

Pressure Independent Control Valves



The power behind **your mission**



Pressure Independent Control Valves

VPMF Series



DN15...32, PN25

The VPMF series Pressure Independent Control Valve is the combination of a differential pressure regulator and a regulating valve for flow adjustment. It automatically limits the water flow rate, irrespective of pressure and allows the flow to be modulated to match the load. This leads to a considerable reduction in temperature variations and adjustment movements and the extended life of moving devices connected to it.

The VPMF valve offers complete adjustment flexibility. In combination with Johnson Controls actuators they can be

set to a specific flow rate value and allow precise modulating control. Once the maximum flow setting is pre-set using the graduated scale, the flow will be modulated by means of the control valve and actuator independently of the system pressure. The valve always guarantees a suitable flow rate, therefore avoiding high energy consumption.

Since flow rate is the only parameter to be considered, choosing a suitable valve is fast and easy.

Since the VPMF valve performs the functions of two valves (balancing

and adjustment), installation costs are considerably reduced.

Since it is not necessary to adjust the valve after its installation, the valve can work immediately after it has been assembled and it eliminates system adjustment cost.

FEATURES

- Specific devices are not necessary
- Wide range of operating differential pressure
- Compact design that allows installation in small spaces such as fan-coils or narrow supply spaces
- Simple flow rate adjustment
- Dirty resistance allows long life characteristic
- Pressure ports selectable



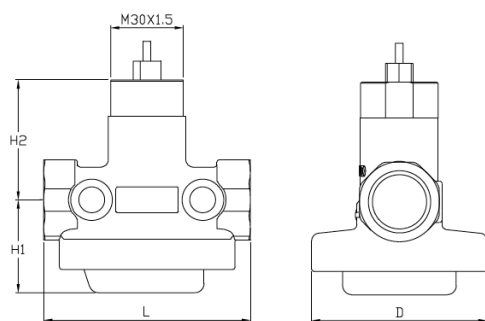
ORDERING INFORMATION

VP	M	F	7	020	P	-C
VP	Balancing valve					
	M	Type: mechanical pressure independent control				
		F	Application: Fan Coil Unit			
			7	Pressure Rating: PN25		
				020	Valve Size: 015 = DN15, 020 = DN20, 025 = DN25, 032 = DN32	
					without pressure port	
				P	with pressure port	
					-C	Place of origin: C = Made in China

SELECTION TABLE

Product Number	Size	Flow rate max. (m ³ /h)	Stroke (mm)	Start-up max. (kPa)	ΔP max. (kPa)	Pressure Ports
VPMF7015-C	DN15	0.9	4	35	500	No
VPMF7020-C	DN20	1.3	4	35	500	No
VPMF7025-C	DN25	2.0	4	35	500	No
VPMF7032-C	DN32	3.5	4	40	500	No
VPMF7015P-C	DN15	0.9	4	35	500	Yes
VPMF7020P-C	DN20	1.3	4	35	500	Yes
VPMF7025P-C	DN25	2.0	4	35	500	Yes
VPMF7032P-C	DN32	3.5	4	40	500	Yes

DIMENSIONS



DN	L(mm)	D(mm)	H1(mm)	H2(mm)	Weight(kg)
15	74	62	34	46.5	0.6
20	80	68	36	46.5	0.8
25	85	69	42.5	46.5	0.9
32	100	81	53.5	46.5	0.9

Note: * Weight data is without pressure port fittings (≈50g).

TECHNICAL SPECIFICATIONS

- Pressure Rating: PN25
 - Fluid Type: Regulation of hot / chilled water with glycol up to max. 50% vol. in HVAC system
 - Fluid Temperature: -10 °C to 120 °C
 - Flow Rate Accuracy: ± 5%
- Leakage: ≤0.01% (ANSI Class IV IEC 60534-4)
 - Pipe Connection: ISO7-1 Rp
 - Actuator Connection: M30 x 1.5
 - Stem Movement: PDTC (Push Down To Close)
- Storage temperature: -10 to 60 °C
 - Materials:
 - Valve body: Brass (Hpb59-1), nickel-plated
 - Stem: SS304
 - Diaphragm: Enhanced EPDM

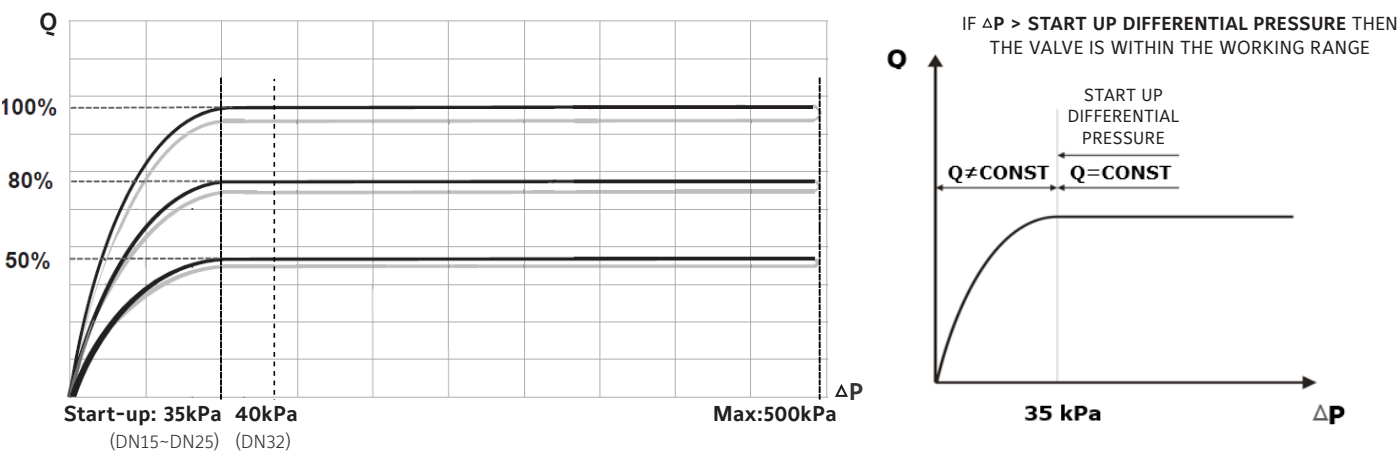


Fig 1: Dynamic Characteristic Curves

Note:

Choose the smaller value of max. DP and close-off pressure in table “ACTUATOR COMPATIBILITY” as upper limit of working range after actuator is selected.

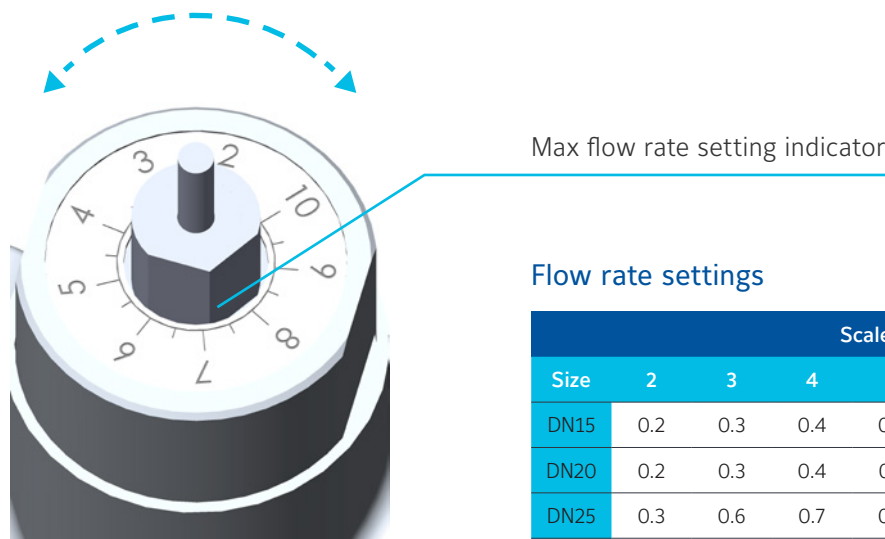


Fig 2: Max flow rate adjustment

Flow rate settings

Scale – Flow (m³/h)									
Size	2	3	4	5	6	7	8	9	10
DN15	0.2	0.3	0.4	0.4	0.5	0.6	0.7	0.8	0.9
DN20	0.2	0.3	0.4	0.5	0.6	0.7	0.8	1.0	1.3
DN25	0.3	0.6	0.7	0.8	1.0	1.2	1.4	1.6	2.0
DN32	1.2	1.6	1.9	2.3	2.7	2.9	3.2	3.3	3.5



ACTUATOR COMPATIBILITY

Valve Size	Actuator Force	Close-off Pressure max.	Actuator Force	Close-off Pressure max.	Actuator Force	Close-off Pressure max.
DN15	100N	400 kPa	120N	500 kPa	160N	500 kPa
DN20	100N	400 kPa	120N	500 kPa	160N	500 kPa
DN25	100N	400 kPa	120N	500 kPa	160N	500 kPa
DN32	100N	250 kPa	120N	300 kPa	160N	400 kPa

FOLLOWING ACTUATORS ARE AVAILABLE

THERMAL ACTUATORS

Models	VA-7088-23	VA-7088-21
Type of Control	ON/OFF	
Action	Stem retracts when energized	
Supply Voltage (50/60 Hz)	230 VAC $\pm$ 10%	24 VAC/VDC + 20%...-10%
Power Consumption	1 W	
Switching Current for Micro Switch	5A resistive load 1A inductive load	3A resistive load 1A inductive load
Nominal Force	100N + 5%	
Nominal Stroke	5 mm	
Running Time	~ 4 min	~ 4.5 min
Electrical Connection	1.5m PVC cable, wire sections 2 x 0.75 mm ²	
IP Rating	IP54 (EN60529)	
Ambient Operating Condition	0°C to 60°C, non-condensing	
Ambient Storage Condition	-25°C to 60°C, non-condensing	
Connection to Valves	M30 x 1.5	
Weight (excl. packaging)	0.1 Kg	
CE Compliance	Johnson Controls declares that this product is in compliance with the essential requirements and other relevant provisions of:	
	EMC Directive and Low Voltage Directive	EMC Directive

Note: See "VA-7088" Product Bulletin for more information of actuators.

WIRING DIAGRAM

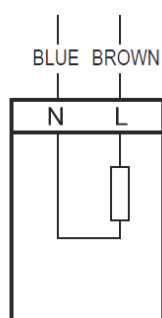


Fig 3: VA7088-2x Wiring Diagram

DIMENSIONS

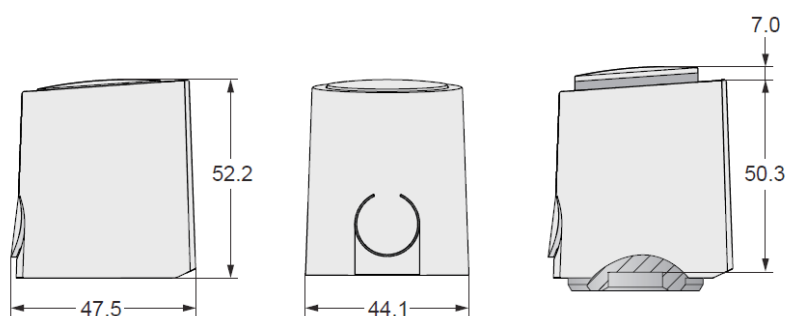


Fig 4: VA7088-2x Dimensions

MOTORIZED ACTUATORS

Models	VA-7481-0003		VA-7483-8201
Type of Control	Floating or PAT		Proportional
Action	Input	Direction	When the Input signal Increases, the actuator stem extends; When the Input signal Decreases, the actuator stem retracts;
	Brown wire energised	↓ Actuator stem extends	
	Orange wire energised	↑ Actuator stem retracts	
Supply Voltage (50/60 Hz)	230 VAC ± 10%		24 VAC/VDC ± 15%
Power Consumption	2.2 W		1.5 W
Input Signal	---		0(2)...10VDC
Feedback Signal	---		0(2)...10 VDC
Nominal Force	120 N		160N
Max. Mechanical Stroke	6.3 mm		6.3 mm
Factory Stoke Config.	---		Auto stroke detection
Running Time	8 sec/mm		8 sec/mm
Operating Status Indications	LED		
Electrical Connection	1.5m PVC cable, wire sections 3 x 0.75 mm ²		2m PVC cable, wire sections 4 x 0.35 mm ²
IP Rating	IP43 (EN60529)		IP54 (EN60529)
Ambient Operating Condition	0°C to 50°C, 10 to 90 RH%		
Ambient Storage Condition	-20°C to 65°C, 5 to 95 RH%		
Connection to Valve	M30 x 1.5		
Weight	0.2 Kg		
CE Compliance	Johnson Controls declares that this product is in compliance with the essential requirements and other relevant provisions of the EMC Directive and Low Voltage Directive		

Note: See "VA-748x" Product Bulletin for more information of actuators.

WIRING DIAGRAM

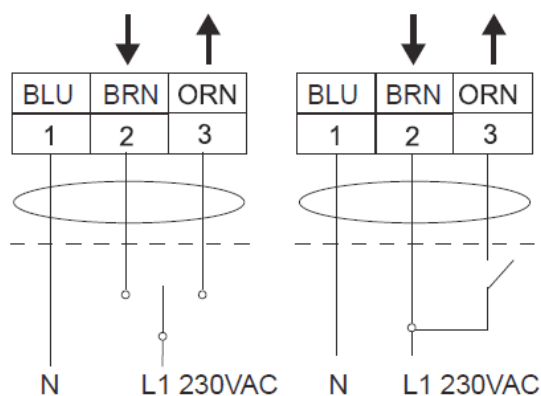


Fig 5: 230VAC Floating Model

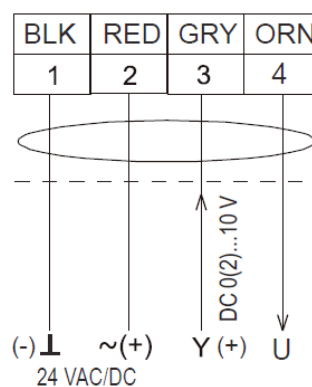


Fig 6: 24 VAC /VDC Proportional Model with Feedback



DIMENSIONS

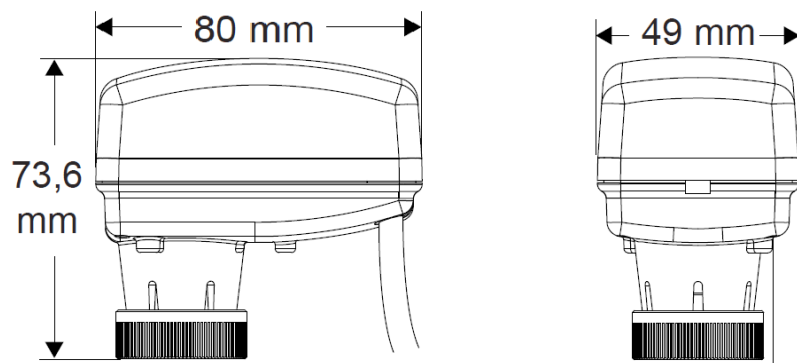
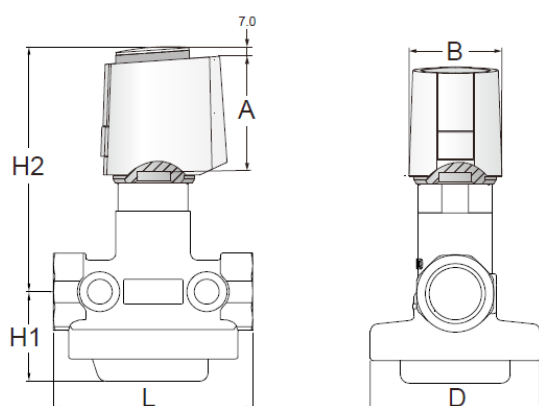


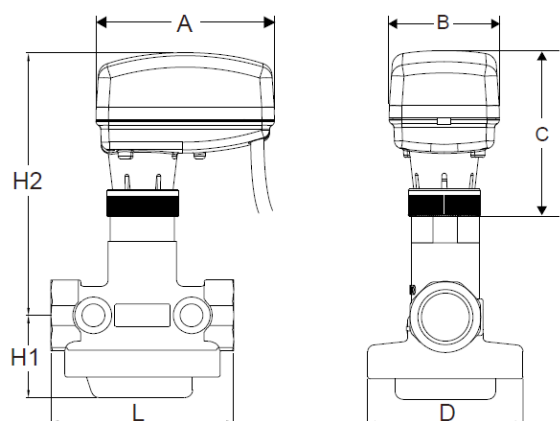
Fig 7: VA748x Dimensions

ASSEMBLY DIMENSIONS (Valve with thermal actuator)



DN	L (mm)	D (mm)	H1 (mm)	H2 (mm)	A (mm)	B (mm)
15	74	62	34	104	53	44.3
20	80	68	36	104	53	44.3
25	85	69	42.5	104	53	44.3
32	100	81	53.5	104	53	44.3

ASSEMBLY DIMENSIONS (Valve with motorized actuator)



DN	L (mm)	D (mm)	H1 (mm)	H2 (mm)	A (mm)	B (mm)	C (mm)
15	74	62	34	115	80	49	73.6
20	80	68	36	115	80	49	73.6
25	85	69	42.5	115	80	49	73.6
32	100	81	53.5	115	80	49	73.6

About Johnson Controls:

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