

Zone Valves
VB Series

The VB Series Zone Valves provide economical two position spring return control of fan coil units, unit heaters, and perimeter fin-tube radiation systems. Valves and actuators can be ordered factory assembled or separately to allow stocking flexibility. Actuator installation and removal is accomplished without tools, with a simple twisting motion.

Available with sweat or threaded connections, all VB Series Zone Valves feature the Hansen Synchron™ hysteresis synchronous motor, proven worldwide to provide long life and reliable operation.



Typical VB Series Zone Valve, shown with actuator removed

SPECIFICATIONS

Valve Body Pressure Rating	300 PSIG (PN20 or 2, 100 kPa) System Operating Pressure	
Fluid / Ambient Temperature Limits	0 to 94°C water at an Ambient Temperature of 40°C (32 to 200°F at 104°F)	
Shipping & Storage Temperature Limits	-40 to 70°C (-40 to 158°F)	
Service	Chilled and Hot Water, up to 50% Glycol Solutions	
Motor Voltages	Refer to actuator selection table, page 2.	
Motor Leads	6" 22 AWG wires, with 3/4" conduit provision	
Power Consumption	5 W, 6.8 VA	
End Switch	5A, 250 V 50/60 Hz	
Stroke Speeds	Power Stroke: 9 to 11 seconds	
	Spring Return Stroke: 4 to 5 seconds	
Flow Characteristic	Quick Opening	
Seat Leakage	Zero Leakage (100% Bubble-Tight Shut-off)	
Body Materials	Body	Forged Brass
	Stem	Hard Chrome-Plated Brass
	Seat	Brass
	Paddle	Buna N Rubber
Actuator	Enclosure	Stainless Steel Base and Bearing Plates, Aluminum Cover
	Motor	UL Recognized, CSA Certified and CE Mark Compliant
Agency Approval	UL Listing Pending, CE Mark Compliant	
Shipping Weight (Actuator/Valve Assembly)	1360 g (3.0 lb) Maximum for Complete Assembly	

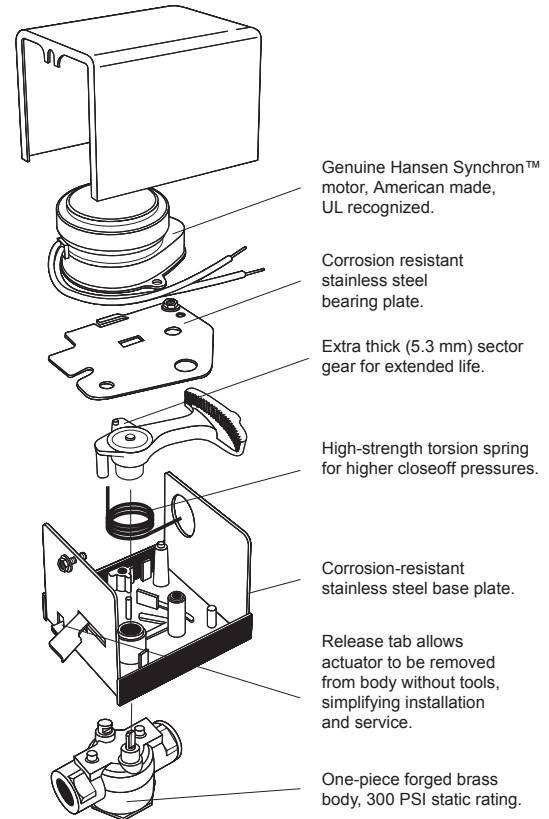
The performance specifications above are nominal and subject to tolerances and application variables of generally acceptable industry standards. Bray Controls shall not be liable for damages resulting from misapplication or misuse of its products.

Zone Valves

VB Series

2-Way Valve Bodies

Valve Size	C _v (K _v)	Closeoff ΔP PSI (kPa)	Connection Type	Part Number
1/2"	1.0 (.9)	75 (517)	Sweat	VB221S
			NPT	VB221N
			BSP	VB221B
	2.5 (2.2)	60 (414)	Sweat	VB222S
			NPT	VB222N
			BSP	VB222B
3.5 (3.0)	40 (276)	Sweat	VB223S	
		NPT	VB223N	
		BSP	VB223B	
3/4"	3.5 (3.0)	40 (276)	Sweat	VB233S
			NPT	VB233N
			BSP	VB233B
	5.0 (4.3)	35 (243)	Sweat	VB235S
			NPT	VB235N
			BSP	VB235B
7.5 (6.5)	30 (208)	Sweat	VB237S	
		NPT	VB237N	
		BSP	VB237B	
1"	8.0 (6.9)	30 (208)	Sweat	VB248S
			NPT	VB248N
			BSP	VB248B



Shaded part numbers are common items with higher inventory levels.

3-Way Valve Bodies

Valve Size	C _v (K _v)	Closeoff ΔP PSI (kPa)	Connection Type	Part Number
1/2"	3.0 (2.6)	55 (379)	Sweat	VB322S
			NPT	VB322N
			BSP	VB322B
	4.0 (3.4)	35 (243)	Sweat	VB323S
			NPT	VB323N
			BSP	VB323B
3/4"	4.0 (3.4)	35 (243)	Sweat	VB333S
			Sweat	VB335S
			NPT	VB335N
	5.0 (4.3)	35 (243)	BSP	VB335B
			Sweat	VB337S
			NPT	VB337N
7.5 (6.5)	25 (172)	BSP	VB337B	
		Sweat	VB347S	
		Sweat	VB348S	
1"	8.0 (6.9)	25 (172)	NPT	VB348N
			BSP	VB348B

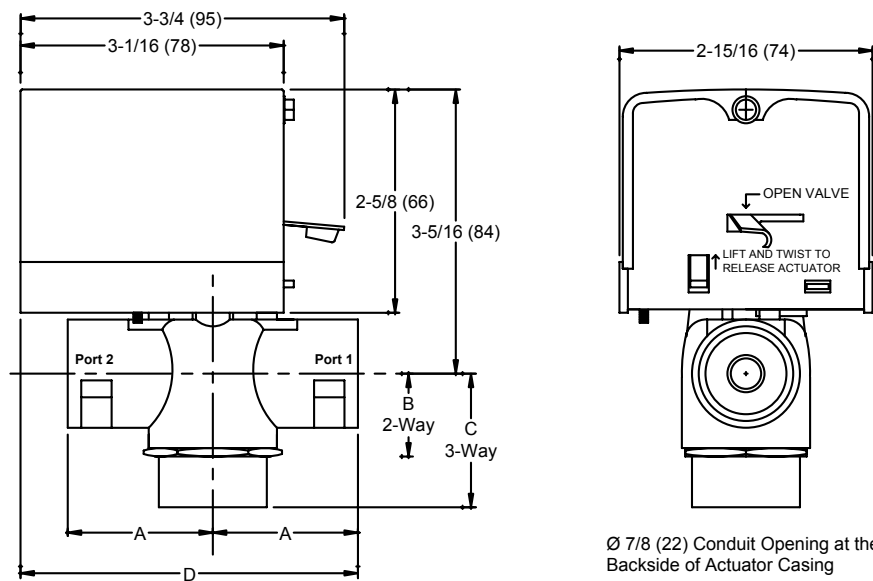
Actuators*

Fail Position	Voltage (VAC)	End Switch	Part Number
Normally Closed (N.C.)	24	No	VA1A0
		Yes	VA1A1
	110/120	No	VA1B0
		Yes	VA1B1
	220/230	No	VA1U0
		Yes	VA1U1
Normally Open (N.O.)	24	No	VA2A0
		Yes	VA2A1
	110/120	No	VA2B0
		Yes	VA2B1
	220/230	No	VA2U0
		Yes	VA2U1

*Use only Normally Closed Actuators with 3-Way valves.

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DIMENSIONS INCHES/(MM)



Valve Size	Dimensions								Weight			
	A		B		C		D		2-Way		3-Way	
	in.	mm	in.	mm	in.	mm	in.	mm	lb.	kg	lb.	kg
1/2" Sweat	1-3/8	35	15/16	24	1-1/2	38	3-5/8	92	1.9	0.85	2.4	1.1
3/4" Sweat	1-3/8	35	15/16	24	1-1/2	38	3-5/8	92	1.9	0.85	2.4	1.1
1" Sweat	1-11/16	43	15/16	24	1-1/2	38	3-15/16	100	2.1	0.95	2.9	1.3
1/2" NPT, BSP	1-3/8	35	15/16	24	1-1/2	38	3-5/8	92	1.9	0.85	2.4	1.1
3/4" NPT, BSP	1-11/16	43	15/16	24	1-1/2	38	3-15/16	100	1.9	0.85	2.4	1.1
1" NPT, BSP	1-7/8	47	1	25	1-11/16	43	4-1/8	105	2.4	1.1	3.0	1.4

MANUAL OPERATING LEVER

All VB Series Electrically Operated Zone Valves (except normally-open 2-way valves) are equipped with a manual operating lever. This lever:

- Allows the valve to be opened for system flushing before it is put into operation
- Prevents damage to the seating paddle on 3-way valves, and allows flushing of the system by maintaining the valve in the mid-position
- Resets to normal position the first time the valve is powered up

Note: The manual lever cannot be used to close the bypass port on 3-way valves.

MOUNTING

The valves can be mounted in horizontal or vertical piping. When installed in horizontal piping, the actuator must be above the valve body and can be tilted left or right but it must not be tilted below 85° from vertical.

Notes:

- Ensure there is no overhead water source that may drop onto valve actuator.
- In normal service, as some condensation may occur on or around the valve, the valve must be installed over a drip pan.

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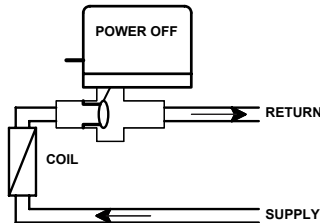
VB Series

PIPING AND INSTALLATION

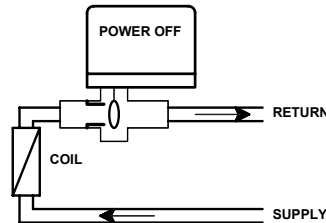
The zone valves must be piped so that the seating paddle always closes against the direction of flow, except in 3-way diverting configurations. The valves are designed for application in closed hydronic heating and cooling systems and are not recommended for use in systems requiring high amounts of make-up water (open systems). High levels of dissolved oxygen and chlorine found in open systems may attack the valve materials and result in premature failure.

Notes:

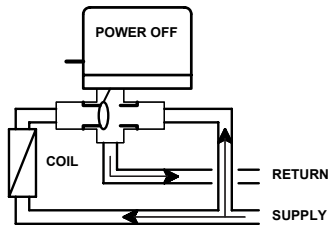
- 3-way valves always require a normally-closed actuator.
- 3-way valves are always closed at Port “1” when no power is applied to the motor.
- On power-up, the valve closes to Port “2” on 3-way valves.
- Orient the 3-way valve body as needed for normally-closed or normally-open flow through coil.



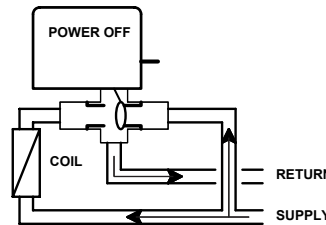
2-Way Valve with Normally-Closed Actuator



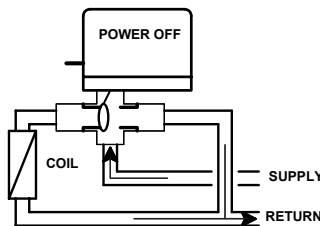
2-Way Valve with Normally-Open Actuator



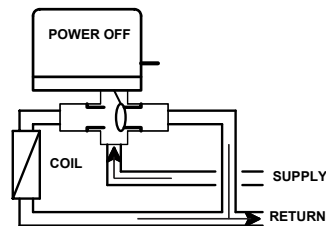
3-Way Mixing Valve Normally-Closed to the Coil



3-Way Mixing Valve Normally-Open to the Coil



3-Way Diverting Valve Normally-Closed to the Coil



3-Way Diverting Valve Normally-Open to the Coil

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