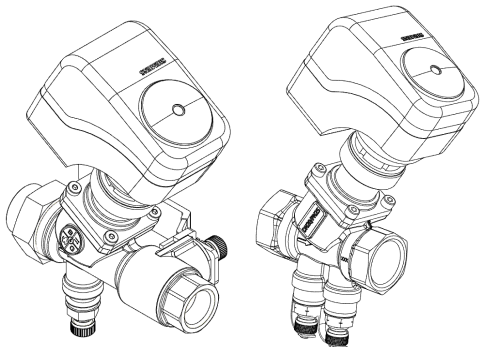


<b>JOB:</b>	<b>REPRESENTATIVE:</b>	
<b>UNIT TAG:</b>	<b>ORDER NO.</b>	<b>DATE:</b>
<b>ENGINEER:</b>	<b>SUBMITTED BY:</b>	<b>DATE:</b>
<b>CONTRACTOR:</b>	<b>APPROVED BY:</b>	<b>DATE:</b>



## Ultra Setter™ Compact Pressure Independent Control Valve

1/2" - 1 1/4"

### DESCRIPTION

The Bell & Gossett Ultra Setter™ Compact 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 has been set, the flow rate is controlled through 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™ Compact is available in three models, Model PVC, Model AU, and Model AX. All Models are equipped with two capped 1/4" readout valves and threaded female NPT end connections. They offer a choice of 0-10V Analog Modulating and 3-Position Tri-State actuators from Siemens and Honeywell, as well as an additional On-Off actuator from Siemens.

The Model AU also provides an integrated ball style isolation/shut-off valve, hanging ID tag for commissioning, and a variety of end connections on both the fixed and union ends.

The Model AX has an attached isolation valve which can be fitted with an optional extended handle and hanging ID tag for commissioning.

### CONSTRUCTION

**Valve Housing:** Brass  
**Flow Setting:** Brass  
**ΔP Controller:** PPS 40% Glass  
**Stem:** Stainless Steel  
**Spring:** Stainless Steel  
**Diaphragm:** HNBR  
**O-Rings:** EPDM

**Ball (Model AU Only):**  
Stainless Steel

**Ball (Model AX Only):**  
Chrome Plated Brass

### MAXIMUM WORKING PRESSURE

360 psig (2,500 kPa)

### TEMPERATURE RANGE

Fluid: 32°F (0°C) to 248°F (120°C)  
Ambient: 34°F (1°C) to 122°F (50°C)

### CONTROL RANGE

Min: See Page 6  
Max: 60 PSID

### ACCURACY

+/- 5%

### LEAKAGE RATE

ANSI Class IV (ANSI/FCI 70-2) to 60 PSID

### CLOSE OFF PRESSURE

Up To 140 PSID (no actuator only)

**For additional actuator information, including construction specifications and operating limits, please refer to the manufacturer product literature listed on Page 6.**

**SCHEDULE: MODEL PVC ULTRA SETTER™ COMPACT**

PART NUMBER	MODEL NUMBER	FLOW RANGE (GPM)	TAGGING INFORMATION	QUANTITY
117520	PVC-1/2UL	0.13 - 0.88		
117521	PVC-1/2L	0.29 - 1.59		
117522	PVC-1/2H	0.44 - 2.53		
117523	PVC-1/2UH	0.97 - 5.85		
117524	PVC-3/4L	0.44 - 2.53		
117525	PVC-3/4H	0.97 - 5.85		
117526	PVC-1	2.64 - 15.89		
117527	PVC-1-1/4	2.42 - 17.62		

**SCHEDULE: MODEL AU ULTRA SETTER™ COMPACT**

VALVE SIZE FIXED END	MODEL NUMBER	FLOW RANGE (GPM)	TAGGING INFORMATION	QUANTITY
1/2a UL Sweat Female	AU-1/2UL	0.13 - 0.88		
1/2a UL NPT Female	AU-1/2UL	0.13 - 0.88		
1/2a L Sweat Female	AU-1/2L	0.29 - 1.59		
1/2 L NPT Female	AU-1/2L	0.29 - 1.59		
1/2 H Sweat Female	AU-1/2H	0.44 - 2.53		
1/2 H NPT Female	AU-1/2H	0.44 - 2.53		
1/2a UH Sweat Female	AU-1/2UH	0.97 - 5.85		
1/2a UH NPT Female	AU-1/2UH	0.97 - 5.85		
3/4a L Sweat Female	AU-3/4L	0.44 - 2.53		
3/4 L NPT Female	AU-3/4L	0.44 - 2.53		
3/4 H Sweat Female	AU-3/4H	0.97 - 5.85		
3/4 H NPT Female	AU-3/4H	0.97 - 5.85		

**SCHEDULE: MODEL AX ULTRA SETTER™ COMPACT**

VALVE SIZE FIXED END	MODEL NUMBER	FLOW RANGE (GPM)	TAGGING INFORMATION	QUANTITY
1/2a UL Sweat Female	AX-1/2UL	0.13 - 0.88		
1/2a UL NPT Female	AX-1/2UL	0.13 - 0.88		
1/2a L Sweat Female	AX-1/2L	0.29 - 1.59		
1/2 L NPT Female	AX-1/2L	0.29 - 1.59		
1/2 H Sweat Female	AX-1/2H	0.44 - 2.53		
1/2 H NPT Female	AX-1/2H	0.44 - 2.53		
1/2a UH Sweat Female	AX-1/2UH	0.97 - 5.85		
1/2a UH NPT Female	AX-1/2UH	0.97 - 5.85		
3/4a L Sweat Female	AX-3/4L	0.44 - 2.53		
3/4 L NPT Female	AX-3/4L	0.44 - 2.53		
3/4 H Sweat Female	AX-3/4H	0.97 - 5.85		
3/4 H NPT Female	AX-3/4H	0.97 - 5.85		
1" Sweat Female	AX-1	2.64 - 15.89		
1" NPT Female	AX-1	2.64 - 15.89		
1-1/4" Sweat Female	AX-1-1/4	2.42 - 17.62		
1-1/4" NPT Female	AX-1-1/4	2.42 - 17.62		

**Typical Specification:**

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

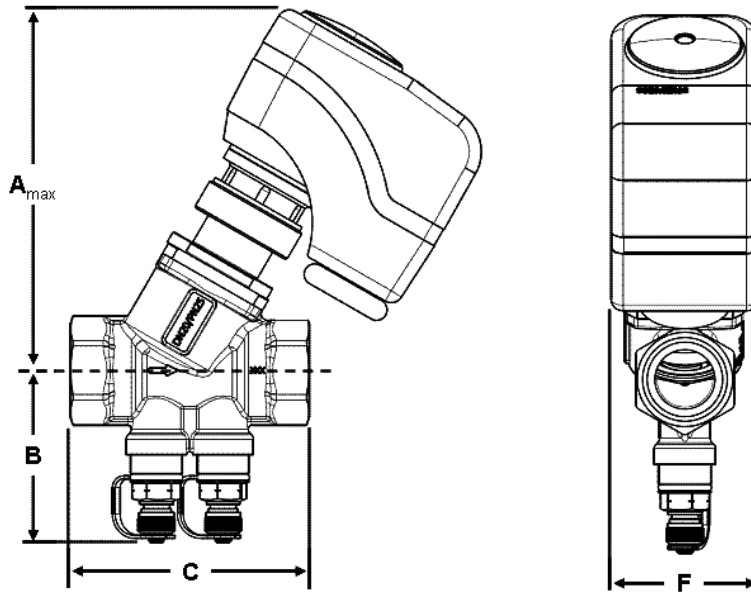
Valve shall maintain flow accuracy to within +/-5% of desired flow rate for the entire control range up to 60 PSID. Valve shall include two (2) pressure/temperature readout valves to allow measurement of differential pressure. Maximum flow setting shall be set using a rotational flow setting motion and an externally 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 (ANSI/FCI 70-2). Valve shall have a close off pressure of up to 140 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 of the valve.

Valve body shall be brass construction, rated for 360 psi maximum working pressure and 248°F maximum working temperature. Valve flow setting element shall be brass and construction. Differential pressure control element shall be PPS 40% glass with stainless steel spring and HNBR rubber diaphragm.

**Model AU Only:** Valve shall include ball style isolation/shut-off valve with stainless steel ball and integrated pressure/temperature port. Valve shall include hanging ID tag for commissioning. Valve shall include union tailpiece and union nut.

**Model AX Only:** PICV Valve shall have attached ball valve with chrome plated ball and shall include hanging ID tag.



Model PVC

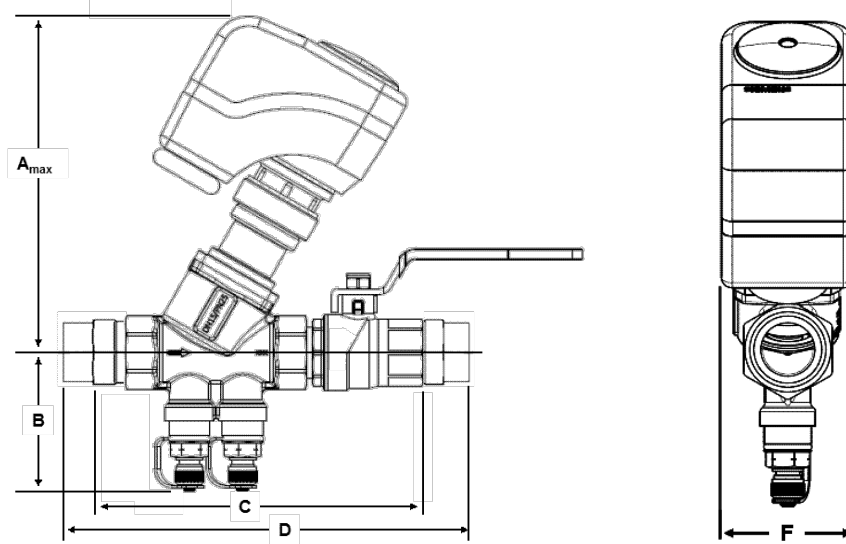
**DIMENSIONS AND WEIGHTS**

Model Number	Size	Connection Type	DIMENSIONS* IN INCHES (mm)				Flow Capacity in GPM (L/hr)		Approx. Weight Lbs.(kg.)
			A <sub>max</sub>	B	C	F	Min.	Max.	
PVC-1/2UL	1/2"	NPT Female	5.08 (129)	0.92 (23)	2.95 (75)	1.97 (50)	0.13 (30)	0.88 (200)	1.15 (0.52)
PVC-1/2L	1/2"	NPT Female	5.08 (129)	0.92 (23)	2.95 (75)	1.97 (50)	0.29 (66)	1.59 (361)	1.15 (0.52)
PVC-1/2H	1/2"	NPT Female	5.08 (129)	0.92 (23)	2.95 (75)	1.97 (50)	0.44 (100)	2.53 (575)	1.15 (0.52)
PVC-1/2UH	1/2"	NPT Female	5.08 (129)	0.92 (23)	2.95 (75)	1.97 (50)	0.97 (220)	5.85 (1,329)	1.15 (0.52)
PVC-3/4L	3/4"	NPT Female	5.08 (129)	2.12 (54)	3.11 (79)	1.97 (50)	0.44 (100)	2.53 (575)	1.19 (0.54)
PVC-3/4H	3/4"	NPT Female	5.08 (129)	2.12 (54)	3.11 (79)	1.97 (50)	0.9 (220)	5.85 (1,329)	1.19 (0.54)
PVC-1	1"	NPT Female	5.67 (144)	2.48 (63)	3.94 (100)	2.52 (64)	2.64 (600)	15.89 (3,609)	2.5 (1.14)
PVC-1-1/4	1-1/4"	NPT Female	5.67 (144)	2.68 (68)	4.09 (104)	2.52 (64)	2.42 (550)	17.62 (4,000)	2.8 (1.27)

\*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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**xylem**  
Let's Solve Water



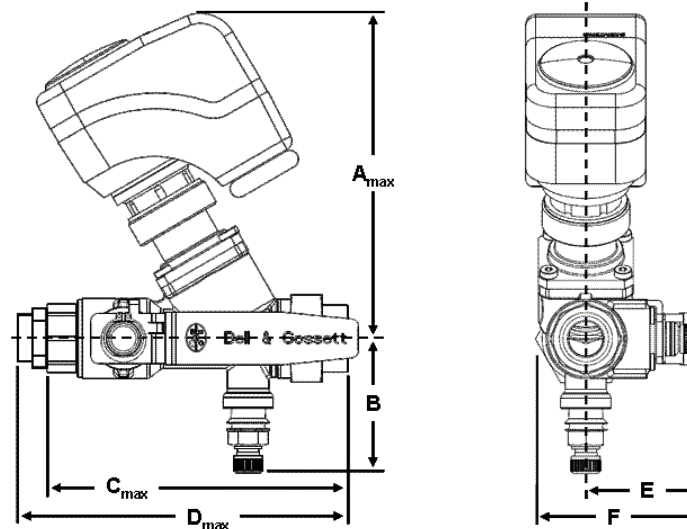
Model AX

DIMENSIONS AND WEIGHTS

Model Number	Size	Connection Type	DIMENSIONS* IN INCHES (mm)					Flow Capacity** in GPM (L/hr)		Approx. Weight Lbs.(kg.)
			A <sub>max</sub>	B	C	D	F	Min.	Max.	
AX-1/2UL	1/2"	NPT Female	5.08 (129)	0.92 (23)	4.65 (118)	N/A	1.97 (50)	0.13 (30)	0.88 (200)	1.15 (0.52)
		Sweat Female	5.08 (129)	0.92 (23)	4.65 (118)	5.85 (149)	1.97 (50)			
AX-1/2L	1/2"	NPT Female	5.08 (129)	0.92 (23)	4.65 (118)	N/A	1.97 (50)	0.29 (66)	1.59 (361)	1.15 (0.52)
		Sweat Female	5.08 (129)	0.92 (23)	4.65 (118)	5.85 (149)	1.97 (50)			
AX-1/2H	1/2"	NPT Female	5.08 (129)	0.92 (23)	4.65 (118)	N/A	1.97 (50)	0.44 (100)	2.53 (575)	1.15 (0.52)
		Sweat Female	5.08 (129)	0.92 (23)	4.65 (118)	5.85 (149)	1.97 (50)			
AX-1/2UH	1/2"	NPT Female	5.08 (129)	0.92 (23)	4.65 (118)	N/A	1.97 (50)	0.9 (220)	5.85 (1,329)	1.15 (0.52)
		Sweat Female	5.08 (129)	0.92 (23)	4.65 (118)	5.85 (149)	1.97 (50)			
AX-3/4L	3/4"	NPT Female	5.08 (129)	2.12 (54)	5.21 (132)	N/A	1.97 (50)	0.44 (100)	2.53 (575)	1.19 (0.54)
		Sweat Female	5.08 (129)	2.12 (54)	5.21 (132)	7.31 (186)	1.97 (50)			
AX-3/4H	3/4"	NPT Female	5.08 (129)	2.12 (54)	5.21 (132)	N/A	1.97 (50)	0.9 (220)	5.85 (1,329)	1.19 (0.54)
		Sweat Female	5.08 (129)	2.12 (54)	5.21 (132)	7.31 (186)	1.97 (50)			
AX-1	1"	NPT Female	5.67 (144)	2.48 (63)	6.44 (164)	N/A	2.52 (64)	2.64 (600)	15.89 (3,609)	2.5 (1.14)
		Sweat Female	5.67 (144)	2.48 (63)	6.44 (164)	8.74 (222)	2.52 (64)			
AX-1-1/4	1-1/4"	NPT Female	5.67 (144)	2.68 (68)	7.19 (183)	N/A	2.52 (64)	2.42 (550)	17.62 (4,001)	2.8 (1.27)
		Sweat Female	5.67 (144)	2.68 (68)	7.19 (183)	9.69 (246)	2.52 (64)			

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

\*\*Flow ranges are with supplied ball valve 100% open. Ball valve is not intended to be used to limit flow, but rather as an isolation valve only.



Model AU

DIMENSIONS AND WEIGHTS

Valve Size Fixed End	Connection Fixed End	DIMENSIONS* IN INCHES (mm)						Flow Capacity** in GPM (L/hr)		Approx. Weight Lbs.(kg.)
		A <sub>max</sub>	B	C <sub>max</sub>	D <sub>max</sub>	E	F	Min.	Max.	
1/2"UL	Sweat Female	5.08 (129)	0.92 (23)	5.7 (143)	6.3 (158)	1.77 (45)	2.51 (64)	0.13 (30)	0.88 (200)	1.5 (0.68)
	NPT Female	5.08 (129)	0.92 (23)	5.7 (143)	N/A	1.77 (45)	2.51 (64)	0.13 (30)	0.88 (200)	1.5 (0.68)
1/2"L	Sweat Female	5.08 (129)	0.92 (23)	5.7 (143)	6.3 (158)	1.77 (45)	2.51 (64)	0.29 (66)	1.59 (361)	1.5 (0.68)
	NPT Female	5.08 (129)	0.92 (23)	5.7 (143)	N/A	1.77 (45)	2.51 (64)	0.29 (66)	1.59 (361)	1.5 (0.68)
1/2"H	Sweat Female	5.08 (129)	0.92 (23)	5.7 (143)	6.3 (158)	1.77 (45)	2.51 (64)	0.44 (100)	2.53 (575)	1.5 (0.68)
	NPT Female	5.08 (129)	0.92 (23)	5.7 (143)	N/A	1.77 (45)	2.51 (64)	0.44 (100)	2.53 (575)	1.5 (0.68)
1/2"UH	Sweat Female	5.08 (129)	0.92 (23)	5.7 (143)	6.3 (158)	1.77 (45)	2.51 (64)	0.97 (220)	5.85 (1,329)	1.5 (0.68)
	NPT Female	5.08 (129)	0.92 (23)	5.7 (143)	N/A	1.77 (45)	2.51 (64)	0.97 (220)	5.85 (1,329)	1.5 (0.68)
3/4"L	Sweat Female	5.08 (129)	2.12 (54)	6.0 (150)	7.0 (176)	1.92 (49)	2.87 (68)	0.44 (100)	2.53 (575)	1.7 (0.77)
	NPT Female	5.08 (129)	2.12 (54)	6.0 (150)	N/A	1.92 (49)	2.87 (68)	0.44 (100)	2.53 (575)	1.7 (0.77)
3/4"H	Sweat Female	5.08 (129)	2.12 (54)	6.0 (150)	7.0 (176)	1.92 (49)	2.87 (68)	0.97 (220)	5.85 (1,329)	1.7 (0.77)
	NPT Female	5.08 (129)	2.12 (54)	6.0 (150)	N/A	1.92 (49)	2.87 (68)	0.97 (220)	5.85 (1,329)	1.7 (0.77)

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

\*\*Flow ranges are with integral ball valve 100% open. Ball valve is not intended to be used to limit flow, but rather as an isolation valve only.

**Cv RATINGS AND MINIMUM REQUIRED DIFFERENTIAL PRESSURE**

Valve Size 1/2"UL						
Flow Setting (GPM)	Min (0.13)	0.2	0.4	0.6	0.8	Max (0.88)
Cv*	0.06	0.09	0.20	0.39	0.53	0.58
Required Min. ΔP	2.07	2.10	2.15	2.21	2.27	2.29

Valve Size 1/2"L						
Flow Setting (GPM)	Min (0.29)	0.5	1	1.5	Max (1.59)	
Cv*	0.21	0.38	0.64	0.96	1.04	
Required Min ΔP	2.12	2.18	2.32	2.46	2.49	

Valve Size 1/2"H						
Flow Setting (GPM)	Min (0.44)	1	1.5	2	Max (2.88)	
Cv*	0.28	0.64	0.92	1.19	1.51	
Required Min ΔP	2.16	2.33	2.45	2.56	2.68	

Valve Size 1/2"UH						
Flow Setting (GPM)	Min (0.97)	2	3	4	5	Max (5.85)
Cv*	0.56	1.17	1.74	2.20	2.71	3.13
Required Min ΔP	2.32	2.52	2.78	2.94	3.06	3.13

Valve Size 3/4"L						
Flow Setting (GPM)	Min (0.44)	1	1.5	2	Max (2.53)	
Cv*	0.28	0.64	0.92	1.19	1.51	
Required Min ΔP	2.16	2.33	2.45	2.56	2.68	

Valve Size 3/4"H						
Flow Setting (GPM)	Min (0.97)	2	3	4	5	Max (5.85)
Cv*	0.56	1.17	1.74	2.20	2.71	3.13
Required Min ΔP	2.32	2.52	2.78	2.94	3.06	3.13

Valve Size 1"				
Flow Setting (GPM)	Min (2.64)	5	10	Max (15.89)
Cv*	1.67	3.14	6.07	8.70
Required Min ΔP	2.51	2.54	2.71	3.34

Valve Size 1-1/4"					
Flow Setting (GPM)	Min (2.42)	5	10	15	Max (17.62)
Cv*	1.60	3.18	5.88	8.44	8.82
Required Min ΔP	2.60	2.65	2.85	3.54	4.06

\*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 Model Number	Fail Position	Control Signal	Valves Actuator Can Be Used With	Manufacturer Data Sheet
V1000645	Siemens	SSA61U	Fail Last Position	0-10 Vdc Modulating	All 1/2" thru 1-1/4"	155-710
V1000646	Siemens	SSA81U	Fail Last Position	3 Position Floating	All 1/2" thru 1-1/4"	155-710
V59062	Siemens	SSD61U	Fail Last Position	0-10 Vdc Modulating	All 1/2" thru 1-1/4"	155-773
V59061	Siemens	SSD81U	Fail Last Position	3 Position Floating	All 1/2" thru 1-1/4"	155-773
V1001958	Siemens	SSD61.5U	Spring Return Fail Open	0-10 Vdc Modulating	All 1/2" thru 1-1/4"	155-773
V1001959	Siemens	SSD81.5U	Spring Return Fail Open	3 Position Floating	All 1/2" thru 1-1/4"	155-773
V1000647	Siemens	SFP71U	Spring Return Fail Open	On/Off	1/2"UL, 1/2"H, and 3/4"L Only	155-321P25
V1001952	Siemens	SFA71U	Spring Return Fail Closed	On/Off	1/2"UL, 1/2"H, and 3/4"L Only	155-321P25
V1000648	Honeywell	M7410F1000	Fail Last Position	0-10 Vdc/2-10 Vdc Modulating	All 1/2" thru 1-1/4"	62-0100
V1000649	Honeywell	M6410A1029	Fail Last Position	3 Position Floating	All 1/2" thru 1-1/4"	62-0100
V1000735	Honeywell	M7435F3007	Spring Return Fail Open	0-10 Vdc/2-10 Vdc Modulating	All 1/2" thru 1-1/4"	62-0100
V1000736	Honeywell	M6435A3000	Spring Return Fail Open	3 Position Floating	All 1/2" thru 1-1/4"	62-0100