

M-Type Electrically Operated Zone Valves

The electric zone valves are designed for 2-position (on-off), spring-return control of chilled water and hot water flow through coils and heat exchanges of all types in a variety of Heating, Ventilation and Air Conditioning (HVAC) applications.

All valves feature a hysteresis synchronous motor, proven worldwide for quality, reliability and long life, and a spring-return mechanism to return the valves to a power fail-safe position. A selection of motor voltages is available for use of valves in different countries.

The valves are available in normally-closed, normally-open and three-way mixing/diverting styles, with 1/2", 3/4" and 1" internal threaded BSP/NPT and sweat (solder joints for copper tubing) connections, and 1-1/4" sweat connections only. The one-piece body permits high pressure ratings: 300 psig (2100 kPa). For a complete list of available features and options, refer to Fig. 1: Valve Model Number Selection Guide.



Specifications

Valve Body Pressure Rating	300 psig (PN20 or 2,100 kPa) System Operating Pressure		
Fluid / Ambient Temperature Limits	0 to 94 °C water in an Ambient Temperature of 0 to 40 °C (32 to 200 °F in 32 to 104 °F)		
Body Sizes	See Fig. 1: Valve Model Number Selection Guide		
Service	Hot and Chilled Water, up to 50% Glycol Solutions		
Motor Voltages	See Fig. 1: Valve Model Number Selection Guide		
Motor Leads	6" 22 AWG wires, with 3/4" conduit provision		
Power Consumption	5 W, 6.8 VA		
Stroke Speeds	Power Stroke: 9 to 11 seconds Spring Return Stroke: 4 to 5 seconds		
Flow Coefficients & Maximum Close-Off Pressures:			
Valve Size	2-way Cv (Kv)	3-way Cv (Kv)	Close-Off ΔP (kPa)
1/2" Only	1.0 (0.9)	1.0 (0.9)	50 PSI (350)
1/2" & 3/4"	2.5 (2.2) 4.0 (3.5)	3.0 (2.6) 5.0 (4.3)	25 PSI (175) 10 PSI (70)
3/4" Threaded & 1" Sweat	7.0 (6.0)	7.0 (6.0)	8 PSI (56)
1" Threaded & 1-1/4" Sweat	8.0 (6.9)	7.5 (6.0)	15 PSI (103)
Flow Characteristic	Quick Opening		
Seat Leakage	Zero Leakage (100% Bubble-Tight Shut-Off)		
Body Materials	Body Stem Seat Paddle	Forged Brass Hard Chrome-Plated Brass Brass Buna N Rubber	
Actuator	Enclosure Motor	Stainless Steel Base and Bearing Plates, Aluminum Cover UL Recognized, CSA Certified and CE Mark Compliant	
Agency Approval	UL Listed (File No. MH28700, Category YIOZ), CE Mark Compliant		
Shipping Weight	1360 g (3.0 lb) Maximum		

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

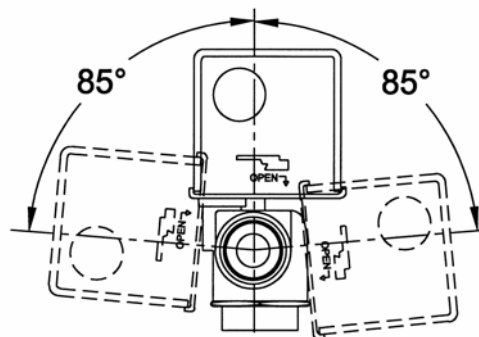
Fig. 1: Valve Model Number Selection Guide

Product Type	Configuration	Valve Size	Cv Factor	Pipe Connection	Spring Return Position	Voltage	Options
V	2	3	2	B	1	U	0

Valve Model Number Designations

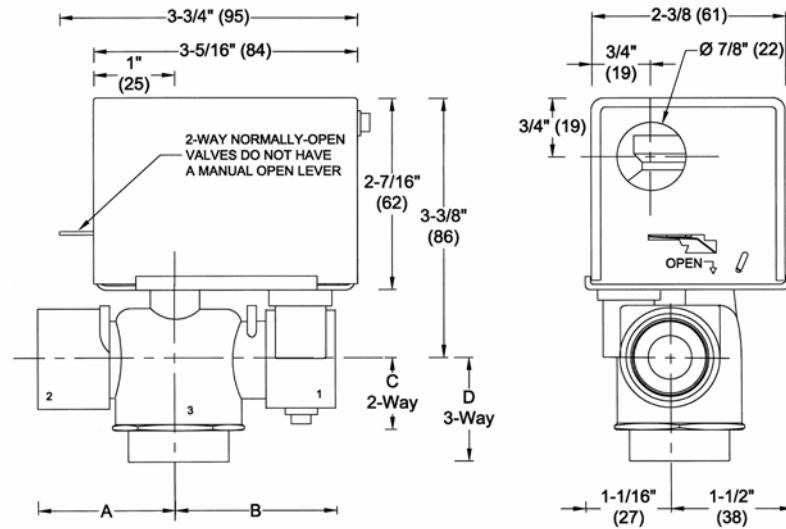
Product Type	Pipe Connection																			
V = M-Type Zone Valves	B = BSP N = NPT S = Sweat																			
Configuration	Spring Return Position																			
2 = 2-way 3 = 3-way	1 = Normally Closed 2 = Normally Open 3-way is available in designation "1" only and configured as N.C. to port "1" and N.O. to port "2". For N.O. configuration to the water coil, connect the coil to port "2".																			
Valve Size	Motor Voltage																			
2 = 1/2" 3 = 3/4" 4 = 1" 5 = 1-1/4" Sweat Only	A = 24 V 50/60 Hz B = 110/120 V 50/60 Hz D = 208 V 60 Hz T = 277 V 50/60 Hz U = 220/230 V 50/60 Hz																			
Cv Factor	Options																			
<table> <tr> <th></th><th>2-way</th><th>3-way</th></tr> <tr> <td>*1 =</td><td>1.0</td><td>1.0</td></tr> <tr> <td>2 =</td><td>2.5</td><td>3.0</td></tr> <tr> <td>4 =</td><td>4.0</td><td>5.0</td></tr> <tr> <td>**7 =</td><td>7.0</td><td>7.0</td></tr> <tr> <td>***8 =</td><td>8.0</td><td>7.5</td></tr> </table> <p>* For 1/2" Valves only ** For 3/4" Threaded and 1" Sweat Valves Only *** For 1" Threaded and 1-1/4" Sweat Valves Only</p>		2-way	3-way	*1 =	1.0	1.0	2 =	2.5	3.0	4 =	4.0	5.0	**7 =	7.0	7.0	***8 =	8.0	7.5	0 = No Options 1 = End Switch 2 = 18" Motor Leads 3 = End Switch and 18" Motor Leads	
	2-way	3-way																		
*1 =	1.0	1.0																		
2 =	2.5	3.0																		
4 =	4.0	5.0																		
**7 =	7.0	7.0																		
***8 =	8.0	7.5																		

Fig. 2: Mounting Orientation



In horizontal piping applications, mount the valve within 85° of the upright position.

Fig. 3: Dimensions in inches (mm)



VALVE SIZE	A	B	C	D
1/2" Sweat	1-5/16" (33)	2-3/16" (55)	15/16" (24)	1-5/16" (33)
3/4" Sweat	1-5/16" (33)	2-3/16" (55)	15/16" (24)	1-1/2" (39)
1" Sweat	1-11/16" (43)	1-15/16" (50)	15/16" (24)	1-1/2" (39)
1-1/4" Sweat	1-13/16" (46)	1-15/16" (50)	1-1/8" (29)	2-3/16" (55)
1/2" NPT, BSP	1-5/16" (33)	2-3/16" (55)	15/16" (24)	1-5/16" (33)
3/4" NPT, BSP	1-11/16" (43)	1-15/16" (50)	15/16" (24)	1-7/16" (36)
1" NPT, BSP	1-13/16" (46)	1-15/16" (50)	1-1/8" (29)	2-3/16" (55)

Fig. 4: Water Valve Sizing Table - Water Capacity in Gallons Per Minute (GPM)

		1.0 Cv	2.5 Cv	3.0 Cv	4.0 Cv	5.0 Cv	7.0 Cv	8.0 Cv
Differential Pressure, ΔP	1 PSI	1.0	2.5	3.0	4.0	5.0	7.0	8.0
	2 PSI	1.4	3.5	4.2	5.7	7.1	9.9	11.3
	3 PSI	1.7	4.3	5.2	6.9	8.7	12.1	13.9
	4 PSI	2.0	5.0	6.0	8.0	10.0	14.0	16.0
	5 PSI	2.2	5.6	6.7	8.9	11.2	15.7	17.9

PIPING & INSTALLATION

The zone valves must be piped so that the paddle always closes against the direction of flow, except in 3-way diverting configurations, refer to Fig.5 to Fig.10. The manual operating lever, provided on all 2-way normally-closed and all 3-way valves, is factory set in open position to allow flushing of the hydronic system after installation and also to unseat the valve while soldering the sweat-type connections. Each time when the valve is operated electrically, the manual lever will transfer automati-

cally to the valve's normal position. Owing to condensation in chilled water applications, the valves must be installed over a drip pan. The valves are designed for use 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.

Fig. 5: 2-Way Valve Normally Closed to the Coil in De-energized Mode

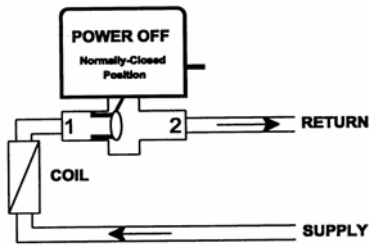


Fig. 6: 2-Way Valve Normally Open to the Coil in De-energized Mode

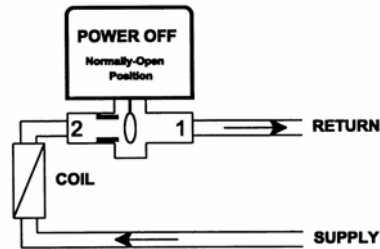


Fig. 7: 3-Way Valve in Mixing Configuration, Normally Closed to the Coil in De-energized Mode

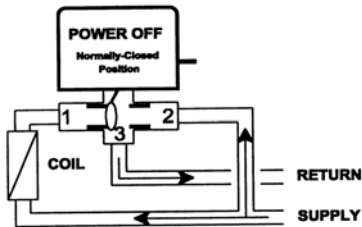


Fig. 8: 3-Way Valve in Mixing Configuration, Normally Open to the Coil in De-energized Mode

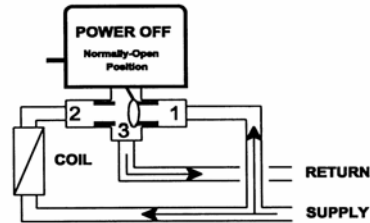


Fig. 9: 3-Way Valve in Diverting Configuration, Normally Closed to the Coil in De-energized Mode

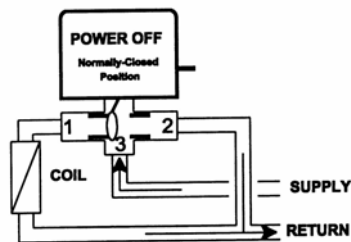
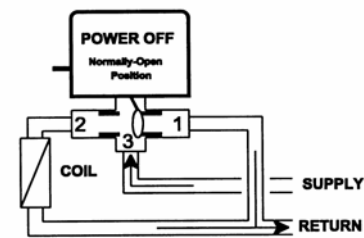


Fig. 10: 3-Way Valve in Diverting Configuration, Normally Open to the Coil in De-energized Mode



Mega Controls Limited

Room 2505, Trend Centre

29 Cheung Lee Street, Chai Wan, Hong Kong

Phone: +852 2896 7277 Fax: +852 2896 7234

E-mail: sales@megacontrols.com

Website: www.megacontrols.com