				
121				
127*				
133	3	80	EV300S-180	ARB24-80-A01-2-D
141				
149				
157				
173				
180*				
195	4	100	EV400S-317	GRB24-100-A01-2-D
210				
225				
240				
255				
270				
285				
300				
317*				
335				
353	5	125	EV500S-495	GRB24-125-A01-2-D
371				
389				
407				
425				
443				
461				
479				
495*				
515				
537	6	150	EV600S-713	GRB24-150-A01-2-D
559				
581				
603				
625				
647				
669				
691				
713*				

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Mode of Operation

The Energy Valve controls water flow and/or Delta T while monitoring, trending and storing water temperatures, flow and energy usage of the coil. Information is reported to the BAS using BACnet MSTP, BACnet IP enabling owners to see energy usage.

Product Features

Energy Valve provides precise control of any coil directly saving energy consumption. Its unique data trending and storage capability coupled with BACnet TCP/IP communication make continuous commissioning possible in a cost effective way.

Actuator Specifications

Control type	proportional
Manual override	AR, GR
Electrical connection	3 ft [1m] cable with ½" conduit fitting

Valve Specifications

Service	chilled or hot water, 60% glycol (open loop and steam not allowed)
Flow characteristic	equal percentage
Controllable flow range	75°
Sizes	2½", 3", 4", 5", 6"
End fitting	pattern to mate with ANSI 125 flange

Materials	
Body	
Valve	cast iron - GG25
Sensor housing	ductile iron - GGG50
Ball	stainless steel
Stem	stainless steel
Seats	Teflon® PTFE
Seat O-rings	Viton rubber
Characterizing disc	stainless steel
O-rings	EPDM (lubricated)
Media temp range	23°F to 248°F (-5°C to +120°C)
Body pressure rating	ANSI 125, class B
	°F Psi
	-20° to 150° 200
	200° 180
	225° 180
	250° 175

Close-off pressure	100 psi
Differential pressure range (ΔP)	5 to 50 psid
Leakage	0%
Inlet length required in front of valve	5x DN
Conductivity	min. 20uS/cm
Remote temperature sensor length	32.8 ft [10m]

*V^{nom} = Maximum flow for each valve body size.

SET-UP

		2-WAY VALVE
NON-SPRING RETURN ACTUATOR STAYS IN LAST POSITION	ARB... Series GRB... Series	NC*: Normally Closed- valve will open as voltage increases.

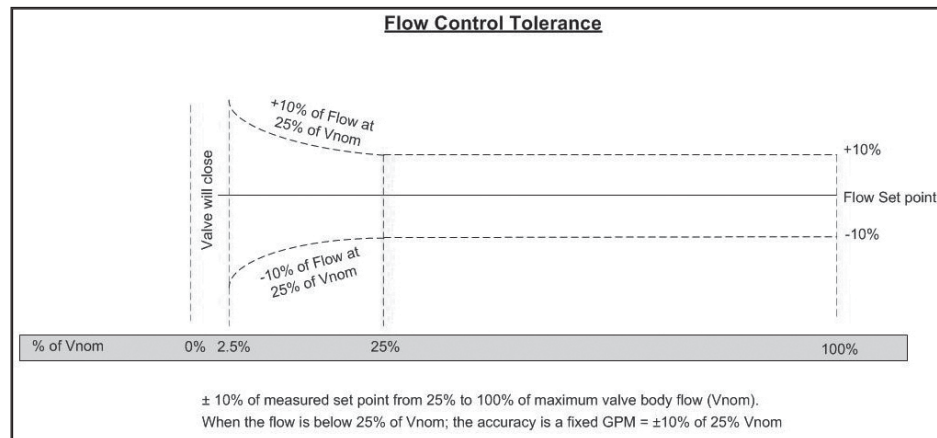
*Feedback signal is always NC

Valve is set up at the factory based on customer needs, see ordering example on section tab.

FLOW TOLERANCE

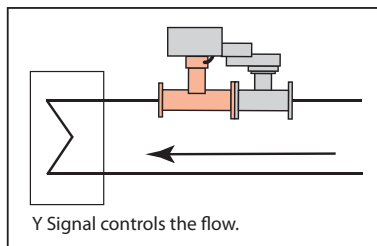
Flow Control Tolerance:
±10% of V'nom

Flow Measurement Tolerance:
±2% of V'nom



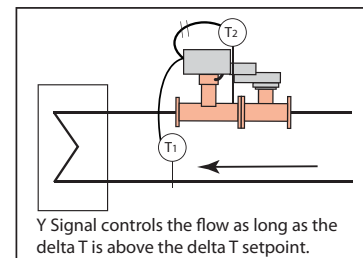
FUNCTIONALITY

The Energy Valve offers different operating modes which can be selected using the web interface.



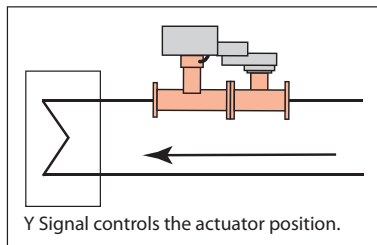
Characterized Position Control

The position of the actuator can be controlled with the Y-Signal. The Energy Valve will then work like a normal pressure dependent valve. The actuator is positioned based on the DDC control signal.



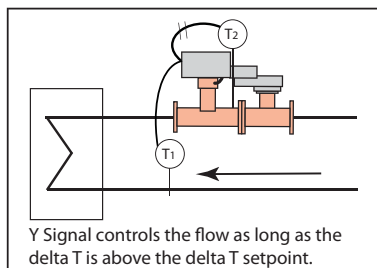
Characterized Position Control + Delta T Manager

The position of the actuator can be controlled with the Y-Signal. The Energy Valve works like a pressure dependent valve. If the measured Delta T is lower than the defined min Delta T, regardless of the control signal Y, the maximum flow will be limited by the Delta T Manager logic.



Pressure Independent Flow Control

The flow is controlled with the Y-Signal. The Energy Valve works like an ePIV. The valve senses any change in flow and modulates the actuator to maintain the flow setpoint based on the DDC control signal.



Pressure Independent Flow + Delta T Manager

The Flow is controlled with the Y- Signal. The Energy Valve works like an ePIV but if the measured Delta T is lower than the defined min. Delta T regardless of the control signal Y the maximum flow will be limited by the Delta T Manager logic.

Powered by Belimo SharedLogic Technology
Powered by Optimum Energy™

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INSTALLATION

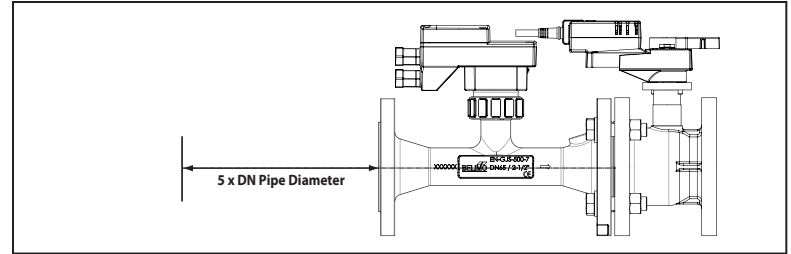
Inlet Length

The Energy Valve requires a section of straight pipe on the valve inlet to guarantee sensor accuracy. This section should be at least 5 pipe diameters long with respect to the size of the valve.

- DN65 5 x DN = 12.5" [317 mm]
- DN80 5 x DN = 15" [381 mm]
- DN100 5 x DN = 20" [508 mm]
- DN125 5 x DN = 25" [635 mm]
- DN150 5 x DN = 30" [762 mm]

Output Length

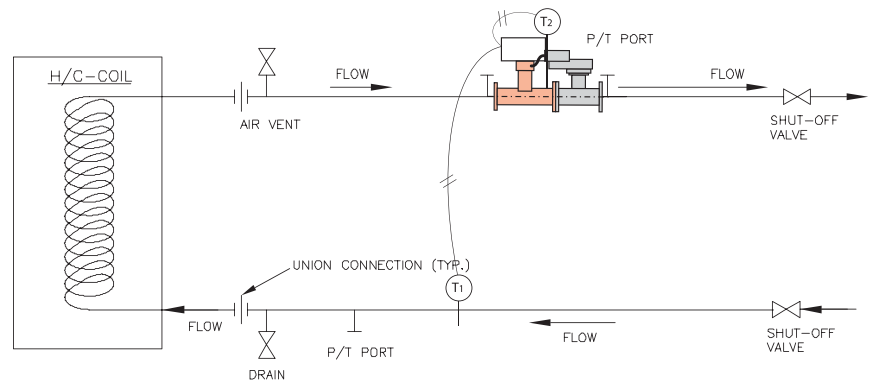
No requirements for outlet length.
Elbows can be installed directly after the valve.



PIPING

The Energy Valve is recommended to be installed on the return side of the coil. This diagram is for typical applications only. Consult engineering specification and drawings for particular circumstances. Install provided thermal well on the other side of the coil (T1). P/T ports are recommended on either side of the valve and the supply side of the heat transfer device to allow for pressure/flow measurement/calculation.

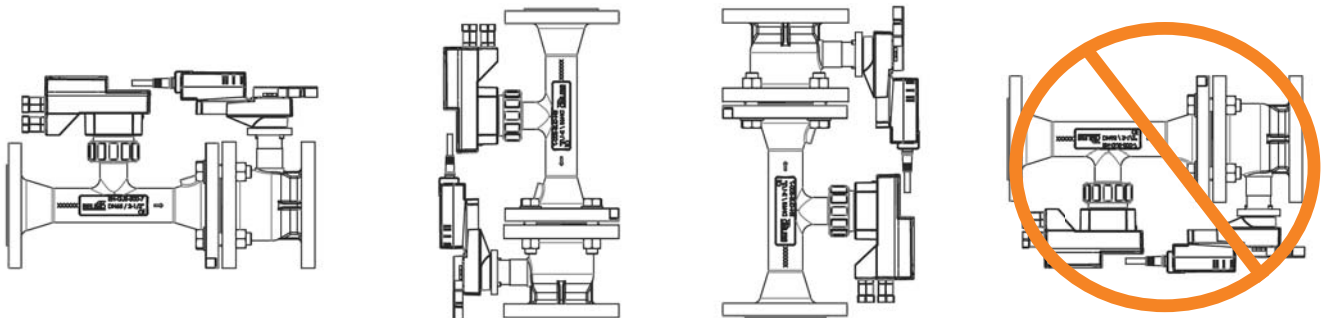
It is not necessary to install one strainer per unit. Belimo recommends installing one strainer per system. If the system has multiple branches, it is recommended to install one strainer per branch.



ORIENTATION

Energy Valves shall be installed with flow in the direction of the arrow on the valve body.

The valve assembly can be installed in a vertical or horizontal arrangement, as long as the actuator is positioned to avoid condensation from dripping onto the actuator.



Energy Valves Non-Spring Return Actuators

2-way Valve with Stainless Steel Ball and Stem, Flanged Ends



Valve Specifications

Service	chilled or hot water, 60% glycol (open loop and steam not allowed)
Flow characteristic	equal percentage / linear
Controllable flow range	75°
Sizes	2½", 3", 4", 5", 6"
End fitting	pattern to mate with ANSI 125 flange
Materials:	
Body	
Valve	cast iron - GG25
Sensor housing	ductile iron - GGG50
Ball	stainless steel
Stem	stainless steel
Seats	Teflon® PTFE
Characterizing disc	stainless steel
O-rings	EPDM (lubricated)
Body pressure rating	according to ANSI 125, standard class B
Media temp. range	23°F to 248°F (-5°C to +120°C)
Conductivity	min. 20uS/cm
Differential pressure range (ΔP)	5 to 50 psid
Leakage	0%
Inlet length required in front of valve	5x DN
Power supply for the Flow sensor	sensor is powered by the actuator
Remote temperature sensor length	32.8 ft [10m]





Non-Spring Return Actuators



ACTUATOR PART #	ARB24-65-A01-2-D	ARB24-80-A01-2-D	GRB24-100-A01-2-D	GRB24-125-A01-2-D	GRB24-150-A01-2-D	
Control type	Proportional	Proportional	Proportional	Proportional	Proportional	
Manual override	•	•	•	•	•	
Running time	90 seconds	90 seconds	90 seconds	90 seconds	90 seconds	
Noise level	<45 dB(A)	<45 dB(A)	<45 dB(A)	<45 dB(A)	<45 dB(A)	
ELECTRICAL CONNECTION:						
3 ft cable, ½" conduit fitting	•	•	•	•	•	
Valve Nominal Size						
EPIV Model #	Flow Rate GPM	Flow Rate Liter/Min	Inches	DN mm	Close-off psi	
EV250S-127	127	480	2½	65	100	\$8,017.00
EV300S-180	180	680	3	80	100	\$9,891.00
EV400S-317	317	1200	4	100	100	\$11,363.00
EV500S-495	495	1875	5	125	100	\$14,036.00
EV600S-713	713	2700	6	150	100	\$18,046.00

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CABLES	Non-Spring Return Actuator		List Price
	GRB	ARB	
EV-RT-15 Remote temperature sensor 4.9 ft [1.5 meters]	•	•	\$513.00
EV-RT-30 Remote temperature sensor 9.8 ft [3 meters]	•	•	\$513.00
EV-RT-50 Remote temperature sensor 16.4 ft [5 meters]	•	•	\$513.00
EV-RT-100 Remote temperature sensor 32.8 ft [10 meters]	•	•	\$513.00
 ZTH-2 Handheld interface module that allows field programming of MFT actuators. Order PN. 99981-00450	<i>Available for MFT Actuators</i>		\$596.00
WEATHERSHEILDS			
ZS-EPIV-EV-80 Sizes DN65 and DN80		•	\$1,051.00
ZS-EPIV-EV-150 Sizes DN100, DN125 and DN150	•		\$1,051.00
AUXILIARY SWITCHES & POTENTIOMETERS			
 S1A Auxiliary switch - 1x SPDT, 3A (0.5A inductive) @ 250 VAC	•	•	\$84.00
S2A Auxiliary switch - 2x SPDT, 3A (0.5A inductive) @ 250 VAC	•	•	\$125.00

