

ZV-NPT

Zone Valve Bronze Body

Series 16

24 VAC, NEMA 1, Spring Return

Description

The ZV Series 16 assemblies are complete with bronze body valves and spring return electric actuators in two-way and three-way configurations. ZV Assemblies are designed for use in hot or chilled water with up to 50% glycol mix. Valves can fail either stem up or stem down to achieve the desired "Normally Open" or "Normally Closed" position on loss of power.

Applications

- VAV applications
- Floor heating
- Fail coil units
- Induction units
- Zone ceiling cooling
- Zone wall mounted boilers
- VAV applications

Actuator Performance

- Housing protection NEMA 1 (indoor applications)
- Power supply 24 VAC 50/60 Hz +/- 10%
Low voltage class II device, per UL and CSA
- Controls available are on/off, floating, modulating (2-10 VDC/4-20 MA), and pulse with modulating 0.25-5 second
- Brushless hysteresis motor capable of continuous stall
- Power consumption: 8 VA
- Drive time: on/off 10 seconds, modulating 25 seconds
- Operating temperatures -40°F to +122°F
- Visual position indicator confirms valve travel
- Compact design provides maximum torque output relative to small actuator enclosure
- Stroke: 4.5 MM
- Wiring connections: 4" Leads with 7/8" strain relief
- Modulating actuator has 2-10 Reverse acting jumper onboard
- Warranty: 3-years

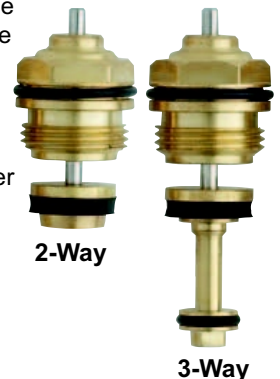
Valve Performance

- Body material: low zinc bronze alloy C84400
- Pressure rating: ANSI 240 400 psi at 150° C.
- Maximum body test pressure: 1200 psi
- Maximum delta p: 45 psi
- Close off: 100% (max 45 psi)
- Water rating: 250°F
- Glycol mixture: 50%
- Steam rating: 15 psi max (2-way only)
- Valve stem: polished stainless steel
- Turndown ratio: 50:1
- Valve seat: Integral bronze
- Valve disc : EPDM
- Valve plunger: brass
- Packing material: double EPDM
- Connections: NPT or sweat
- Optional unions available on one side or both
- Warranty: 3-Years



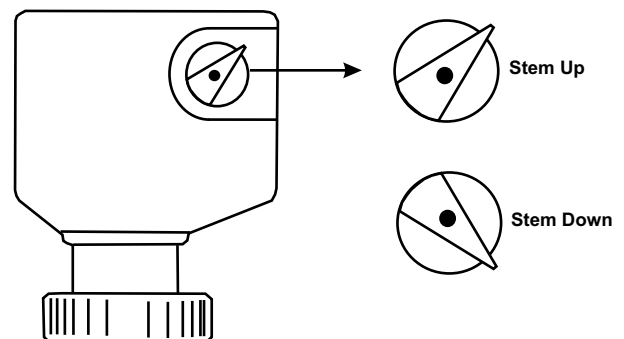
Replaceable Cartridge

All valve bodies have replaceable cartridges to enable Cv size change without removing the valve from the line. The cartridge has a parabolic characterizing plug which opens wide to clear the orifice of debris and eliminates fouling. The disc is made of EPDM with a brass plunger and stainless steel stem for years of trouble free operation. The cartridge arrangement is rated for 1.5 million cycles or 3,000,000 strokes leak free.



Position Indicator

Actuators are equipped with a visual position indicator standard



Operation

2-Way

Figure 2 shows the zone valve in the open or full flow position. The valve spring provides the necessary force to hold the stem in the raised or NO position.

In the event of power failure the ZV Series 16 assemblies fail in either stem up (NO) or stem down (NC).

3-Way Diverting

Figure 3 shows the 3-way diverting zone valve in the normally open position to the coil. As the valve stem moves downward, the flow through the (A) port decreases and the flow through the (B) port increases. As the valve stem moves upward the flow through the (A) port increases and the flow through the (B) port decreases.

In the event of power failure the ZV Series 16 assemblies fail in either:
 stem up (AB to A port),
 Stem down (AB to B port).

Figure 2. NORMALLY OPEN (Stem Up)

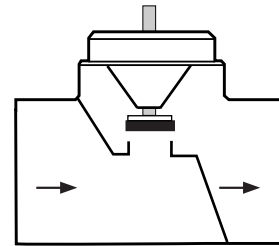
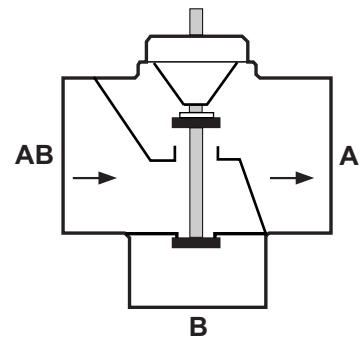
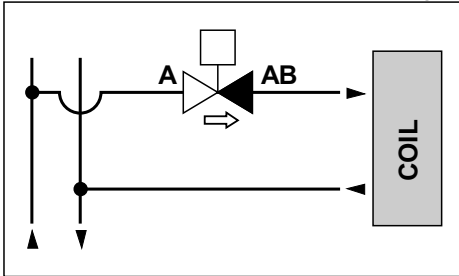


Figure 3. NORMALLY OPEN AB to A (Stem Up)

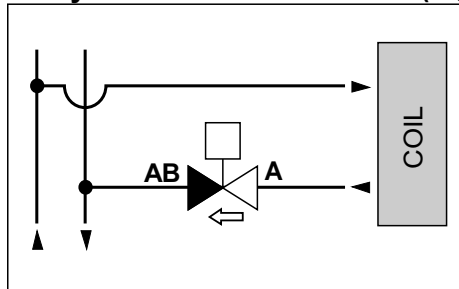


Piping

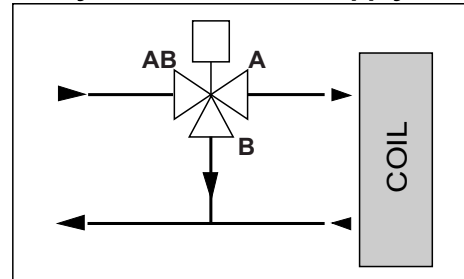
2-way installed on the supply (Fig. 4)



2-way installed on the return (Fig. 5)



3-way installed on the supply side (Fig. 6)



Note 3-Way Installation:

3-way diverting valves **MUST** always be installed on the supply side of the coil as shown above. Flow enters the common port and goes to the coil. The bottom port is for bypass around the coil. Do not pipe the bottom port for anything other than bypass around the coil.

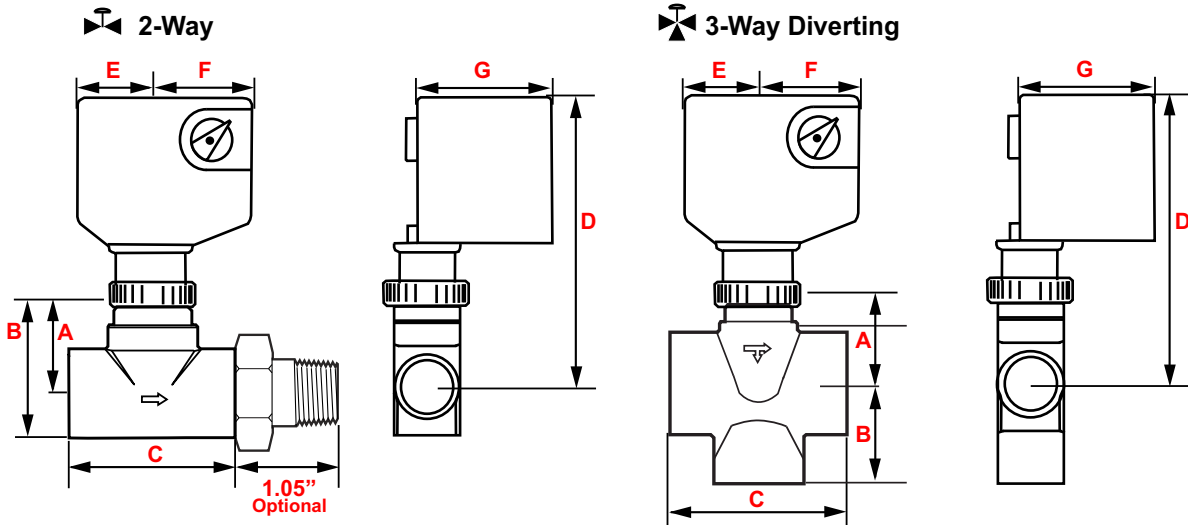
Solder Instructions:

If direct solder bodies are used, remove the stem packing cartridge during installation. Heat will damage the packing.
 If solder unions are used, solder the unit without the sealing o-ring.

ZV Series 16



Dimensions



Type	Size Inch	2-Way Valve								3-Way Valve							
		A	B	C	D	E	F	G	Wt. lb	A	B	C	D	E	F	G	Wt. lb
NPT	1/2"	1.09"	1.60"	2.29"	4.00"	1.20"	1.60"	2.00"	.40	1.09"	2.60"	5.14"	4.00"	1.20"	1.60"	2.00"	.90
	3/4"	1.09"	2.20"	2.20"	4.00"	1.20"	1.60"	2.00"	.70	1.09"	2.75"	5.44"	4.00"	1.20"	1.60"	2.00"	1.2
	1"	1.80"	2.84"	3.88"	4.00"	1.20"	1.60"	2.00"	1.5								
Sweat	1/2"	1.09"	1.60"	2.24"	4.00"	1.20"	1.60"	2.00"	.33	1.09"	2.62"	3.02"	4.00"	1.20"	1.60"	2.00"	.04
	3/4"	1.09"	1.60"	2.29"	4.00"	1.20"	1.60"	2.00"	.38	1.09"	2.23"	2.24"	4.00"	1.20"	1.60"	2.00"	.05

NOTES: 1) 3-Way Solder Valve is Standard 3/4" with 1/2" inserts Included for 1/2" Solder Connections.
2) 3-Way NPT Standard Male Union.

Cv Values

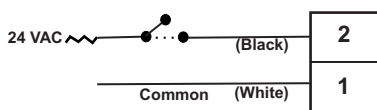
Type	Nominal Line Size	Flow Rate	Close Off	Assembly Number 24 VAC Power / On/Off Control (For Modulating Change O to E)	
	Inch	Cv		NPT	Solder
2-Way	1/2"	.50	45	ZV22ANA16O	ZV22ASA16O
	1/2"	1.0	45	ZV22BNA16O	ZV22BSA16O
	1/2"	1.5	45	ZV22CNA16O	ZV22CSA16O
	1/2"	2.0	45	ZV22DNA16O	ZV22DSA16O
	1/2"	2.5	45	ZV22ENA16O	ZV22ESA16O
	1/2"	3.0	45	ZV22FNA16O	ZV22FSA16O
	1/2"	3.5	45	ZV22GNA16O	ZV22GSA16O
	3/4"	1.0	45	ZV23ANA16O	ZV23ASA16O
	3/4"	1.5	45	ZV23BNA16O	ZV23BSA16O
	3/4"	2.0	45	ZV23CNA16O	ZV23CSA16O
	3/4"	2.5	45	ZV23DNA16O	ZV23DSA16O
	3/4"	4.5	45	ZV23ENA16O	ZV23ESA16O
	1"	6.0	45	ZV24ANA16O	ZV24ASA16O
1"	6.4	45	ZV24BNA16O	ZV24BSA16O	
1"	8.0	45	ZV24CNA16O	ZV24CSA16O	
1"	9.0	45	ZV24DNA16O	ZV24DSA16O	
3-Way	1/2"	1.0	45	ZVD2ANA16O	ZVD2ASA16O
	1/2"	2.0	45	ZVD2BNA16O	ZVD2BSA16O
	1/2"	3.0	45	ZVD2CNA16O	ZVD2CSA16O
	1/2"	3.5	45	ZVD2DNA16O	ZVD2DSA16O
	3/4"	1.0	45	ZVD3ANA16O	ZVD3ASA16O
	3/4"	2.0	45	ZVD3BNA16O	ZVD3BSA16O
	3/4"	3.0	45	ZVD3CNA16O	ZVD3CSA16O
	3/4"	3.5	45	ZVD3DNA16O	ZVD3DSA16O

Water Capacity (GPM)

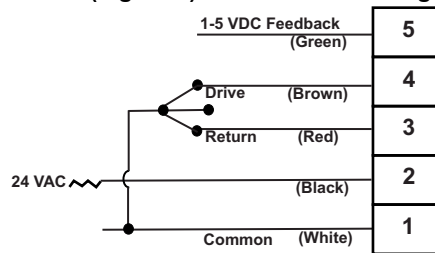
C _v	Size In	Pressure Drop Across Valve									
		1 psi	2 psi	3 psi	4 psi	5 psi	6 psi	7 psi	8 psi	9 psi	10 psi
.50	1/2"	.50	0.7	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6
1.0	1/2"-3/4"	1.0	1.4	1.7	2.0	2.2	2.4	2.6	2.8	3.0	3.2
1.5	1/2"-3/4"	1.5	2.1	2.6	3.0	3.4	3.7	4.0	4.2	4.5	4.7
2.0	1/2"-3/4"	2.0	2.8	3.5	4.0	4.5	4.9	5.3	5.7	6.0	6.3
2.5	1/2"-3/4"	2.5	3.5	4.3	5.0	5.6	6.1	6.6	7.1	7.5	7.9
3.0	1/2"-3/4"	3.0	4.2	5.2	6.0	6.7	7.3	7.9	8.5	9.0	9.5
3.5	1/2"	3.5	4.9	6.1	7.0	7.8	8.6	9.3	9.9	10.5	11.1
4.5	3/4"	4.5	6.4	7.8	9.0	10.1	11.0	11.9	12.7	13.5	14.2
6.0	1"	6.0	8.5	10.4	12.0	13.4	14.7	15.9	17.0	18.0	19.0
6.4	1"	6.4	9.1	11.1	12.8	14.3	15.7	16.9	18.1	19.2	20.2
8.0	1"	8.0	11.3	13.9	16.0	17.9	19.6	21.2	22.6	24.0	25.3
9.0	1"	9.0	12.7	15.6	18.0	20.1	22.0	23.8	25.5	27.0	28.5

Electrical

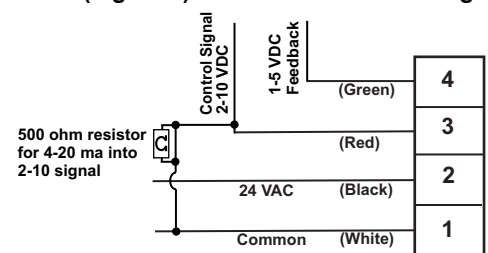
(Figure 6) 24 VAC On/Off



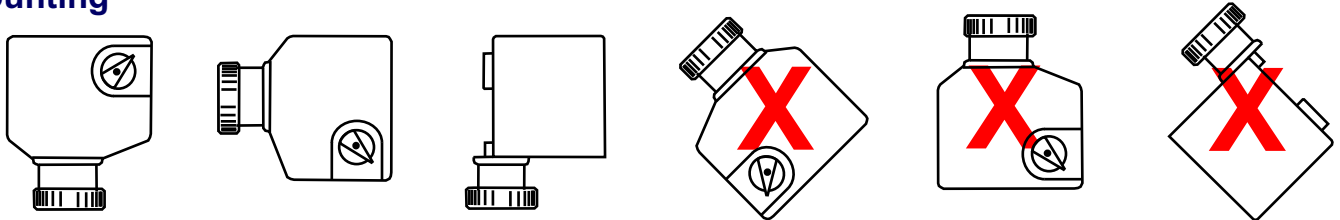
(Figure 7) 24 VAC Floating



(Figure 8) 24 VAC Modulating



Mounting



Assembly Number

Standard Construction

ZV 2 2A N A 16 O
 1&2 3 4&5 6 7 8&9 10

Zone Valve Assembly, 2-Way, 1/2" Cv=0.5, NPT Ends, Bronze Body, Stainless Stem, EPDM Disc, Spring Return, 24 VAC, NEMA 1 Actuator, On/Off Control.

#	ITEM	CODE	DESCRIPTION
1 & 2	Series	ZV	Zone Valve
3	Assembly	2 D	2-Way Configuration 3-Way Diverter
4 & 5	Size	2 ■ 3 ■ 4 ■	1/2" ■ = A, B, C, D, E, F, G 3/4" ■ = A, B, C, D, E 1" ■ = A, B, C, D
6	Valve Type	N S U Q	NPT Threaded Ends Solder Connections Union Ends Union Outlet (1 Union)

#	ITEM	CODE	DESCRIPTION
7	Construction	A	Bronze Body, S.S. Stem, EPDM Disc
8 & 9	Actuator	16	Spring Return 24 VAC
10	Control	O F E T	On/Off Floating Modulating 2-10 VDC Pulse with Modulation (2-5 seconds)

⬅ Please Specify NO or NC for 2-Way, For 3-Way Specify AB to A or AB to B Fail Position
 Fail Open and Fail Closed Valves Use Different Actuators, Please Specify Correctly!