

DIRECT NEWS

SPECIAL EDITION

Product News and Technical Information for HVAC Professionals

> Characterized Control Valve (CCV)

CCV Overview

Features and Benefits of a Characterized Control Valve

CCV Accessories



**MAINTENANCE FREE
AND NO PACKING
REQUIRED**

Control, Economy, and Reliability in One Package

- Equal percentage flow characteristic yields a linear heat output.
- Cv values equal to globe valves of the same size requiring no additional system design.
- Valve bodies available with stainless steel trim or chrome plated brass trim depending upon application and cost involved.
- Higher close-off up to 200 psi.
- 3-way assemblies can be piped for mixing or diverting applications.



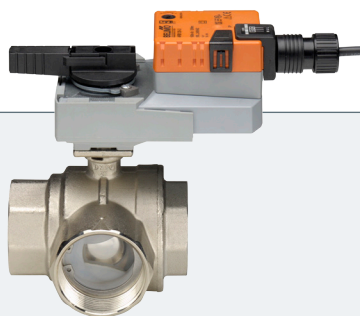


Large CCV increased temperature ratings and higher differential pressure provides ideal replacement solutions.

- Stainless steel characterizing disc stands up to the increase 50 psi differential pressure
- Resistance to piping stresses offering excellent stability of control
- Ease of installation
- Increase media temperature from 212°F to 250°F
- No sudden change in inlet flow upon opening

The valves can also be used in air handling units on heating or cooling coils, and cooling towers. The valves are available with the AF, GK, and AR actuator series.

The Characterized Control Valve (CCV) marks a true advancement in control valves. It combines the high close-off capabilities of a ball valve with a specialized disc that ensures an equal percentage flow characteristic. Since its release in 1999, over 2 million CCVs have been sold in hydronic systems. The CCV offers a comprehensive Cv range for various applications such as air handlers, heating and cooling coils, fan coil units, unit ventilators and VAV re-heat coils.



Coordinated Motorized Operation

The optimum functionality of the Belimo CCV is assured by properly coordinating its actuation with Multi-Function Technology (MFT). Specially developed rotary actuators provide the necessary precision for modulating, floating-point, and on/off methods of control.

Optimized for Control

CCV with MFT technologies has produced a range of valuable features which surpass the capabilities of globe valves:

- An equal-percentage valve characteristic
- Unlike a globe valve, no sudden change in inlet flow upon opening
- Excellent stability of control
- Cv values comparable with those of globe valves of the same size or larger
- Higher close-off offering a 100% tight shut off on two-way valves
- Three-way valve can be piped in mixing or diverting application

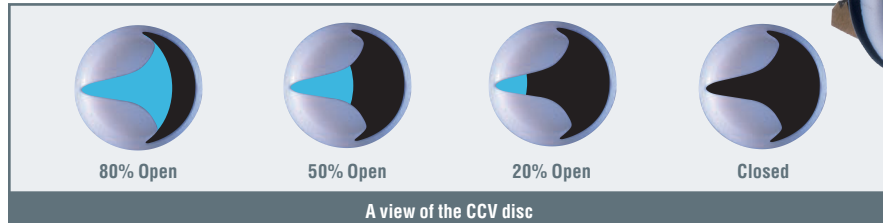
Valve Specifications

B6 Series	Two-way Flanged 2½" to 6"
Service	chilled or hot water, 60% glycol
Flow characteristic	A-port equal percentage
Action	max 90° rotation
Sizes	2½", 3", 4", 5", 6"
Type of end fitting	ANSI 125 flange pattern
Materials	
Body	cast iron (painted)
Ball	stainless steel
Stem	stainless steel
Seats	PTFE
Characterizing disc	stainless steel
Packing	2 EPDM O-rings, lubricated
Pressure rating	400 psi
Media temp range	0°F to 250°F [-18°C to +120°C]
Close-off pressure	100 psi
Maximum differential pressure (DP)	50 psi
Leakage	0% for A to AB

THE DIFFERENCE IS IN THE DETAILS

Achieve Better Control and Cut Cost

A traditional full port ball valve has a large flow coefficient (Cv) in relation to its size. This means that the valve will supply the full required flow when it is only slightly open, thereby utilizing just a small portion of its operating range. Stable control is difficult to achieve - a slight change in valve position results in a large change in the heating or cooling output of the controlled device.

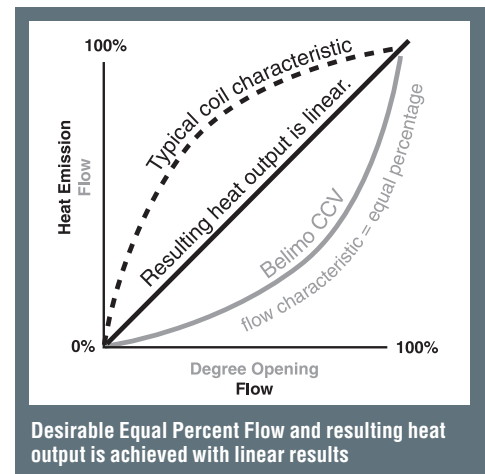
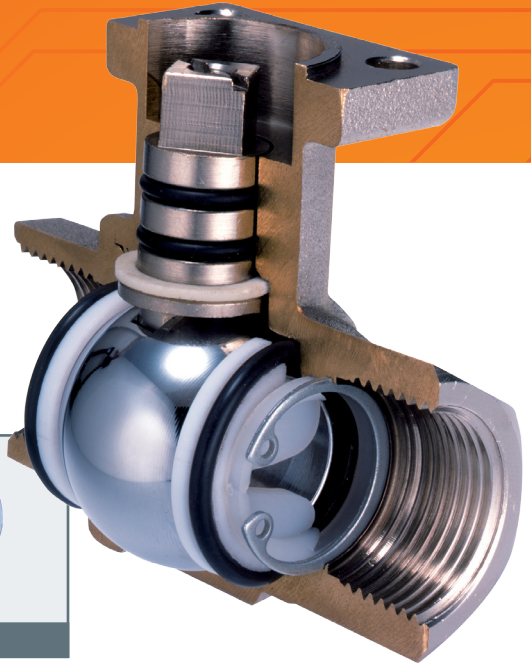


Belimo Characterized Control Valves (CCV) feature a disc fitted inside the inlet port. One side of the disc is concave and matches the surface of the ball. Flow is controlled by the opening in the ball and by a specially designed opening in the disc. This reduces the flow coefficient (Cv). The valve increases flow slowly, especially when it begins to open. Therefore, equal percentage flow characteristic is provided and the resulting heat output is linear.

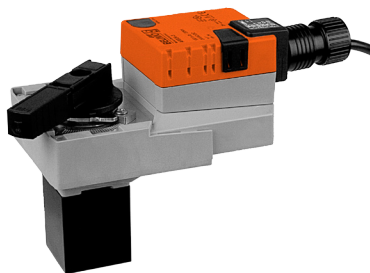
Better valve control prevents "hunting" of the control loop in which the system is constantly adjusting itself to maintain set point. When the operating conditions of the actuator are improved and the full operating range is used, system life span is increased, and energy consumption is reduced.

Valve Specifications

	B2 Series Two-way ½" to 3"	B3 Series Three-way Mixing/Diverting ½" to 2"
Service	chilled or hot water, 60% glycol	
Flow characteristic	A-port equal percentage B-port modified for constant common port flow	
Action	max 90° rotation	
Sizes	½" - 3"	
Type of end fitting	NPT female ends	
Materials		
Body	forged brass, nickel plated	
Ball	stainless steel [BXXXX - chrome plated brass]	
Stem	stainless steel [BXXXX - nickel plated brass]	
Seats	PTFE	
Characterizing disc	TEFZEL®	
Packing	2 EPDM O-rings, lubricated	
Pressure rating		
600 psi	½" - 1¼"	½" - 1"
400 psi	1¼" - 3"	1¼" - 3"
Media temp range	0°F to 212°F [-18°C to +100°C]	
Close-off pressure		
200 psi	½" - 2"	½" - 2"
100 psi	2" - 3"	
Maximum differential pressure (DP)	30 psi	
Leakage	0% for A to AB < 2.0% for B to AB	
Cv rating	A port: see product chart above for values B port: 70% of A to AB Cv	



Valve Accessories



CCV-EXT-Kit, CCV Valve Neck Extension Kit

The CCV-EXT-KIT can be used with most CCV's* and PICCV in order to achieve a large clearance over the pipe. The Extension Kit will provide an additional 2" of space between the top of the valve and the base of the actuator. bracket is made from aluminum and is not intended as a thermal block.— Extension kit will be automatically assembled with any flanged CCV assembly.



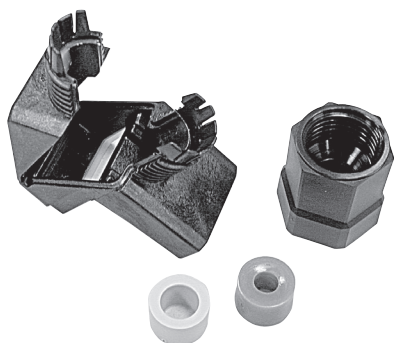
ZS-CCV, New Characterized Control Valve Weather Shield

The ZS-CCV... weather shield provides moderate protection for valves which are mounted outdoors. This product is designed as a water tight enclosure. The housing allows easy mounting over the actuator, while allowing easy viewing of the actuator in operation. Weather shield for to provide protection for actuators in outdoor applications.



NEMA 4X Housing

NEMA 4X housing provides complete, unmatched protection in extreme environments. Weather-tight and corrosion resistant for the harshest indoor and outdoor conditions UV protected housing will resist cracking and discoloration Independently tested and listed by North American and European agencies

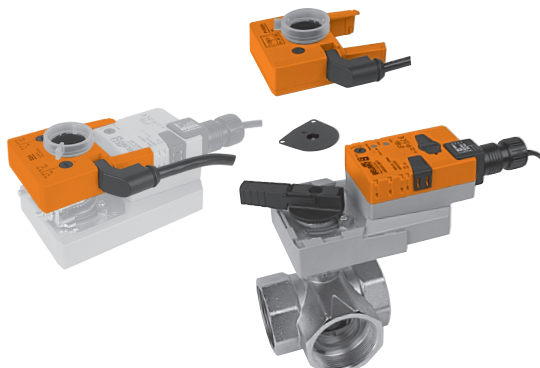


Protective Terminal Cover

Belimo non-spring return actuators with terminal strips are can be converted from NEMA 1/IP20 to NEMA 2/IP54 using the protective terminal cover ZS-T.

The ZS-T terminal cover accessory consists of:

- Terminal Cover
- Conduit Fitting
- Rubber Seal for Wire Diameter 4-6
- Rubber Seal for Wire Diameter 6-8



Auxiliary Switches S1A, S2A

The S1A and S2A auxiliary switches are used to indicate when a desired position of a valve is reached or to interface additional controls for a specific control sequence.

Feedback Potentiometer P...A

The P...A feedback potentiometers are used with LR and AR actuators to provide a resistive signal which varies with valve position. The P...A units are applied with commercial proportional temperature controllers to provide feedback of the valve position, or with electric or electronic meters to provide position indication. The signal can also be used as a positioner for parallel operation of multiple actuators.

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