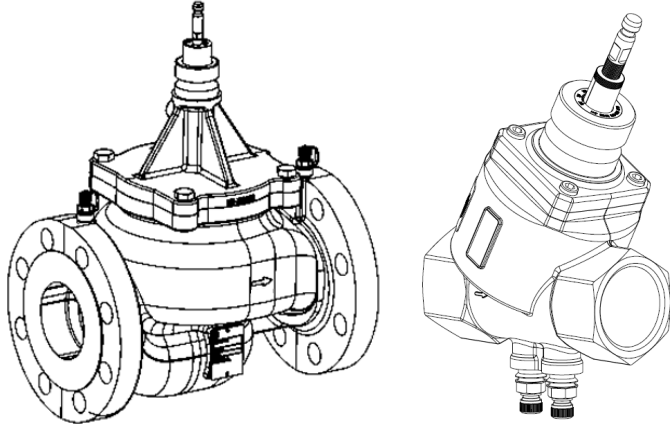


<b>JOB:</b>	<b>REPRESENTATIVE:</b>	
<b>UNIT TAG:</b>	<b>ORDER NO.</b>	<b>DATE:</b>
<b>ENGINEER:</b>	<b>SUBMITTED BY:</b>	<b>DATE:</b>
<b>CONTRACTOR:</b>	<b>APPROVED BY:</b>	<b>DATE:</b>



## Ultra Setter™

### Pressure Independent Control Valve

1½" - 6"

**DESCRIPTION**

The Bell & Gossett Ultra Setter is a pressure independent electrically actuated combination temperature control, balance, and commissioning valve for use in HVAC systems. It features an externally adjustable GPM dial allowing you to easily set the maximum flow rate. Once the maximum flow has been set, the flow rate is controlled through the use of an external control actuator, and the valve's internal differential pressure regulator maintains the desired flow rate as system pressures fluctuate. The result is more accurate flow control, reduced system energy use, more efficient system operation, and reduced installation and commissioning time.

The Ultra Setter is available with NPT Female Threaded connections in sizes 1-1/2" and 2", and ANSI Class 150# and 250# flange connections in sizes 2½"-6". All models are equipped with two capped ¼" readout valves. They offer a choice of 0-10V Analog modulation and 3-Position Floating actuators from Siemens.

**CONSTRUCTION**

Valve Body: Ductile Iron  
 Flow Setting Element: Brass  
 ΔP Controller:  
 1½" - 2": PPS 40% Glass  
 2½" - 6": Stainless Steel  
 Spring: Stainless Steel  
 Diaphragm:  
 1½" - 2": HNBR  
 2½" - 6": Reinforced EPDM  
 O-Rings: EPDM

**MAXIMUM WORKING PRESSURE**

1½" - 2": 360 psi (2,500 kPa)  
 ANSI Class 150#: 175 psi (1,207 kPa)  
 ANSI Class 250#: 360 psi (2,500 kPa)

**OPERATING TEMPERATURE RANGE**

Fluid: 32Â°F (0Â°C) to 248Â°F (120Â°C)  
 Ambient: 32Â°F (0Â°C) to 131Â°F (55Â°C)

**CONTROL RANGE**

Min: See Pages 5-6  
 Max: 85 PSID

**ACCURACY**

+/- 5%

**LEAKAGE RATE**

ANSI Class IV

**CLOSE OFF PRESSURE**

Up to 90 PSID (no actuator only)

**For additional actuator information, including construction specifications and operating limits, please refer to the following manufacturer product literature:**

**Siemens: N4833, N4501**

**SCHEDULE: ULTRA SETTER™ PRESSURE INDEPENDENT CONTROL VALVES**

PART NUMBER	MODEL NUMBER	FLOW RANGE (GPM)	TAGGING INFORMATION	QUANTITY
117528	PVC-1-1/2	6 - 42		
117529	PVC-2	6 - 50		
V1000738	PVL-2-1/2L-125	19 - 110		
V1000737	PVL-2-1/2H-125	26 - 154		
V1000740	PVL-2-1/2L-250	19 - 110		
V1000739	PVL-2-1/2H-250	26 - 154		
V1000742	PVL-3L-125	25 - 150		
V1000741	PVL-3H-125	31 - 189		
V1000744	PVL-3L-250	25 - 150		
V1000743	PVL-3H-250	31 - 189		
V1000746	PVL-4L-125	46 - 308		
V1000745	PVL-4H-125	59 - 396		
V1000748	PVL-4L-250	46 - 308		
V1000747	PVL-4H-250	59 - 396		
V1000750	PVL-5L-125	81 - 484		
V1000749	PVL-5H-125	101 - 594		
V1000752	PVL-5L-250	81 - 484		
V1000751	PVL-5H-250	101 - 594		
V1000754	PVL-6L-125	113 - 652		
V1000753	PVL-6H-125	141 - 859		
V1000756	PVL-6L-250	113 - 652		
V1000755	PVL-6H-250	141 - 859		

**TYPICAL SPECIFICATION**

Branch balance valve shall be a Bell & Gossett™ Ultra Setter as shown.

Valve shall maintain flow accuracy to within +/-5% of desired flow rate for the entire control range up to 85 PSID. Valve shall include two (2) pressure/temperature readout valves to allow measurements of differential pressure. Maximum flow setting shall be set using a rotational flow setting motion and an external adjustable dial with GPM scale. Modulating control element shall utilize a linear control stroke. Length of control stroke shall be independent of maximum flow setting. Valve shall have a leakage rate compliant with ANSI Class IV. Valve shall have close off pressure of up to 90 PSID.

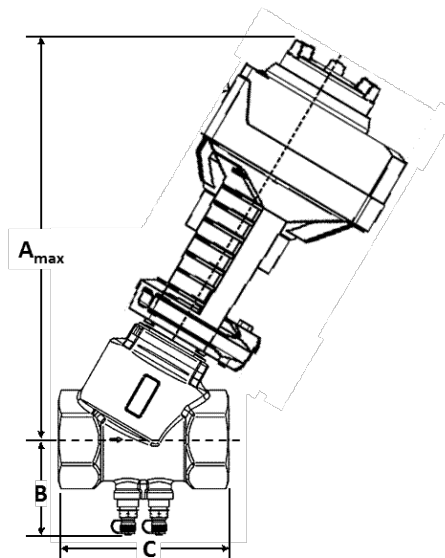
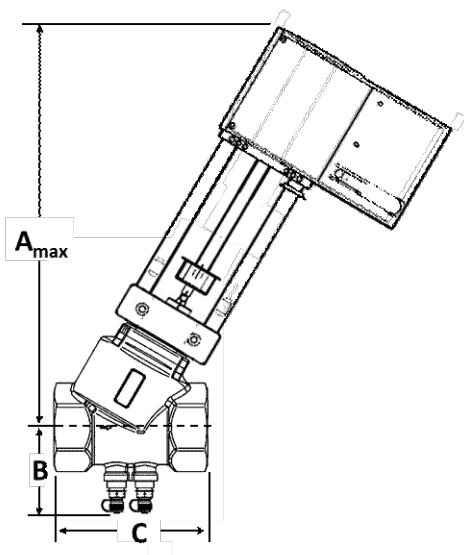
Valve shall feature an internal combination flow setting, differential pressure regulator, and modulating assembly. Differential pressure regulator shall utilize an internal capillary tube to maintain supply-side pressure to the backside of the regulator, as well as a rolling rubber diaphragm seal to prevent unwanted flow from passing through the backside of the regulator to the discharge side of the valve.

**1½" - 2" Models Only**

Valve body shall be constructed of ductile iron, rated for 360 Psi maximum working pressure and 248°F maximum working temperature. Valve flow setting element shall be brass. Differential pressure regulator shall be PPS 40% Glass with stainless steel spring and HNBR rubber diaphragm.

**2½" - 6" Models Only**

Valve body shall be constructed of ductile iron, rated for 175 psi/250 psi maximum working pressure and 248°F maximum working temperature. Valve flow setting element shall be brass. Differential pressure regulator shall be stainless steel with stainless steel spring and reinforced EPDM rubber diaphragm.



**DIMENSIONS AND WEIGHTS**

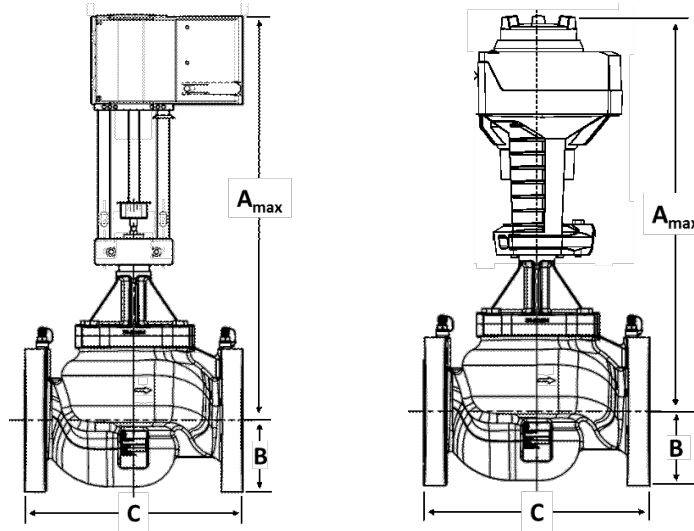
Model Number	Size	Connection Type	DIMENSIONS* IN INCHES (mm)			Flow Capacity in GPM (L/hr)		Approx. Weight Lbs.(kg.)
			$A_{max}$	B	C	Min.	Max.	
PVC-1-1/2	1-1/2"	NPT Female	14.5 (368)	2.80 (71)	5.43 (138)	6 (1370)	42 (9500)	15.0 (6.8)
PVC-2	2"	NPT Female	15.00 (381)	3.04 (77)	5.43 (138)	6 (1400)	50 (11500)	16.0 (7.3)

\*All dimensions +/- 0.125 (3.2 mm) tolerance. Dimensions are subject to change. Not to be used for construction purposes unless certified.

Xylem Inc.  
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**xylem**  
Let's Solve Water

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**DIMENSIONS AND WEIGHTS**

Model Number	Size	Flange Type	DIMENSIONS* IN INCHES (mm)			Flow Capacity in GPM (L/hr)		Approx. Weight Lbs.(kg.)
			A <sub>max</sub>	B	C	Min.	Max.	
PVL-2-1/2L-125	2-1/2"	ANSI Class 125#	19 (505)	3.6 (92)	11.4 (290)	19 (4315)	110 (24985)	41 (19)
PVL-2-1/2H-125	2-1/2"	ANSI Class 125#	19.9 (505)	3.6 (92)	11.4 (290)	26 (5970)	154 (35000)	41 (19)
PVL-2-1/2L-250	2-1/2"	ANSI Class 250#	19.9 (505)	3.6 (92)	11.4 (290)	19 (4315)	110 (24985)	41 (19)
PVL-2-1/2H-250	2-1/2"	ANSI Class 250#	19.9 (505)	3.6 (92)	11.4 (290)	26 (5970)	154 (35000)	41 (19)
PVL-3L-125	3"	ANSI Class 125#	20.6 (522)	3.9 (100)	12.2 (310)	25 (5800)	150 (34020)	57 (26)
PVL-3H-125	3"	ANSI Class 125#	20.6 (522)	3.9 (100)	12.2 (310)	31 (7025)	189 (43035)	57 (26)
PVL-3L-250	3"	ANSI Class 250#	20.6 (522)	3.9 (100)	12.2 (310)	25 (5800)	150 (34020)	57 (26)
PVL-3H-250	3"	ANSI Class 250#	20.6 (522)	3.9 (100)	12.2 (310)	31 (7025)	189 (43035)	57 (26)
PVL-4L-125	4"	ANSI Class 125#	24.9 (632)	4.6 (118)	13.8 (350)	46 (10500)	308 (70000)	107 (49)
PVL-4H-125	4"	ANSI Class 125#	24.9 (632)	4.6 (118)	13.8 (350)	59 (13500)	396 (90000)	107 (49)
PVL-4L-250	4"	ANSI Class 250#	24.9 (632)	4.6 (118)	13.8 (350)	46 (10500)	308 (70000)	107 (49)
PVL-4H-250	4"	ANSI Class 250#	24.9 (632)	4.6 (118)	13.8 (350)	59 (13500)	396 (90000)	107 (49)
PVL-5L-125	5"	ANSI Class 125#	26.2 (665)	5.3 (135)	15.8 (400)	81 (18500)	484 (110000)	154 (70)
PVL-5H-125	5"	ANSI Class 125#	26.2 (665)	5.3 (135)	15.8 (400)	101 (23000)	594 (135000)	154 (70)
PVL-5L-250	5"	ANSI Class 250#	26.2 (665)	5.3 (135)	15.8 (400)	81 (18500)	484 (110000)	154 (70)
PVL-5H-250	5"	ANSI Class 250#	26.2 (665)	5.3 (135)	15.8 (400)	101 (23000)	594 (135000)	154 (70)
PVL-6L-125	6"	ANSI Class 125#	26.9 (682)	5.6 (143)	19.9 (505)	113 (25600)	652 (148000)	212 (96)
PVL-6H-125	6"	ANSI Class 125#	26.9 (682)	5.6 (143)	19.9 (505)	141 (32000)	859 (195000)	212 (96)
PVL-6L-250	6"	ANSI Class 250#	26.9 (682)	5.6 (143)	19.9 (505)	113 (25600)	652 (148000)	212 (96)
PVL-6H-250	6"	ANSI Class 250#	26.9 (682)	5.6 (143)	19.9 (505)	141 (32000)	859 (195000)	212 (96)

\*All dimensions +/- 0.125 (3.2 mm) tolerance. Dimensions are subject to change. Not to be used for construction purposes unless certified.

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**Cv RATINGS AND MINIMUM REQUIRED DIFFERENTIAL PRESSURE**

Valve Size 1 1/2"					
Flow Setting (GPM)	Min (6)	10	20	30	Max (42)
Cv*	5	8	15	19	22
Required Min. ΔP	1.4	1.5	1.8	2.6	3.6

Valve Size 2"						
Flow Setting (GPM)	Min (6)	10	20	30	40	Max (50)
Cv*	5	8	14	17	20	22
Required Min. ΔP	1.5	1.6	2.1	2.8	4.0	5.2

Valve Size 2 1/2"L						
Flow Setting (GPM)	Min (19)	25	50	75	100	Max (110)
Cv*	13	17	31	44	54	58
Required Min. ΔP	2.0	2.1	2.6	2.9	3.4	3.6

Valve Size 2 1/2"H				
Flow Setting (GPM)	Min (26)	50	100	Max (154)
Cv*	13	24	45	54
Required Min ΔP	4.3	4.5	5.0	8.0

Valve Size 3"L				
Flow Setting (GPM)	Min (25)	50	100	Max (150)
Cv*	16	32	58	78
Required Min ΔP	2.3	2.4	3.0	3.7

Valve Size 3"H					
Flow Setting (GPM)	Min (31)	50	100	150	Max (189)
Cv*	17	27	51	64	70
Required Min ΔP	3.2	3.4	3.8	5.5	7.3

Valve Size 4"L						
Flow Setting (GPM)	Min (46)	100	150	200	250	Max (308)
Cv*	28	58	83	104	118	137
Required Min ΔP	2.8	3.0	3.3	3.7	4.5	5.1

Valve Size 4"H					
Flow Setting (GPM)	Min (59)	100	200	300	Max (396)
Cv*	29	48	85	106	120
Required Min ΔP	4.1	4.4	5.6	8.0	10.9

Valve Size 5"L						
Flow Setting (GPM)	Min (81)	100	200	300	400	Max (484)
Cv*	56	67	126	176	203	215
Required Min ΔP	2.1	2.2	2.5	2.9	3.9	5.1

Valve Size 5"H						
Flow Setting (GPM)	Min (101)	200	300	400	500	Max (594)
Cv*	51	100	145	185	200	214
Required Min ΔP	3.9	4.0	4.3	4.7	6.3	7.7

\*Cv is applicable only when the differential pressure across the valve is below the given minimum requirement. When differential pressure is below the minimum requirement, flow can be calculated using the equation  $q=Cv*\sqrt{\Delta P}$ , where q is the flow in GPM and ΔP is the differential pressure in PSI.

## Cv RATINGS AND MINIMUM REQUIRED DIFFERENTIAL PRESSURE (cont.)

Valve Size 6"L							
Flow Setting (GPM)	Min (113)	200	300	400	500	600	Max (652)
Cv*	65	114	168	200	236	271	289
Required Min ΔP	3.0	3.1	3.2	4.0	4.5	4.9	5.1

Valve Size 6"H							
Flow Setting (GPM)	Min (141)	225	350	475	600	725	Max (859)
Cv*	65	103	158	197	229	255	280
Required Min ΔP	4.7	4.8	4.9	5.8	6.9	8.1	9.4

\*Cv is applicable only when the differential pressure across the valve is below the given minimum requirement. When differential pressure is below the minimum requirement, flow can be calculated using the equation  $q=Cv*\sqrt{\Delta P}$ , where q is the flow in GPM and ΔP is the differential pressure in PSI.

## ACTUATOR SPECIFICATIONS

B&G Part Number	Manufacturer	Manufacturer Part Number	Normal Position	Fail-Safe Position	Control Signal	Valve Models Actuator Can be Used With
V1000757	Siemens	SAX61.03U	Normally Open	Last Position	DC 0-10V Analog/DC 4-20 mA	All 1-1/2" thru 3"
V1000758	Siemens	SAX81.03U	Normally Open	Last Position	3 Position	All 1-1/2" thru 3"
V1000759	Siemens	SQV91P30	Normally Open	Fail Open	3 Position Floating/0-10V Analog	All 1-1/2" thru 6"
V1000760	Siemens	SQV91P40	Normally Closed	Fail Closed	3 Position Floating/0-10V Analog	All 1-1/2" thru 6"

For additional actuator information, please see Siemens submittals N4833 and N4501.