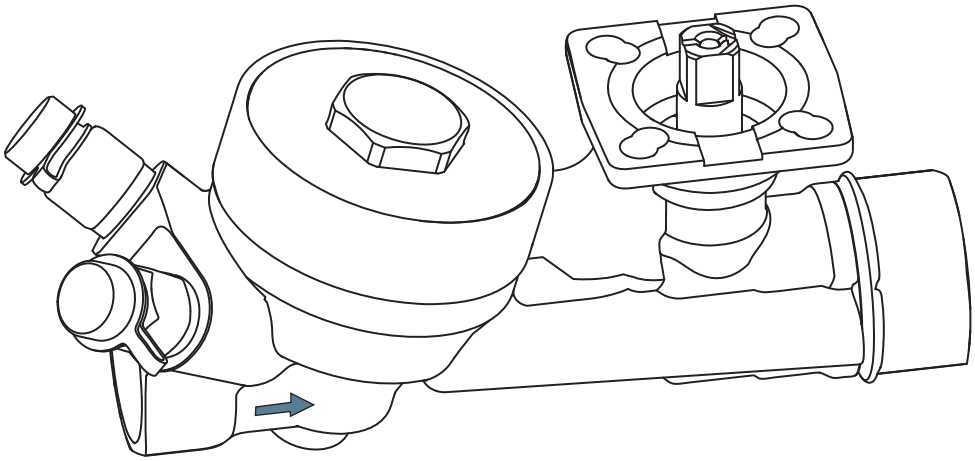
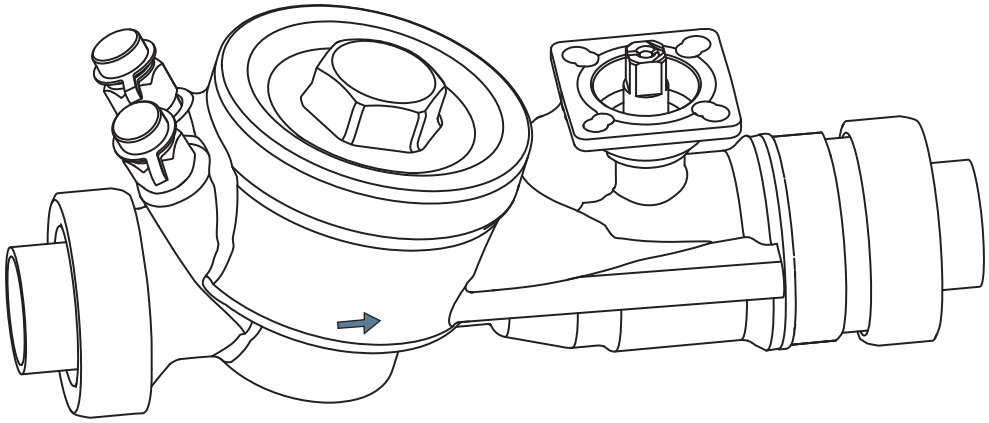
VP140 1/2 Inch to 1-1/4 Inch (DN15-DN32) Pressure Independent Control Valve - Rotary

Installation Instructions





Johnson Controls

P/N 14-88360-03419, Rev. –
Issued, November 2017

Warnings and considerations

Warning: Risk of electric shock

Disconnect the power supply before making electrical connections. Contact with components carrying hazardous voltage can cause electric shock and may result in severe personal injury or death.

Avertissement : Risque de choc électrique

Coupez l'alimentation électrique avant d'effectuer tout branchement électrique. Le contact avec un composant chargé électriquement peut provoquer un choc électrique pouvant causer des blessures corporelles graves ou mortelles.

Advertencia: Riesgo de descarga eléctrica

Desconecte el suministro de energía antes de hacer conexiones eléctricas. El contacto con componentes conductores de tensión peligrosa puede provocar una descarga eléctrica y puede dar lugar a lesiones personales graves o la muerte.

Caution

Johnson Controls, Inc. 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 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.

Attention

Johnson Controls, Inc. ne peut être tenu responsable de l'utilisation inadéquate de ce produit. Le traitement adéquat de l'eau est recommandé; reportez-vous à la directive VDI 2035. De plus, la teneur en oxyde de fer de l'eau circulant dans la vanne de régulation indépendante de la pression (PICV) ne devrait pas dépasser 25 mg/kg (25 ppm). Pour s'assurer que la canalisation principale est bien nettoyée, il est recommandé d'utiliser un dispositif de dérivation afin de rincer la canalisation sans rincer le régulateur de pression de la vanne de régulation indépendante de la pression.

Precaución

Johnson Controls, Inc. no asume ninguna responsabilidad por el uso inapropiado o incorrecto de este producto.
Se recomienda el tratamiento correcto del agua. Consulte la Guía VDI 2035. Además, el óxido de hierro máximo en el agua que pasa a través de la válvula de control de presión independiente (Pressure Independent Control Valve, PICV) no debe superar los 25 mg/kg (25 ppm). Para asegurar la limpieza correcta de la tubería principal, se deben usar by-passes de purga sin purgar el regulador de presión de la válvula de control de presión independiente.

Wiring instructions for the technician

- All wiring conforms to local codes and must be carried out by authorized personnel only.
- Keep high and low voltage wiring separated.
- When using multi-stranded wire apply a cable ferrule to the cable end.
- Make sure that the line power supply is in accordance with the power supply specified on the device.
- Check all wiring connections before applying power to the system.
- Short-circuited or improperly connected wires may result in permanent damage to the equipment.

Instructions de câblage pour le technicien

- Tous les câblages doivent se conformer aux codes locaux et être effectués par un technicien autorisé.
- Le câblage haute tension et le câblage basse tension doivent être séparés.
- Lorsqu'un câble à faisceaux torsadés est utilisé, installez une bague à l'extrémité du câble.
- Assurez-vous que la source d'alimentation électrique correspond à l'alimentation spécifiée sur l'appareil.
- Vérifiez tous les raccordements avant de mettre l'appareil sous tension.
- Tout court-circuit ou câble incorrectement branché pourrait endommager l'équipement de façon permanente.

Instrucciones de cableado para el técnico

- Todo el cableado cumple con los códigos locales y debe estar a cargo de personal autorizado únicamente.
- Mantenga separado el cableado de alta y baja tensión.
- Cuando use cables de trenzado múltiple, aplique una virola en el extremo del cable.
- Asegúrese de que el suministro de energía de la línea coincida con el suministro de energía que se especifica en el dispositivo.
- Revise todas las conexiones del cableado antes de aplicar energía al sistema.

Los cables con cortocircuito o mal conectados pueden provocar daños permanentes en el equipo.

Mounting considerations for the technician

All Spring and Non-Spring Actuators ship from the factory in the fully up position. Before mounting the actuator, you must note the following:

- Ensure that the actuator is free from thermal insulating material.
- Allow a minimum clearance of 3 1/2 inches (89mm) above the actuator body.
- If the actuator was powered before mounting on the valve, you must return the actuator to its original open position before proceeding.
- The actuator must be independently mounted in a vertical or horizontal position.

Instructions d'installation pour le technicien

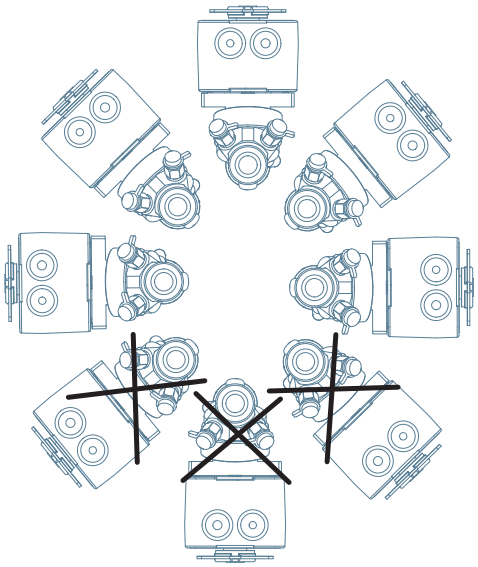
Tous les actionneurs à ressort ou sans ressort sont livrés en position complètement relevée. Avant d'installer l'actionneur, veuillez vous assurer :

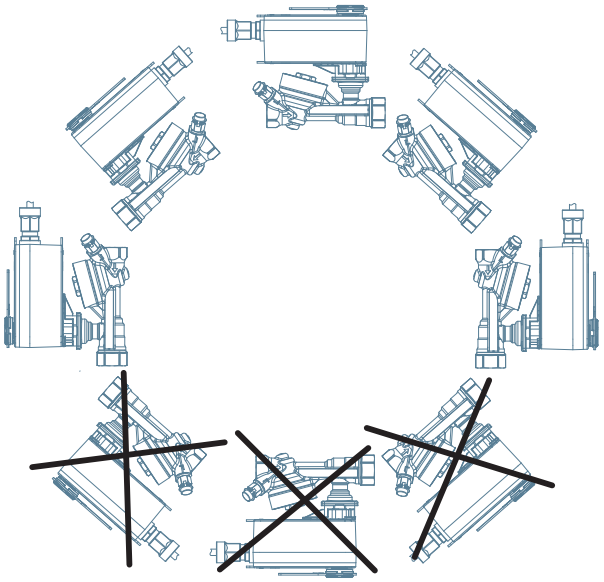
- que le matériau d'isolation thermique a été retiré de l'actionneur;
- qu'il existe un dégagement de 89 mm (3 1/2 po) au-dessus du corps de l'actionneur;
- que l'actionneur a été remis à sa position d'origine s'il avait été mis sous tension avant d'être installé sur la vanne; et
- que l'actionneur est installé à la position verticale ou horizontale de façon indépendante.

Consideraciones de montaje para el técnico

Todos los accionadores con y sin resorte se entregan de fábrica en la posición totalmente hacia arriba. Antes de montar el accionador, debe tener en cuenta lo siguiente:

- Asegúrese de que el accionador esté libre de material aislante térmico.
- Deje una distancia mínima de 3 1/2 pulg (89 mm) por encima del cuerpo del accionador.
- Si el accionador se encendió antes de montar la válvula, debe volver a ponerlo en su posición abierta original antes de continuar.
- El accionador se debe montar de forma independiente en posición vertical u horizontal.





For additional installation information and technical specifications, refer to the appropriate document:

- *VA9104-xGA-2S Series Electric Non-Spring Return Valve Actuators Installation Instructions Part No. 14-1336-15*
- *VA9203-AGx-2Z Series On/Off and Floating Point Electric Spring Return Valve Actuators Installation Instructions Part No. 14-1380-8*
- *VA9203-GGx-xx Series Proportional Electric Spring Return Valve Actuators Installation Instructions Part No. 14-1380-24*

Maintenance and cleaning

During valve cleaning operations, use a damp cloth. Do not use any detergent or chemical product that may seriously damage or compromise the proper functioning and reliability of the valve.

Entretien et nettoyage

Utilisez un linge humide pour nettoyer la vanne. N'utilisez aucun détergent ou produit chimique pouvant endommager la vanne ou nuire à son bon fonctionnement.

Mantenimiento y limpieza

Durante las operaciones de limpieza de las válvulas, utilice un paño húmedo. No use ningún detergente ni producto químico que pueda dañar gravemente la válvula o perjudicar el funcionamiento adecuado y la fiabilidad del componente.

Dimensions

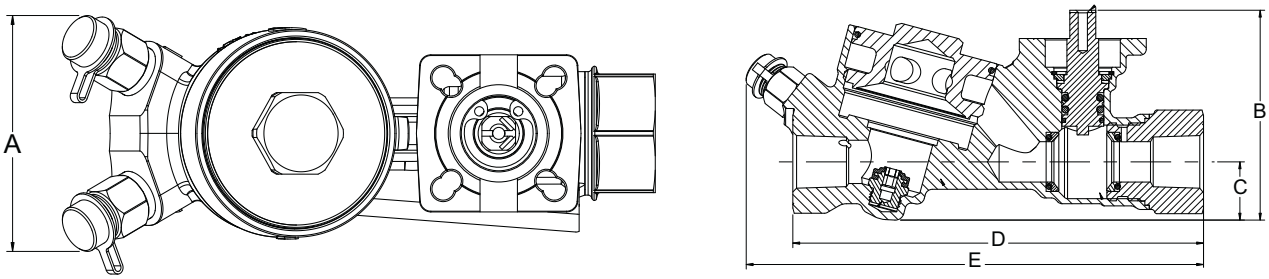


Table 1: VP140 Lxx and VP140 Mxx dimensions in. (mm)

	Valve Size	A	B	C	D	E
VP140LCA	1/2" DN15	2.4 (62)	2.9 (73)	0.8 (20)	6 (142)	6.2 (158)
VP140LCB	1/2" DN15	2.4 (62)	2.9 (73)	0.8 (20)	6 (142)	6.2 (158)
VP140LAJ	1/2" DN15	2.4 (62)	2.9 (73)	0.8 (20)	6 (142)	6.2 (158)
VP140MAG	3/4" DN20	2.4 (62)	2.9 (73)	0.8 (20)	6 (142)	6.2 (158)
VP140MCC	3/4" DN20	2.4 (62)	2.9 (73)	0.8 (20)	6 (142)	6.2 (158)

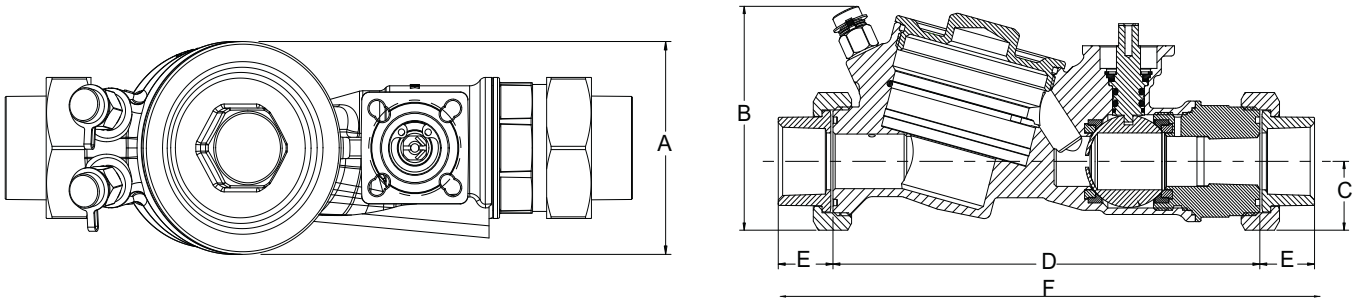


Table 2: VP140 Mxx, VP140 Nxx, VP140 Pxx dimensions in. (mm)

	Valve Size	A	B	C	D	E	F
VP140MAU	3/4” DN20	3.2 (80)	3.9 (98)	1 (27)	7.7 (195)	0.8 (20)	9.3 (235)
VP140NAU	1” DN25	3.2 (80)	3.9 (98)	1 (27)	7.7 (195)	0.9 (25)	9.6 (244)
VP140NAW	1” DN25	3.2 (80)	3.9 (98)	1 (27)	7.7 (195)	0.9 (25)	9.6 (244)
VP140PAY	1-1/4” DN32	3.2 (80)	3.9 (98)	1 (27)	7.7 (195)	1.5 (37)	10.59 (269)
VP140PCD	1-1/4” DN32	3.2 (80)	3.9 (98)	1 (27)	7.7 (195)	1.5 (37)	10.59 (269)

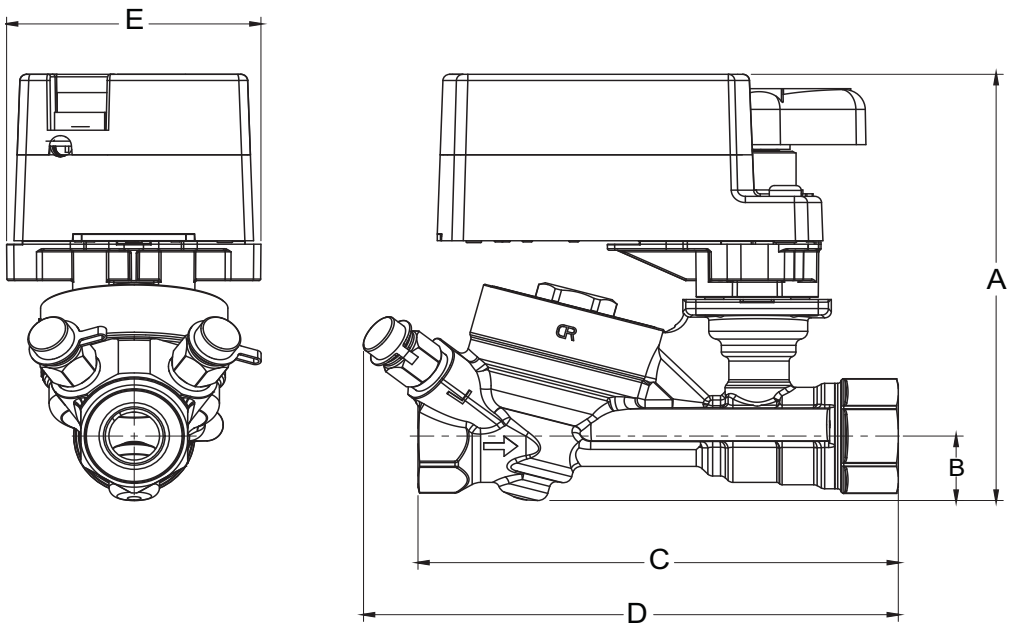


Table 3: VP140 Lxx and VP140 Mxx with VA-9104 Series Actuator assembled in. (mm)

	Valve Size	A	B	C	D	E
VP140LCA+9A4xxx	1/2"" DN15	5.2 (133)	1 (20)	5.6 (142)	6.2 (158)	2.9 (75)
VP140LCB+9A4xxx	1/2" DN15	5.2 (133)	1 (20)	5.6 (142)	6.2 (158)	2.9 (75)
VP140LAJ+9A4xxx	1/2" DN15	5.2 (133)	1 (20)	5.6 (142)	6.2 (158)	2.9 (75)
VP140MAG+9A4xxx	3/4" DN20	5.2 (133)	1 (20)	5.6 (142)	6.2 (158)	2.9 (75)
VP140MCC+9A4xxx	3/4" DN20	5.2 (133)	1 (20)	5.6 (142)	6.2 (158)	2.9 (75)

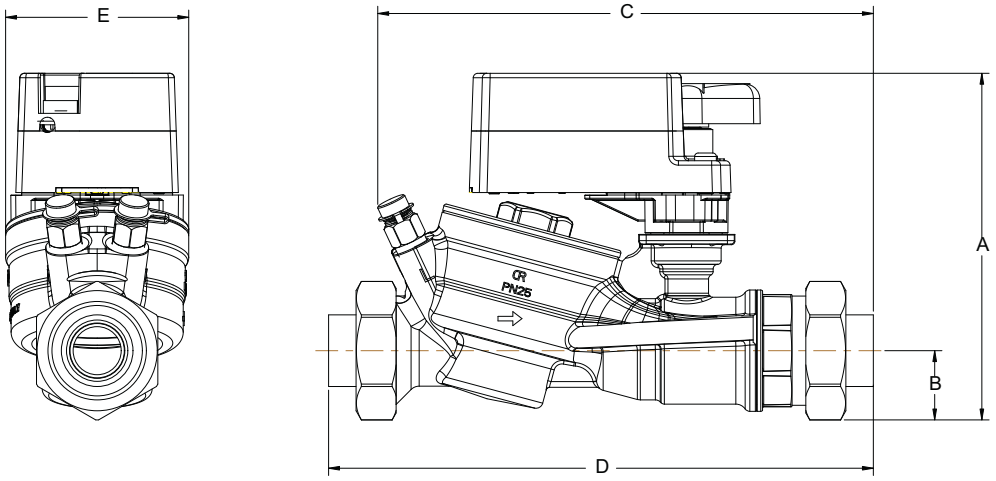


Table 4: VP140 Mxx, VP140 Nxx and VP140 Pxx with VA-9104 Series Actuator assembled in. (mm)

	Valve Size	A	B	C	D	E
VP140MAU+9A4xxx	3/4" DN20	6 (151)	1.2 (30)	8.5 (217)	9.4 (238)	3.2 (80)
VP140NAU+9A4xxx	1" DN25	6 (151)	1.2 (30)	8.5 (217)	9.4 (238)	3.2 (80)
VP140NAW+9A4xxx	1" DN25	6 (151)	1.2 (30)	8.7 (220)	9.6 (245)	3.2 (80)
VP140PAY+9A4xxx	1-1/4" DN32	6 (151)	1.2 (30)	9.2 (233)	10.7 (271)	3.2 (80)
VP140PCD+9A4xxx	1-1/4" DN32	6 (151)	1.2 (30)	9.2 (233)	10.7 (271)	3.2 (80)

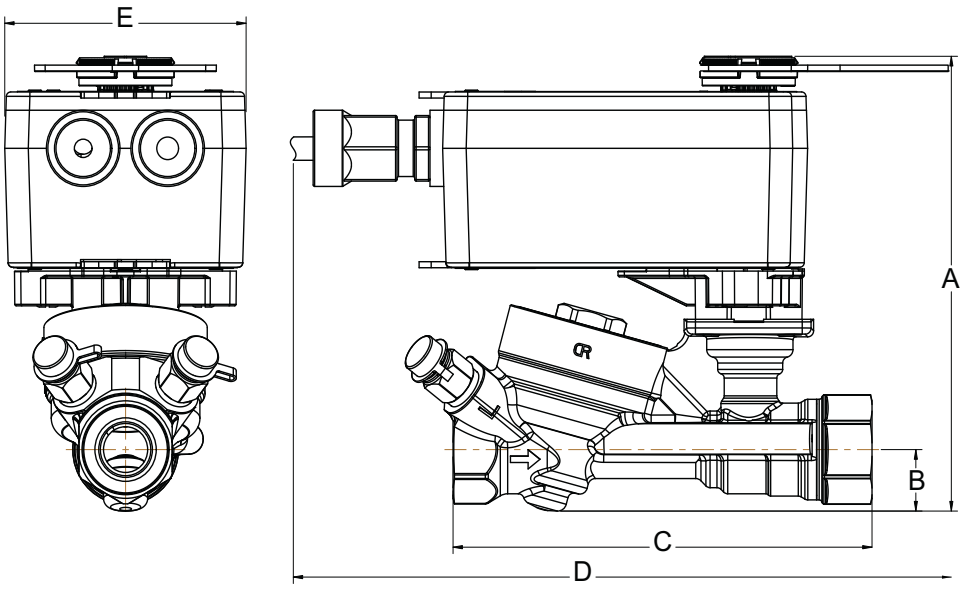


Table 5: VP140 Lxx, VP140 Nxx, and VP140 Pxx with VA-9203 Series Actuator assembled in. (mm)

	Valve Size	A	B	C	D	E
VP140LCA+923xxx	1/2” DN20	6 (149)	0.8 (20)	5.6 (142)	8.7 (220)	3.2 (82)
VP140LCB+923xxx	1/2” DN25	6 (149)	0.8 (20)	5.6 (142)	8.7 (220)	3.2 (82)
VP140LAJ+923xxx	1/2” DN25	6 (149)	0.8 (20)	5.6 (142)	8.7 (220)	3.2 (82)
VP140MAG+923xxx	3/4” DN32	6 (149)	0.8 (20)	5.6 (142)	8.7 (220)	3.2 (82)
VP140MCC+923xxx	3/4” DN32	6 (149)	0.8 (20)	5.6 (142)	8.7 (220)	3.2 (82)

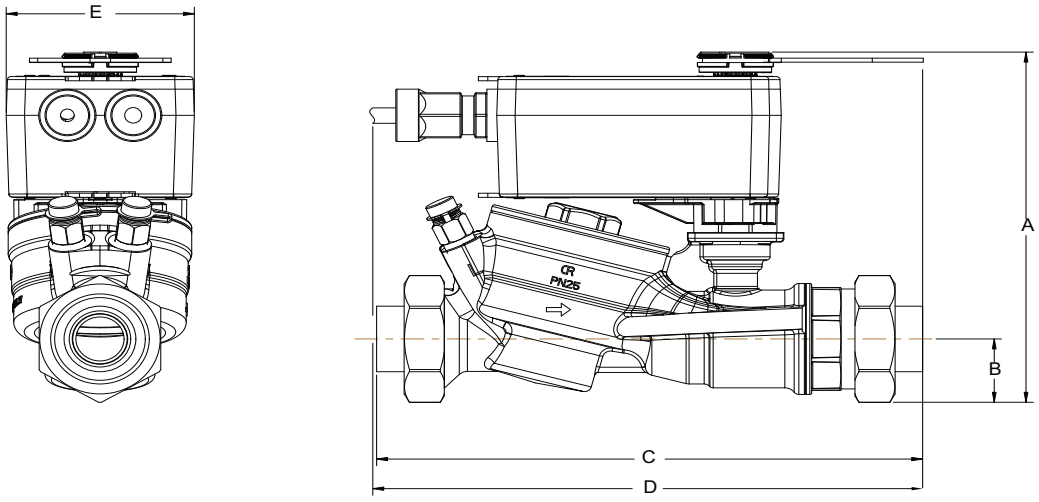


Table 6: VP140MAU, VP140Nxx, and VP140 Pxx with VA-9203 Series Actuator assembled in. (mm)

	Valve Size	A	B	C	D	E
VP140MAU+923xxx	3/4” DN20	6.6 (167)	1.2 (30)	9.4 (238)	9.2 (234)	3.2 (82)
VP140NAU+923xxx	1” DN25	6.6 (167)	1.2 (30)	9.4 (238)	9.2 (234)	3.2 (82)
VP140NAW+923xxx	1” DN25	6.6 (167)	1.2 (30)	9.6 (245)	9.8 (249)	3.2 (82)
VP140PAY+923xxx	1-1/4” DN32	6.6 (167)	1.2 (30)	10.7 (271)	10 (256)	3.2 (82)
VP140PCD+923xxx	1-1/4” DN32	6.6 (167)	1.2 (30)	10.7 (271)	10 (256)	3.2 (82)

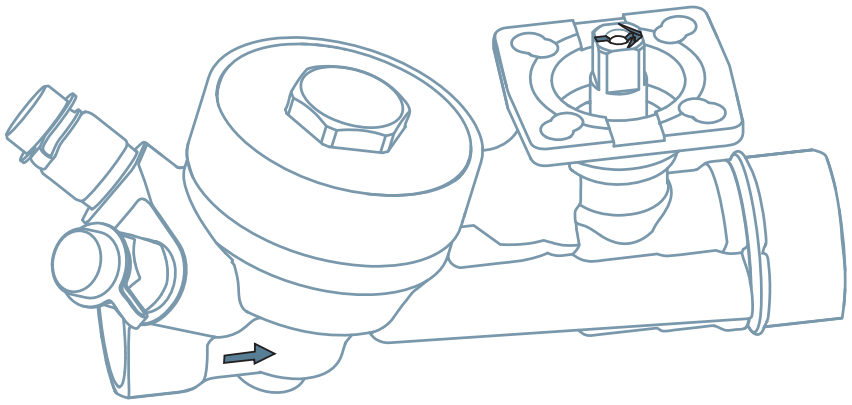
Flow direction | Sens du débit | Dirección del flujo

The following diagram illustrates the flow direction. Use this diagram as a guide on how to attach the actuator. If flow reversal is possible, mount a a non-return valve. See Table 10 for the minimum differential pressure required.

Le diagramme ci-dessous illustre le sens du débit. Reportez-vous à ce diagramme pour l'installation de l'actionneur. S'il est possible de renverser le débit, installez un clapet antiretour. Consultez le Table 6 pour connaître la pression différentielle minimale requise.

En el siguiente diagrama, se muestra la dirección del flujo. Use este diagrama como una guía sobre cómo conectar el accionador. Si el retorno del flujo es posible, instale una válvula de no retorno. Consulte la Tabla 6 para conocer la presión diferencial mínima requerida.

CAUTION: Mounting in the wrong direction may damage the system and the valve.
ATTENTION : Installer la vanne dans le mauvais sens pourrait endommager le système et la vanne.
PRECAUCIÓN: El montaje en la dirección incorrecta puede dañar el sistema y la válvula.



Flow rate settings

Table 7: VP140Lxx

Pre-Setting	VP140 LCA		VP140 LCB		VP140 LAJ	
	Flow GPM	Flow l/h	Flow GPM	Flow l/h	Flow GPM	Flow l/h
100%	1.6	360	3.0	700	4.4	1000
90%	0.9	210	2.5	563	4.2	960
80%	0.5	114	1.5	341	3.7	845
70%	0.3	75	1.0	207	3.2	737
60%	0.2	53	0.7	153	2.5	570
50%	0.16	36	0.4	98	1.7	380
40%	0.07	15	0.3	74	1.0	232
30%	0.02	4	0.2	39	0.6	132
20%	--	--	--	--	0.1	23
10%	--	--	--	--	--	--

Table 8: VP140Mxx

Pre-Setting	VP14MAG		VP140MCC		VP140MAU	
	Flow GPM	Flow l/h	Flow GPM	Flow l/h	Flow GPM	Flow l/h
100%	3.4	780	5.0	1,150	9.7	2,200
90%	2.8	626	4.9	1,122	7.1	1,615
80%	1.7	286	4.5	1,032	4.5	1,015
70%	1.0	215	3.5	805	2.9	647
60%	0.7	153	2.5	561	2.2	508
50%	0.6	129	1.4	323	1.6	372
40%	0.4	93	0.6	141	0.9	213
30%	0.2	53	0.04	9	0.5	121
20%	--	--	--	--	0.2	44
10%	--	--	--	--	--	--

Table 9: VP140Nxx and Pxx

Pre-Setting	VP140NAU		VP140NAW		VP140PAY		VP140PCD	
	Flow GPM	Flow l/h	Flow GPM	Flow l/h	Flow GPM	Flow l/h	Flow GPM	Flow l/h
100%	9.7	2,200	11.9	2,700	13.2	3,000	17.6	4,000
90%	7.1	1,615	8.7	1,978	10.5	2,383	15.9	3.621
80%	4.5	1,015	5.4	1,237	7.3	1,654	14.2	3,220
70%	2.9	647	3.5	795	4.5	1,017	11.4	2,594
60%	2.2	508	2.7	623	2.8	642	8.2	1,853
50%	1.6	372	2.0	456	2.0	445	4.5	1,088
40%	0.9	213	1.1	257	1.3	288	2.2	510
30%	0.5	121	0.6	144	0.7	162	0.7	147
20%	0.2	44	0.2	54	0.3	76	0.2	47
10%	--	--	--	--	--	--	--	--

Measuring differential pressure | Mesure de la pression différentielle |Medición de la presión diferencial

To ensure that the valve is working in the operating range, measure the differential gauge across the valve. The valve is in the operating range if the value at P1-P2 (ΔP) is higher than the start up value. If the ΔP measured value is lower than the start up value, then the valve works as a fixed orifice valve. Use the following table as reference for minimum differential pressure requirements.

Pour vous assurer que la vanne fonctionne dans la plage de fonctionnement, relevez la pression indiquée sur le manomètre différentiel de la vanne. La vanne fonctionne dans la plage de fonctionnement si la valeur de P1-P2 (ΔP) est plus élevée que la valeur de mise en service. Si la mesure de ΔP est inférieure à la valeur de mise en service, cela signifie que la vanne fonctionne comme une vanne à orifice fixe. Consultez le tableau suivant pour connaître la pression différentielle minimale requise.

Para asegurarse de que la válvula funcione en el rango de funcionamiento, mida el ancho diferencial a través de la válvula. Si el valor en P1-P2 (ΔP) es superior al valor de arranque, la válvula se encuentra en el rango de funcionamiento. Si el valor ΔP medido es inferior al valor de arranque, entonces la válvula funciona como una válvula de orificio fijo. Use la siguiente tabla como referencia para conocer los requisitos de presión diferencial mínima.

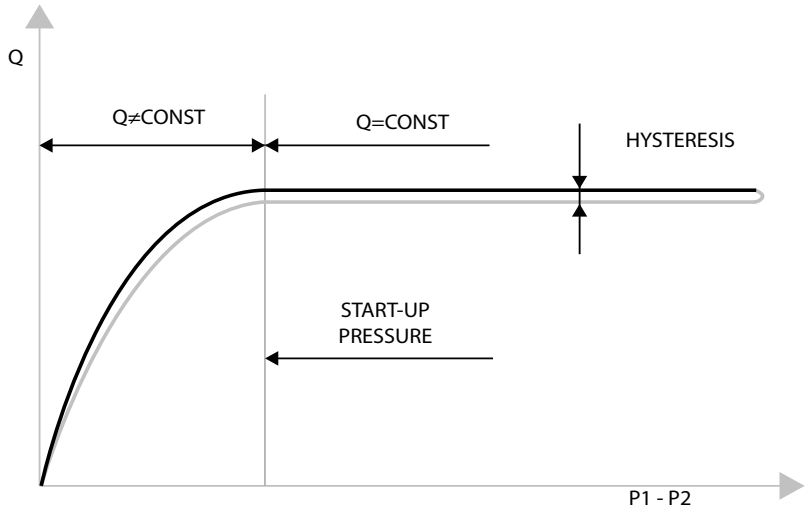


Table 10: Minimum differential pressure

Product codes	Start-up ΔP
VP140Lxx	
VP140LCA	2.90 psi, 20 kPa
VP140LCB	2.90 psi, 20 kPa
VP140LAJ	2.90 psi, 20 kPa
VP140 Mxx	
VP140MAG	3.63 psi, 25 kPa
VP140MCC	3.63 psi, 25 kPa
VP140MAU	4.35 psi, 30 kPa
VP140Nxx	
VP140NAU	4.35 psi, 30 kPa
VP140NAW	4.35 psi, 30 kPa
VP140Pxx	
VP140PAY	4.35 psi, 30 kPa
VP140PCD	4.35 psi, 30 kPa

Technical Specifications

Table 9: VP140Lxx

	VP140LCA	VP140LCB	VP140LAJ
Flow rate max.	1.6 GPM, 360 l/h	3.0 GPM, 600 l/h	4.4 GPM, 1,000 l/h
Service	Water or water-glycol mixture (up to 50% glycol), quality to VDI 2035		
Accuracy up to 15 PSID = 100 kPa	± 5%		
Minimum ΔP for start-up	2.9 psi 20 kPa		
Maximum ΔP	58 psi 400 kPa		
Maximum working pressure	360 psi 2,482 kPa		
Close off pressure	200 psi 1,379 kPa		
Temperature	14 to 248 °F -10 to 120 °C		
Connection	½" FNPT		
Leakage	Class IV IEC 60534-4		
Compliance CE	Johnson Controls, Inc., declares that this product is in compliance with the essential requirements and other relevant provisions of the PED (Pressure Equipment Directive)		

Table 10: VP140Mxx

	VP140MAG	VP140MCC	VP140MAU
Flow rate max.	3.4 GPM, 780 l/h	5.0 GPM, 1,150 l/h	9.7 GPM, 2,200 l/h
Service	Water or water-glycol mixture (up to 50% glycol), quality to VDI 2035		
Accuracy up to 15 PSID = 100 kPa	± 5%		
Minimum ΔP for start-up	3.6 psi 25 kPa		4.4 psi 30 kPa
Maximum ΔP	58 psi 400 kPa		
Maximum working pressure	360 psi 2,482 kPa		
Close off pressure	200 psi 1,379 kPa		
Temperature	14 to 248 °F -10 to 120 °C		
Connections	¾" FNPT		¾" FNPT Union
Leakage	Class IV IEC 60534-4		
Compliance CE	Johnson Controls, Inc., declares that this product is in compliance with the essential requirements and other relevant provisions of the PED (Pressure Equipment Directive)		

Table 11: VP140Nxx

	VP140NAU	VP140NAW
Flow rate max.	9.7 GPM, 2,200 l/h	11.9 GPM, 2,700 l/h
Service	Water or water-glycol mixture (up to 50% glycol), quality to VDI 2035	
Accuracy up to 15 PSID = 100 kPa	± 5%	
Minimum ΔP for start-up	4.4 psi 30 kPa	
Maximum ΔP	58 psi 400 kPa	
Maximum working pressure	360 psi 2,482 kPa	
Close off pressure	200 psi 1,379 kPa	
Temperature	14 to 248 °F -10 to 120 °C	
Connections	1" FNPT Union	
Leakage	Class IV IEC 60534-4	
Compliance	Johnson Controls, Inc., declares that this product is in compliance with the essential requirements and other relevant provisions of the PED (Pressure Equipment Directive)	
CE		

Table 12: VP140Pxx

	VP140PAY	VP140PCD
Flow rate max.	13.2 GPM, 3,000 l/h	17.6 GPM, 4,000 l/h
Service	Water or water-glycol mixture (up to 50% glycol), quality to VDI 2035	
Accuracy up to 15 PSID = 100 kPa	± 5%	
Minimum ΔP for start-up	4.4 psi 30 kPa	
Maximum ΔP	58 psi 400 kPa	
Maximum working pressure	360 psi 2,482 kPa	
Close off pressure	200 psi 1,379 kPa	
Temperature	14 to 248 °F -10 to 120 °C	
Connections	1 ¼" FNPT Union	
Leakage	Class IV IEC 60534-4	
Compliance	Johnson Controls, Inc., declares that this product is in compliance with the essential requirements and other relevant provisions of the PED (Pressure Equipment Directive)	
CE		

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