



**Dynamic Balancing Control Valve
VCB Series**

● PRODUCTS OVERVIEW

As a new type of product that controls the temperature of FCU in heating, ventilation and air-conditioning systems, honeywell dynamic balancing control valves integrate the functions of dynamic balancing and electrical switches in one body with great features including compact structure, high accuracy and stable operation.

The valve consists of VC series electric actuator and VCB series dynamic balancing control valve.

● APPLICATION

Honeywell dynamic balancing control valves are widely used in HVAC FCU systems and other systems that require zoning-control.

● FUNCTIONS

- Electrical switch: Turn on or off the control valve disc in accordance to signals from room thermostat.
- Dynamic balancing: When the valve is at open position, it dynamically balances the system pressure change within the working differential pressure range, maintaining a constant flowrate regardless of pressure fluctuation influences.
- Constantly set flowrate at design flowrate: Flowrate can be set prior to shipment based on design flowrate of terminal equipment. The flowrate maintains at a level that meets the design flowrate requirement for terminal equipment.



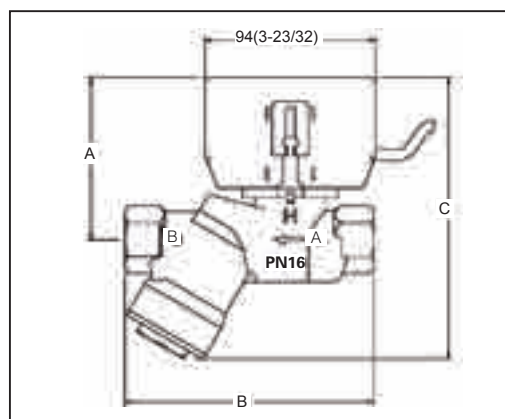
● SPECIFICATIONS

Size range:	DN15 ~ DN25
Pressure rating:	Static - 240 psi (16 Bars) Burst - 1500 psi (100 Bars)
Flow Control Precision:	± 5%
Operational ΔP:	Max. 60 psi (4 Bars)
Materials:	Valve Body / Bronze Flow Cartridge / Brass Chrome plated flow rate 0.28 to 2.3 m ³ /h Control Insert / Ryton™ (polyphenylene sulphide) & Noryl™ (polyphenylene oxide) O-ring seals of EPDM rubber stainless steel stem Spring / Stainless steel Seal ring / EPDM
Leakage:	Less than 0.2%
Media:	Chilled and hot water
Media temperature:	0 ~ 95°C

Actuator Voltage:	220 ~ 240V/50Hz (60Hz)
Power consumption:	6W Max. nominal Voltage (during valve position change)
Nominal timing:	Valve opens in 6 secs @ 60Hz (20% longer @ 50 Hz)
End switch rating:	2.2A inductive from 5 to 110Vac 1.0A inductive above 110 to 277Vac
Electrical termination:	two modality (1) With integral 1m lead cable (2) Molex™ (header # 39 - 30 - 1060) Require mating connector
Operating ambient temperature:	0 ~ 65°C
Shipping & storage temperature:	- 40 ~ 65°C
Atmosphere:	non - corrosive non - explosive

● FEATURES

- Combine dynamic balancing and electric switch function in one body.
- Motor only operates for few seconds each cycle, power consumption is minimal and motor life greatly extended.
- Twist lock mount for actuator head. Actuator can be installed after plumbing work has been completed to prevent damage.
- In this balanced valve design, the control insert moves up and down, across water flow. The actuator provides sinusoidal piston travel action for soft shut-off and open to eliminate water hammer in most applications.



● VC Series Actuator Selection

Model	Voltage	Control type	Electrical Termination	Application
VC4013	200-240VAC/50(60)Hz	"2 way + COM" SPST output	integral 1 meter lead wire	2-Pipe/4-Pipe Fan-coil
VC6013	200-240VAC/50(60)Hz	3 wire SPDT output	integral 1 meter lead wire	2-Pipe Fan-coil

● VCB Series Control Valve Selection

OS#	Size	Flowrate (m³/h)	Differential Pressure (KPa)	OS#	Size	Flowrate (m³/h)	Differential Pressure (KPa)
VCB15BPS01	DN15 BSPP	0.28	22-180	VCB20BPL02	DN20 BSPP	0.76	22-180
VCB15BPS02		0.36		VCB20BPL03		0.86	
VCB15BPS03		0.43		VCB20BPL04		0.94	
VCB15BPS04		0.50		VCB20BPL05		1.12	
VCB15BPS05		0.57		VCB20BPL06		1.33	
VCB15BPL01		0.65		VCB20BPL07		1.51	
VCB15BPL02		0.76		VCB20BPL08		1.69	
VCB15BPL03		0.86		VCB20BPM08		1.76	
VCB15BPL04		0.94		VCB20BPM09		1.98	30-220
VCB15BPL05		1.12		VCB20BPM10		2.20	
VCB20BPS01	DN20 BSPP	0.28	22-180	VCB20BPH10		2.30	40-320
VCB20BPS02		0.36		VCB25BPL08	DN25 BSPP	1.69	22-180
VCB20BPS03		0.43		VCB25BPM08		1.76	30-220
VCB20BPS04		0.50		VCB25BPM09		1.98	
VCB20BPS05		0.57		VCB25BPM10		2.20	
VCB20BPL01		0.65		VCB25BPH10		2.30	40-320

● Dimension and Weight

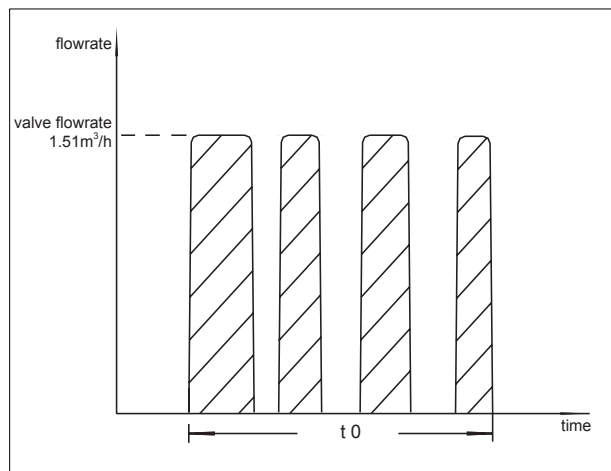
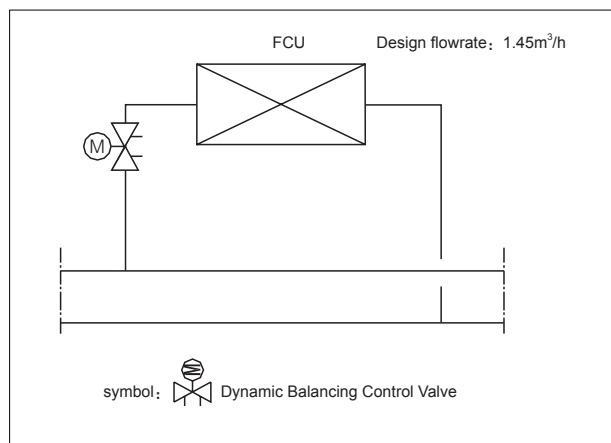
Size	A (mm)	B (mm)	C (mm)	Weight (kg)
DN15 BSPP	89	137	154	1.15
DN20 BSPP	89	137	154	1.18
DN25 BSPP	89	147	154	1.28

● Illustration: Choose the right type

As shown in the drawing on the right, dynamic balancing control valves are used on the terminal pipeline of a two-pipe FCU whose design flowrate is $1.45\text{m}^3/\text{h}$. The size of FCU connection pipe is DN20. In this case, which type of dynamic balancing control valve should we choose?

● Steps to Follow

- (1) According to the requirements for two-pipe system and cable connection, choose VC series actuator VC6013 whose parameters are as follows: Voltage 200-240VAC/50(60)Hz, Power consumption Max6W, Three line SPDT output, 1 meter connection cable.
- (2) A according to the design flowrate and pipe size, choose VCB series control valve VCB20BPL07 whose parameters are as follows: size DN20BSPP, flowrate $1.51\text{m}^3/\text{h}$, working differential pressure range 22-180Kpa, Operational ΔP 4Bar.
- (3) The dynamic balancing control valve we chose consists of VC series actuator VC6013 and VCB series control valve VCB20BPL07.
- (4) Figure shows the actual flowrate distribution when such type of valves are used. And it can be seen that the flowrate is approximately $1.51\text{m}^3/\text{h}$ when the valves are on, which meet the FCU's requirements.



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