

VP140 1/2 Inch to 2 Inch (DN15-DN50) Pressure Independent Control Valve

Description

VP140 Series Pressure Independent Valves (PICVs) are designed to regulate the flow of hot or chilled water and 50% glycol solutions in response to the demand of a controller in HVAC systems. The pressure independent valves eliminate the need for separate balancing valves. These valves are available in sizes 1/2 in. through 2 in. (DN15 through DN50) with factory-mounted Johnson Controls® Non-Spring Return and Spring Return Electric Actuators for floating or proportional control or valve only configuration.

Refer to the *VP140 1/2 Inch to 2 Inch (DN15-DN50) Pressure Independent Control Valve Product Bulletin, (LIT-12012610)* for important product application information.

Repair Information

If the VP140 Series Pressure Independent Control Valve fails to operate within its specifications, replace the unit. For a replacement, contact the nearest Johnson Controls® representative.

VP140 Series Pressure Independent Controller Valve



Features and Benefits

Features	Benefits
Availability of both axial (globe) and rotary (ball) valve styles	Application flexibility
No Cv calculation	Simplifies valve selection
Automatic system balancing	Prevents overflow or underflow to maximize system performance.
Combined control and Balancing valve	Reduces installation time and cost.
Close-off pressure rating - Axial valve 100 psi (700 kPa) and Rotary valve 200 psi (1,400 kPa)	Provides tight shutoff in high pressure systems.
Wide range of operating differential pressure rating	Allows use of valve in range of systems.
Availability of factory-mounted Electric Actuators	Reduces installation time and cost.
American National Standards Institute (ANSI) Class IV Leakage and ±5% Flow Accuracy	Reduces energy costs and provides superior room comfort.



This product is made of copper alloy, which contains lead. The product is therefore not to be used on drinking water.



This product can expose you to chemicals including lead, which is known to the State of California to cause cancer, birth defects, or other reproductive harm. For more information, go to www.P65Warnings.ca.gov.

WARNING: BRASS MAY CONTAIN LEAD

To fulfill our obligations towards Article 33, in accordance to the European REACH Regulation No 1907/2006 EC, we hereby inform you that this article contains the following Substances of Very High Concern mentioned on the Candidate list:

- Lead

VP140 1/2 Inch to 2 Inch (DN15-DN50) Pressure Independent Control Valve (Continued)

Ordering Information

Table 1: Axial (Globe) PICVs and Actuator Combinations

Valve Code Number	Size, in.	Maximum GPM	Close off pressure	24 VAC/DC Non-Spring Return Proportional DC 0 (2) to 10 V or 0 (4) to 20 mA VA-7482-8002-RA
VP140AAA	1/2	0.66	100 psi (700 kPa)	VP140AAA+778GGA
VP140AAE		2.6		VP140AAE+778GGA
VP140AAG		3.4		VP140AAG+778GGA
VP140BAJ	3/4	4.4		VP140BAJ+778GGA
VP140BAN		6.6		VP140BAN+778GGA
VP140BAU		9.7		VP140BAU+778GGA
VP140CAU	1	9.7		VP140CAU+778GGA
VP140CAW		11.9		VP140CAW+778GGA
VP140DAW	1-1/4	11.9		VP140DAW+778GGA
VP140DAY		13.2		VP140DAY+778GGA

Table 2: Brass Body Ball PICVs & NSR Actuator Combinations

Valve Code Number	Size, in.	Maximum GPM	Close off pressure	24 VAC	
				Non-Spring Return	
				Floating	Proportional DC 0 (2) to 10 V or 0 (4) to 20 mA
				VA9104-AGA-2S	VA9104-GGA-2S
VP140LCA	1/2	1.6	200 psi (1,400 kPa)	VP140LCA+9A4AGA	VP140LCA+9A4GGA
VP140LCB		3.0		VP140LCB+9A4AGA	VP140LCB+9A4GGA
VP140LAJ		4.4		VP140LAJ+9A4AGA	VP140LAJ+9A4GGA
VP140MAG	3/4	3.4		VP140MAG+9A4AGA	VP140MAG+9A4GGA
VP140MCC		5.0		VP140MCC+9A4AGA	VP140MCC+9A4GGA
VP140MAU		9.7		VP140MAU+9A4AGA	VP140MAU+9A4GGA
VP140NAU	1	9.7		VP140NAU+9A4AGA	VP140NAU+9A4GGA
VP140NAW		11.9		VP140NAW+9A4AGA	VP140NAW+9A4GGA
VP140PAY	1-1/4	13.2		VP140PAY+9A4AGA	VP140PAY+9A4GGA
VP140PCD		17.6		VP140PCD+9A4AGA	VP140PCD+9A4GGA

Table 3: Brass Body Ball PICVs & Spring Return Actuator Combinations

Valve Code Number	Size, in.	Maximum GPM	Close off pressure	24 VAC/VDC			
				Spring Opens		Spring Closes	
				On/Off and Floating	Proportional DC 0(12) to 10 V or 0 (4) to 20 mA	On/Off and Floating	Proportional DC 0(12) to 10 V or 0 (4) to 20 mA
				VA9203-AGA-2Z	VA9203-GGA-2Z	VA9203-AGA-2Z	VA9203-GGA-2Z
VP140LCA	1/2	1.6	200 psi (1,400 kPa)	VP140LCA+923AGA	VP140LCA+923GGA	VP140LCA+943AGA	VP140LCA+943GGA
VP140LCB		3.0		VP140LCB+923AGA	VP140LCB+923GGA	VP140LCB+943AGA	VP140LCB+943GGA
VP140LAJ		4.4		VP140LAJ+923AGA	VP140LAJ+923GGA	VP140LAJ+943AGA	VP140LAJ+943GGA
VP140MAG	3/4	3.4		VP140MAG+923AGA	VP140MAG+923GGA	VP140MAG+943AGA	VP140MAG+943GGA
VP140MCC		5.0		VP140MCC+923AGA	VP140MCC+923GGA	VP140MCC+943AGA	VP140MCC+943GGA
VP140MAU		9.7		VP140MAU+923AGA	VP140MAU+923GGA	VP140MAU+943AGA	VP140MAU+943GGA
VP140NAU	1	9.7		VP140NAU+923AGA	VP140NAU+923GGA	VP140NAU+943AGA	VP140NAU+943GGA
VP140NAW		11.9		VP140NAW+923AGA	VP140NAW+923GGA	VP140NAW+943AGA	VP140NAW+943GGA
VP140PAY	1-1/4	13.2		VP140PAY+923AGA	VP140PAY+923GGA	VP140PAY+943AGA	VP140PAY+943GGA
VP140PCD		17.6		VP140PCD+923AGA	VP140PCD+923GGA	VP140PCD+943AGA	VP140PCD+943GGA

VP140 1/2 Inch to 2 Inch (DN15-DN50) Pressure Independent Control Valve (Continued)
Table 4: Iron Body Ball PICVs Actuator Combinations

Valve Code Number	Size, in.	Maximum GPM	Close off pressure	24 VAC/DC		
				Non-Spring Return	Spring Opens	Spring Closes
				Universal Input for On/Off, Floating and Proportional 0 (2) to 10 VDC with Adjustable Span	Proportional DC 0 (2) to 10 V or 0 (4) to 20 mA	Proportional DC 0 (2) to 10 V or 0 (4) to 20 mA
				VA9310-HGA-2	VA9208-GGA-2	VA9208-GGA-2
VP140QBB	1-1/4	26.4	200 psi (1,400 kPa)	VP140QBB+910HGA	VP140QBB+928GGA	VP140QBB+948GGA
VP140EBB	1-1/2	26.4		VP140EBB+910HGA	VP140EBB+928GGA	VP140EBB+948GGA
VP140EBC	2	39.6		VP140EBC+910HGA	VP140EBC+928GGA	VP140EBC+948GGA
VP140FBD		48.4		VP140FBD+910HGA	VP140FBD+928GGA	VP140FBD+948GGA
VP140FBE		52.8		VP140FBE+910HGA	VP140FBE+928GGA	VP140FBE+948GGA
VP140FBF		79.3		VP140FBF+910HGA	VP140FBF+928GGA	VP140FBF+948GGA

Table 5: Actuators

Code Number	Valve Compatibility	Spring Return	Proportional Control DC 0 (2) to 10 V or 0 (4) to 20 mA	Floating Point Control	Adjustable Span	Universal Input for On/Off	24 VAC/VDC	24 VAC
VA-7482-8002-RA	Axial (Globe)	No	Yes	No	No	No	Yes	No
VA9104-AGA-2S	Brass Body Ball Valves	No	No	Yes	No	No	No	Yes
VA9104-GGA-2S		No	Yes	No	No	No	No	Yes
VA9203-AGA-2Z		Yes	No	Yes	No	Yes	Yes	No
VA9203-GGA-2Z		Yes	Yes	No	No	No	Yes	No
VA9310-HGA-2	Iron Body Ball Valves	No	Yes	Yes	Yes	Yes	Yes	No
VA9208-GGA-2		Yes	Yes	No	No	No	Yes	No

For actuator technical specifications, refer to the following:

- VA-748x Electric Valve Actuators (LIT-1900866)
- VA9104 Series Electric Non-Spring Return Valve Actuators (LIT-1900354)
- VA9203-xxx-xx Series Electric Spring-Return Actuators (LIT-1900692)
- VA9300 Series Electric Non-Spring Return Valve Actuators (LIT-1901002)
- VA9208-xxx-xx Series Electric Spring-Return Actuators (LIT-1900648)

Table 6: Accessories

Code Number	Description
M9000-342	Weather shield kit for VA9203 or VA9104 Series Electric Actuators (quantity 1)

VP140 1/2 Inch to 2 Inch (DN15-DN50) Pressure Independent Control Valve (Continued)

Valve Technical Specifications

Table 6: Axial (Globe) PICVs

Service ¹		Water or water-glycol mixture, (up to 50% glycol) quality to VDI 2035
Accuracy up to 15 PSID (100 kPa)		± 5%
Fluid Temperature Limits		14°F to 248 °F (-10°C to 120 °C), Not Rated for Steam Service
Maximum Actuator Fluid Temperature Limit		14°F to 212 °F (-10°C to 100 °C), Not Rated for Steam Service
Maximum ΔP		87 psi (600 kPa)
Maximum working pressures		362 psi (2,500 kPa)
Close off pressure		100 psi (700 kPa)
Minimum ΔP for start-up	VP140AAA	2.9 psi (20 kPa)
	VP140AAE	3.6 psi (25 kPa)
	VP140AAG	5.1 psi (35 kPa)
	VP140BAJ	4.4 psi (30 kPa)
	VP140BAN	5.1 psi (35 kPa)
	VP140BAU	3.6 psi (25 kPa)
	VP140CAU	
	VP140CAW	4.4 psi (30 kPa)
	VP140DAW	
Maximum Flow Rate	VP140AAA	0.66 GPM (150 l/h)
	VP140AAE	2.6 GPM (600 l/h)
	VP140AAG	3.4 GPM (780 l/h)
	VP140BAJ	4.4 GPM (1,000 l/h)
	VP140BAN	6.6 GPM (1,500 l/h)
	VP140BAU	9.7 GPM (2,200 l/h)
	VP140CAU	
	VP140CAW	11.9 GPM (2,700 l/h)
	VP140DAW	
Connection	VP140AAA	1/2 inch female NPT
	VP140AAE	
	VP140AAG	
	VP140BAJ	3/4 inch female NPT
	VP140BAN	
	VP140BAU	3/4 inch female NPT Union
	VP140CAU	1 inch female NPT Union
	VP140CAW	
	VP140DAW	1 1/4 inch female NPT Union
Materials	Body forging	DZR Brass CW602N
	Cartridge body	PSU
	Cartridge seat	Brass CW614N
	Cartridge spring	Stainless steel AISI 302
	Cartridge shutter	Stainless steel AISI 303
	Diaphragm EPDM	EPDM
	Globe	Brass CW614N
	Hand-wheel	PSU (Polysulfone)
	Headwork cap	ABS
Leakage	Headwork pin	Stainless steel AISI 303
	All o-rings	EPDM
	Pre-setting seat	Brass CW614N
	Valve headwork	Brass CW614N
	ANSI Class IV IEC 60534-4	
	American National Standards Institute (ANSI) Class IV Leakage	
	Johnson Controls declares that this product is in compliance with the essential requirements and other relevant provisions of the PED (Pressure Equipment Directive) Service	
	CE	

1. Johnson Controls does not accept any liability for improper or wrong use of this product. Proper water treatment is recommended; refer to the VDI 2035 Guideline. Furthermore, maximum iron oxide in the water passing through the control valve (PICV) should not exceed 25 mg/Kg (25 ppm). To ensure the main pipework is cleaned appropriately, flushing by-passes should be used without flushing through the pressure regulator of the Pressure Independent Control Valve. The performance specifications are nominal and conform to acceptable industry standards. For applications at conditions beyond these specifications, consult the local Johnson Controls office. Johnson Controls shall not be liable for damages resulting from misapplication or misuse of its products. © 2019 Johnson Controls. www.johnsoncontrols.com

VP140 1/2 Inch to 2 Inch (DN15-DN50) Pressure Independent Control Valve (Continued)

Table 7: Brass Body Ball PICVs

Service ¹		Water or water-glycol mixture, (up to 50% glycol) quality to VDI 2035
Accuracy up to 15 PSID (100 kPa)		± 5%
Fluid Temperature Limits		14°F to 248°F (-10°C to 120°C), Not Rated for Steam Service
Maximum Actuator Fluid Temperature Limit		14°F to 212°F (-10°C to 100°C), Not Rated for Steam Service
Maximum ΔP		58 psi (400 kPa)
Maximum working pressure		360 psi (2,500 kPa)
Close off pressure		200 psi (1,400 kPa)
Minimum ΔP for start-up	VP140LCA	2.9 psi (20 kPa)
	VP140LCB	
	VP140LAJ	
	VP140MAG	3.6 psi (25 kPa)
	VP140MCC	
	VP140MAU	4.4 psi (30 kPa)
	VP140NAU	
	VP140NAW	
	VP140PAY	
	VP140PCD	
Maximum Flow Rate	VP140LCA	1.6 GPM (360 l/h)
	VP140LCB	3.0 GPM (600 l/h)
	VP140LAJ	4.4 GPM (1,000 l/h)
	VP140MAG	3.4 GPM (780 l/h)
	VP140MCC	5.0 GPM (1,150 l/h)
	VP140MAU	9.7 GPM (2,200 l/h)
	VP140NAU	
	VP140NAW	11.9 GPM (2,700 l/h)
	VP140PAY	13.2 GPM (3,000 l/h)
	VP140PCD	17.6 GPM (4,000 l/h)
Connection	VP140LCA	1/2 inch female NPT
	VP140LCB	
	VP140LAJ	
	VP140MAG	3/4 inch female NPT
	VP140MCC	
	VP140MAU	3/4 inch female NPT Union
	VP140NAU	1 inch female NPT Union
	VP140NAW	
	VP140PAY	1 1/4 inch female NPT Union
	VP140PCD	
Minimum Ambient Operating Conditions	VA9104-AGA-2S	-4°F (-20°C), 90% RH, Noncondensing
	VA9104-GGA-2S	
	VA9203-AGA-2Z	-22°F (-30°C), 90% RH, Noncondensing
	VA9203-GGA-2Z	
Maximum Ambient Operating Conditions (limited by the actuator)	VA9104-AGA-2S	
	VA9104-GGA-2S	140°F (60°C), 90% RH, Noncondensing
	VA9203-AGA-2Z	
	VA9203-GGA-2Z	
Materials	Body forging	DZR Brass CW602N
	Cartridge body	Brass CW614N
	Cartridge seat	Brass CW614N
	Cartridge spring	Stainless Steel AISI 302
	Diaphragm	EPDM
	Ball	Chrome Plated Brass CW617N
	Stem	Brass CW614N
	Stem o-rings	Viton
Leakage		ANSI Class IV IEC 60534-4 American National Standards Institute (ANSI) Class IV Leakage
Compliance		Johnson Controls declares that this product is in compliance with the essential requirements and other relevant provisions of the PED (Pressure Equipment Directive) Service
		

1. Johnson Controls does not accept any liability for improper or wrong use of this product. Proper water treatment is recommended; refer to the VDI 2035 Guideline. Furthermore, maximum iron oxide in the water passing through the control valve (PICV) should not exceed 25 mg/Kg (25 ppm). To ensure the main pipework is cleaned appropriately, flushing by-passes should be used without flushing through the pressure regulator of the Pressure Independent Control Valve.

VP140 1/2 Inch to 2 Inch (DN15-DN50) Pressure Independent Control Valve (Continued)

Table 8: Iron Body Ball PICVs

Service¹		Water or water-glycol mixture, (up to 50% glycol) quality to VDI 2035
Accuracy up to 15 PSID, 100 kPa		± 5%
Fluid Temperature Limits		14°F to 248°F (-10°C to 120°C), Not Rated for Steam Service
Maximum Actuator Fluid Temperature Limit		14°F to 212°F (-10°C to 100°C), Not Rated for Steam Service
Maximum ΔP		87 psi (600 kPa)
Maximum working pressure		232 psi (1,600 kPa)
Close off pressure		200 psi (1,400 kPa)
Minimum ΔP for start-up	VP140 QBB	4.4 psi (30 kPa)
	VP140 EBB	
	VP140 EBC	5.1 psi (35 kPa)
	VP140 FBD	5.8 psi (40 kPa)
	VP140 FBE	5.1 psi (35 kPa)
	VP140 FBF	
Maximum Flow Rate	VP140 QBB	26.4 GPM (6,000 l/h)
	VP140 EBB	
	VP140 EBC	39.6 GPM (9,000 l/h)
	VP140 FBD	48.4 GPM (11,000 l/h)
	VP140 FBE	52.8 GPM (12,000 l/h)
	VP140 FBF	79.3 GPM (18,000 l/h)
Connection	VP140 QBB	1-1/4 inch female NPT Union
	VP140 EBB	1-1/2 inch female NPT Union
	VP140 EBC	
	VP140 FBD	2 inch female NPT Union
	VP140 FBE	
	VP140 FBF	
Minimum Ambient Operating Conditions	VA9310-HGA-2	-20°F (-30°C), 95% RH, Noncondensing
	VA9208-GGA-2	-40°F (-40°C), 95% RH, Noncondensing
Maximum Ambient Operating Conditions (limited by the actuator)	VA9310-HGA-2	140°F (60°C), 95% RH, Noncondensing
	VA9208-GGA-2	140°F (60°C), 95% RH, Noncondensing
Materials	Ball	Chrome Plated Brass CW617N
	Cartridge	High resistance polymer - EPDM Stainless steel AISI 303
	Presetting	Brass CW617N
	Body	Ductile Iron
	Gaskets	EPDM-x
	Additional manual shut-off device	Brass CW614N
	Stem	Brass CW614N
	Stem o-rings	Viton
Leakage		ANSI Class IV IEC 60534-4 American National Standards Institute (ANSI) Class IV Leakage
Compliance		Johnson Controls, declares that this product is in compliance with the essential requirements and other relevant provisions of the PED (Pressure Equipment Directive) Service
		

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