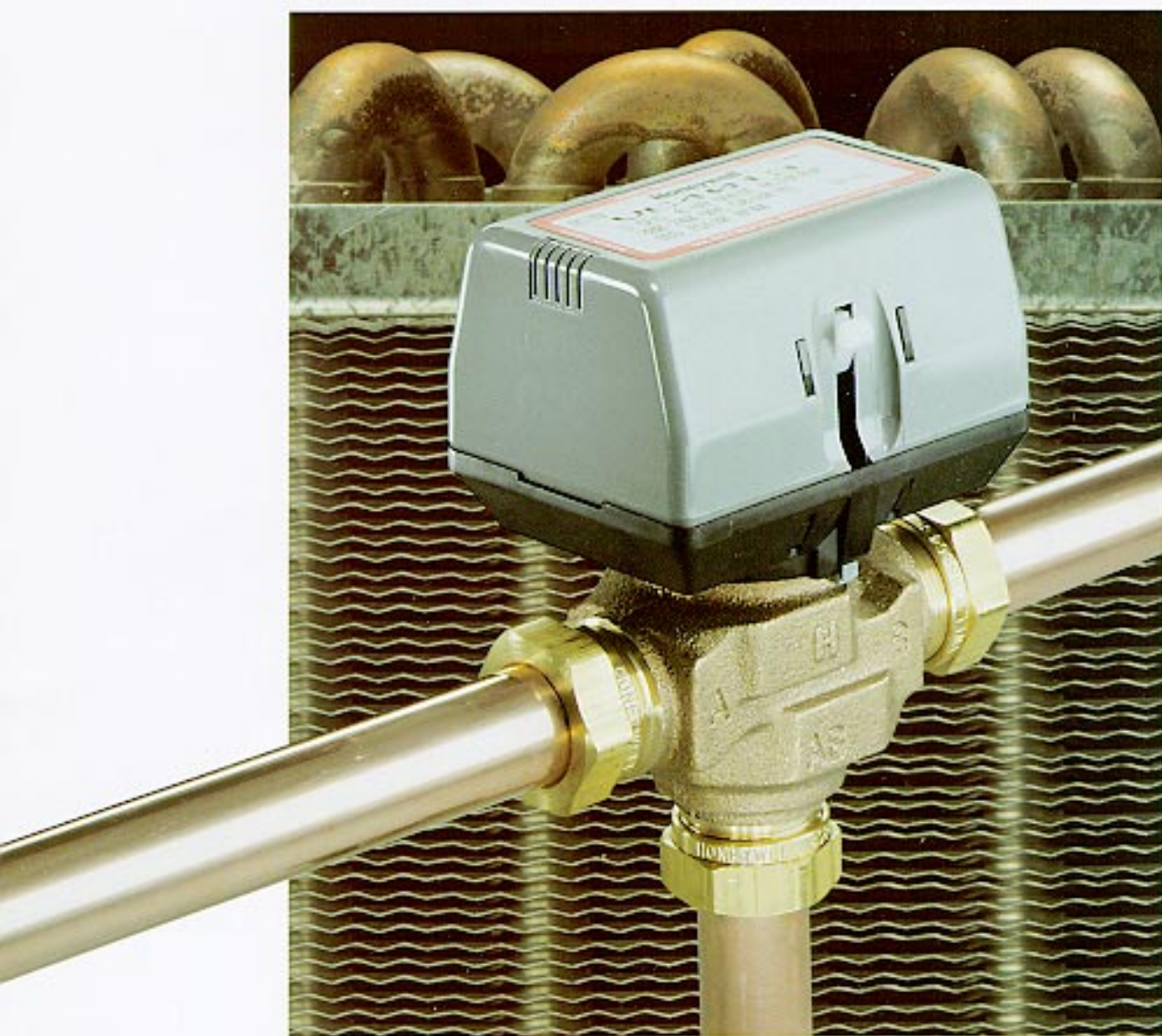
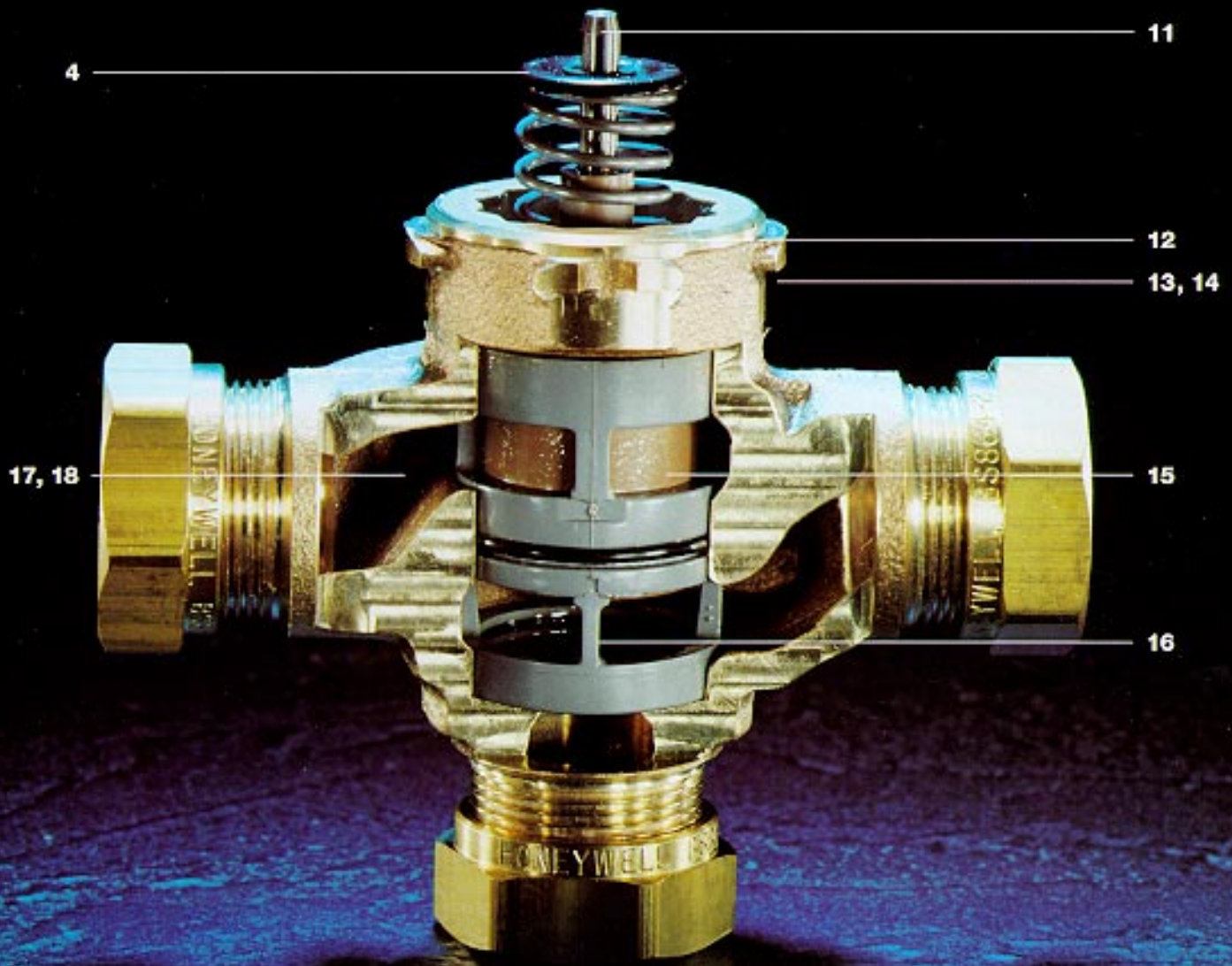
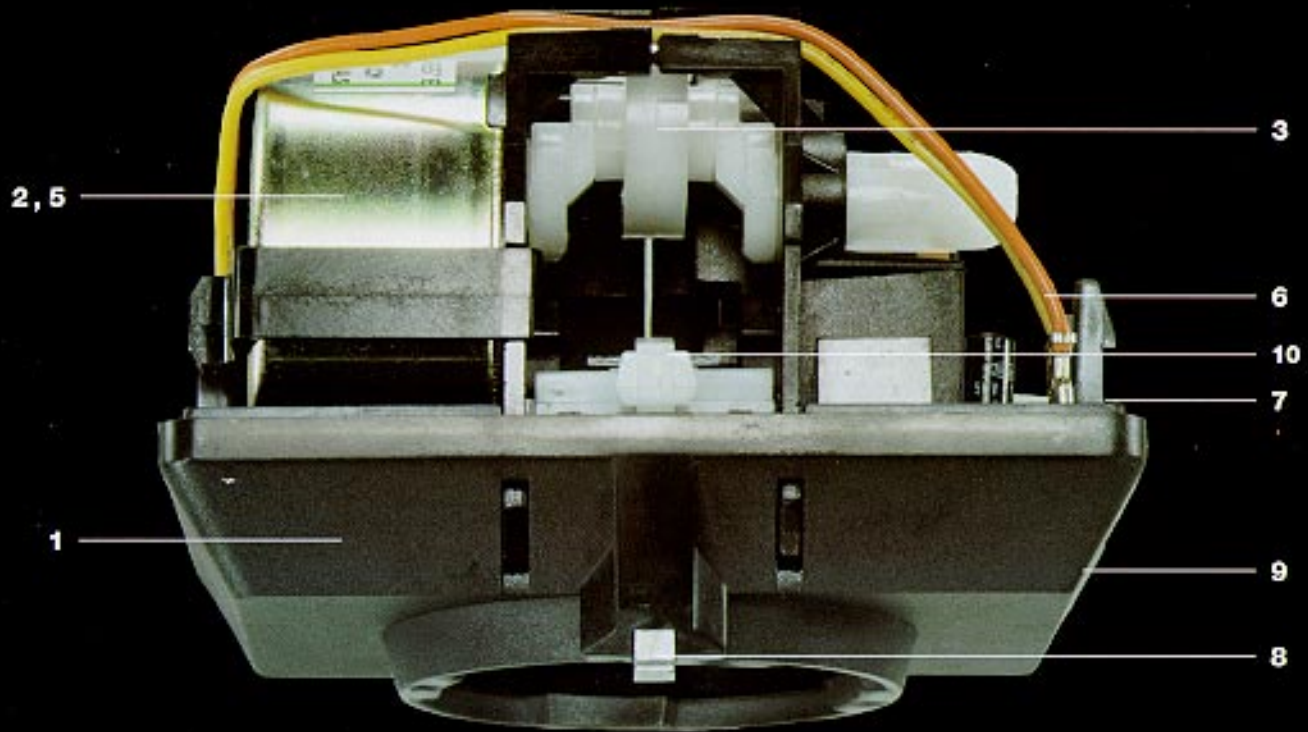


## HONEYWELL VC SERIES BALANCED HYDRONIC VALVES



*Unique modular design  
for efficient installation in plant or on site.  
That's Honeywell expertise for you!*





## The Actuator

1. All actuators are interchangeable and suitable for all valves, 1/2" through 1", providing maximum installation flexibility with minimum stocking requirements.
2. The actuator is powered by a unidirectional motor and crank arm mechanism.
3. When powered, the motor and crank drive the stem of the valve down. It is then turned off by an internal switch.
4. When powered again, the motor drives in the same direction to restore the crank to its original position, while the valve spring returns the valve stem to the up position.
5. Since the motor only operates for a few seconds each cycle, power consumption is minimal and the motor never gets hot. Most important, motor life is greatly extended. Valves can be left with specific ports open or closed indefinitely with no motor activity required.
6. Valve actuator timings available include 6- second nominal for on-off applications, and 120-second nominal for series 60, floating applications.
7. Two wiring configurations are available. See Figs. 1 & 2.
8. Locking tab secures the actuator to the body of the valve. To remove the head, the tab must be depressed and the actuator rotated 45 degrees.
9. Complete actuator is constructed of moisture and humidity-resistant materials.

10. Manual opener and position indicator: Valve is moved to mid-position by sliding indicator down and inward to lock. Auxiliary switch (if provided) is closed in this position. Both "A" and "B" ports are open.

This "manual open" position may be used for filling, venting and draining the system. The valve can be manually restored to the closed position by depressing this lever lightly and then pulling it out. The actuator will automatically return to the "reset" position when energized.

Terminal	Wire Colour	Action
1	Orange	Common*
2	Blue	Neutral
3	Brown	Port A Closes
4	Grey	N.O. (aux. switch)
5	White	N.C. (aux. switch)
6	Black	Port A Opens

\*Terminals 1, 4, and 5 are only connected if auxiliary switch is used. N.O. and N.C. describe the action of the auxiliary switch when the A port is in the closed position.

Use 105°C (221°F) temperature rated supply wire for external connections to the actuator in each configuration.

## The Valve Body

11. Stainless steel valve stem resists corrosion and gives long service life.
12. Bayonet-mount for actuator head. Actuator can be installed after plumbing work has been completed, which makes for more efficient production line assembly or on-site installation.
13. Valve body is cast bronze which is not subject to dezincification.
14. Body dimensions are comparable to existing Honeywell products (V4043/V4044 and V8043/V8044) and in most cases can be interchanged.
15. Precision made, replaceable cartridge made of Ryton™, Noryl™, and stainless steel. Suitable for temperatures from 1° to 95° C.

These materials inhibit the build-up of calcium on sealing members. Replacement of the cartridge replaces all moving parts, seals and ports, giving, in effect, a new valve.

Sweat-fitted valves are supplied with the cartridge loose, to facilitate soldering operations. An installation tool is included.

16. In this balanced valve design, the cartridge moves up and down, across the water flow. The actuator provides sinusoidal piston travel action for "soft" shut-off and open to eliminate water hammer in most applications.
17. In 2-way valves flow is bi-directional.
18. In 3-way valves flow can be mixing or diverting applications. See Figs 6 & 7.
18. Cv varies with the valve body selection and cartridge type. See chart on back.

## Wiring (Models with aux. switch only)

Fig.1a 2 Wire + Common Version VC Valve Actuator with Cable for SPST controller

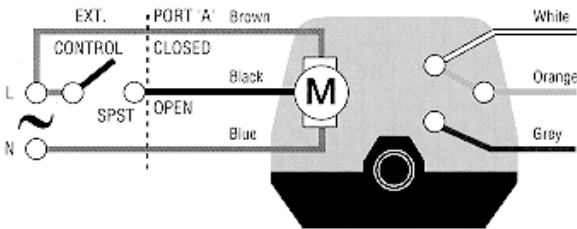


Fig.1b 3 Wire Version VC Valve Actuator with Cable for SPDT controller

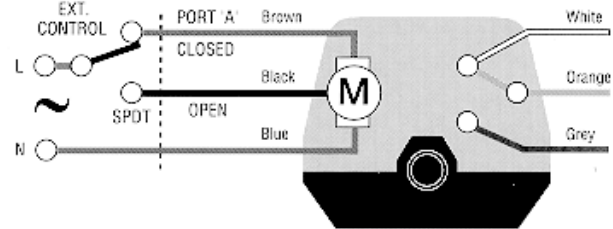


Fig.2a 2 Wire + Common Version VC Valve Actuator with Molex Connector for SPST controller

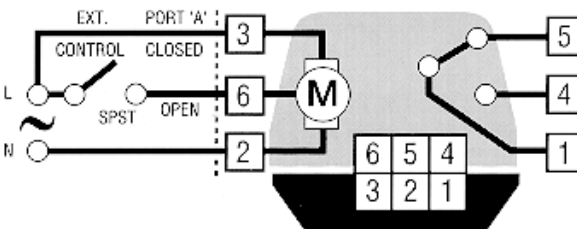
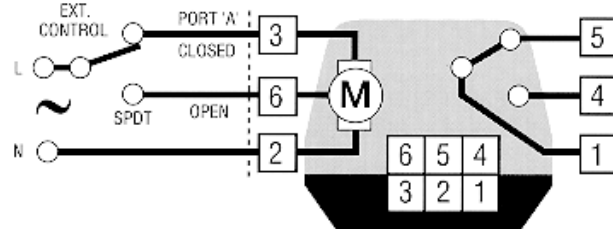


Fig.2b 3 Wire Version VC Valve Actuator with Molex Connector for SPDT controller



## Simplified Internal Wiring Schematics

Fig.3 3 Wire Actuator

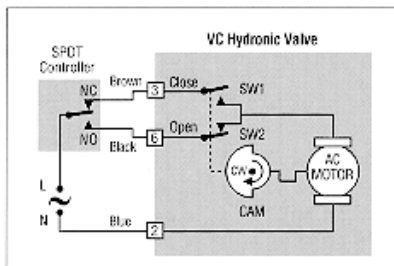


Fig.4 2 Wire + Common Actuator

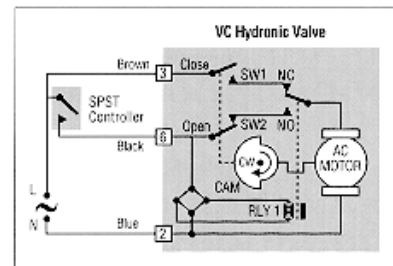
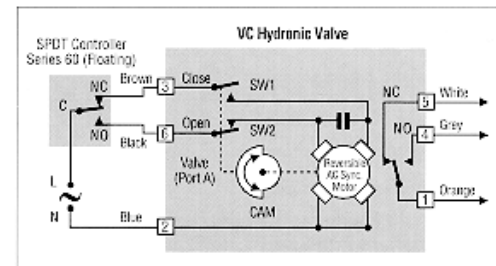


Fig.5 3 Wire Series 60 Floating Actuator



## Flow Direction

Fig.6

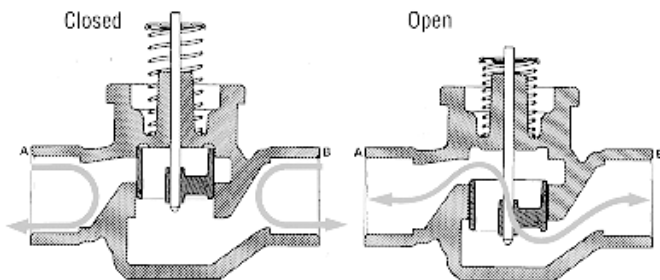
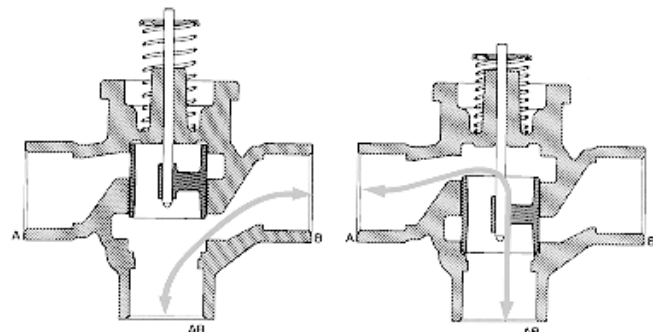


Fig.7

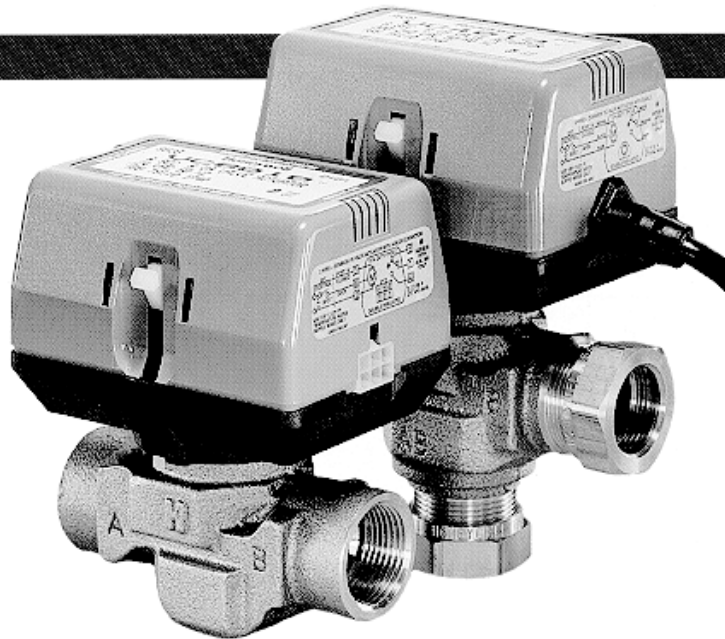




## VC Application

These two-way and three-way balanced hydronic valves are designed for on-off control or floating control of hot and/or chilled water. Applications include central heating and/or cooling systems, fan coil systems, radiators and convectors. The three-way valves are suitable for installation in a diverting and/or mixing mode. Order models with conformal coated printed circuit boards for chilled water applications.

Depending on the model selected, they can be controlled by either a low or line voltage SPST or SPDT or floating (center-off) controller such as a room thermostat, aquastat, or flow switch.



## Specifications

<b>Voltage:</b>	Colour-Coded Label
24V 50Hz Model	Blue
24V 60Hz Model	Blue
24V 50-60Hz (floating) Model	Blue
100-130V 50-60Hz Model	Black
200-240V 50-60Hz Model	Red

### **Power Consumption:**

6 sec. on-off model:

6 Watts Max. @ nominal voltages\*

120 sec. floating model:

4 Watts max. @ nominal voltages\*

Note – Provide 6 VA for transformer and connection wire sizing.

Maximum duty cycle 15%

\* during valve position change

### **End Switch Rating:**

2.2 A Inductive from 5 to 110 Vac.

1.0 A Inductive above 110 to 277 Vac.

Min. DC switching capability: 0.005 A @ 24Vdc.

### **Nominal timing:**

On/off control valve opens in 6 seconds @ 60Hz

Floating control valve opens in 120 seconds @ 60Hz

(note - timing approximately 20% longer @ 50Hz)

### **Electrical termination - Available in 2 versions:**

- 1) Molex™ (header #39-30-1060). Requires mating connector (receptacle/housing #39-01-2060), OR
- 2) With integral 1 meter (nominal 39") leadwire cable

### **Operating ambient temperature:**

0 to 65 degrees C (32 to 150 degrees F)

### **Shipping and storage temperature:**

-40 to 65 degrees C (-40 to 150 degrees F)

### **Atmosphere:**

non-corrosive, non-explosive.

### **Min. & Max fluid temperatures:**

1 to 95 degrees C (34 to 203 degrees F)

(Short duration peak: 120 degrees C[248 degrees F])

### **Operating Pressure Differential:**

Max. - 4 Bar (60 psi).

### **Pressure Rating:**

Static - 20 Bar (300 psi)

Burst - 100 Bar (1500 psi)

### **Valve Material:**

Body of Bronze

Cartridge of Ryton™ (polyphenylene sulphide) and Noryl™ (polyphenylene oxide)

O-ring seals of EPDM rubber

Stem stainless steel

Stem Travel: 10 mm (0.4 inches)

### **Flow:**

**2-Way:** In either direction, ports marked A and B. Valve is closed when stem is in up position (figure 3) and without actuator mounted.

**3-Way:** Flow can be diverting (AB to A or B) or mixing (A to B to AB) (figure 4). Port A is closed without the actuator mounted.

### **Characterized Cartridges:**

Linear flow characteristic

### **Dimensions/pipe fitting sizes/flow ratings (nominal CV):**

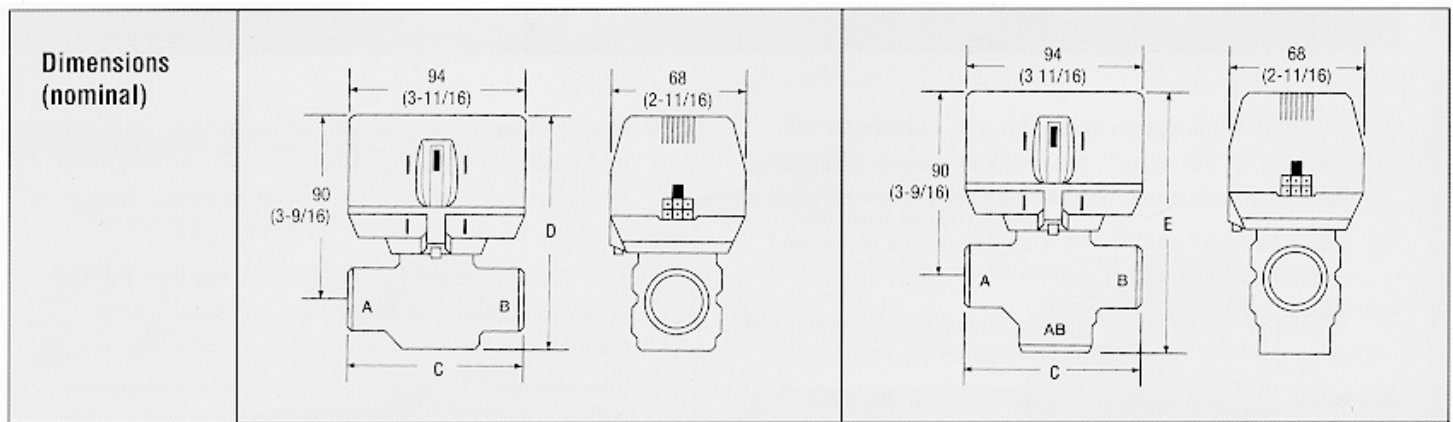
See chart, back cover.

### **Approvals:**

UL Component Recognized

CSA Approved

CE Approved under EMC 89/336/EEC



Pipe Fitting	2-Way					3-Way						
	Dim. C		Dim. D		Nom. flow rating Cv	Char. flow rating Cv	Dim. C		Dim. E		Nom. flow rating Cv	Char. flow rating Cv
	mm	inches	mm	inches			mm	inches	mm	inches		
3/8" Flare	98	3-7/8	111	4-3/8	2.5	2.1	98	3-7/8	136	5-11/32	3.0	2.7
1/2" Sweat	98	3-7/8	111	4-3/8	3.5	3.2	98	3-7/8	136	5-11/32	4.2	3.8
1/2" Flare	98	3-7/8	111	4-3/8	3.4	3.1	98	3-7/8	136	5-11/32	4.0	3.8
1/2" Inv Flare	98	3-7/8	111	4-3/8	3.6	3.2	98	3-7/8	136	5-11/32	4.2	4.2
1/2" BSPP/15mm int.	98	3-7/8	111	4-3/8	3.5	3.0	98	3-7/8	136	5-11/32	4.0	3.7
1/2" BSPP int.	98	3-7/8	111	4-3/8	3.5	3.4	98	3-7/8	136	5-11/32	4.0	3.8
3/4" Sweat	94	3-11/16	113	4-7/16	5.8	4.6	94	3-11/16	132	5-3/16	7.5	5.9
3/4" BSPP ext.	94	3-11/16	113	4-7/16	6.2	5.2	94	3-11/16	130	5-3/32	8.0	6.7
3/4" BSPP int.	94	3-11/16	113	4-7/16	6.2	5.2	94	3-11/16	130	5-3/32	8.2	6.9
3/4" BSPT int.	94	3-11/16	113	4-7/16	6.2	4.7	94	3-11/16	130	5-3/32	8.2	6.2
3/4" NPT int.	94	3-11/16	113	4-7/16	6.3	4.7	94	3-11/16	130	5-3/32	8.6	6.6
22mm Comp.*	112	4-7/16	113	4-7/16	6.2	5.4	112	4-7/16	140	5-1/2	8.3	6.9
1" BSPP int.	94	3-11/16	113	4-7/16	7.0	6.6	94	3-11/16	136	5-11/32	9.0	7.5
1" BSPP ext.	94	3-11/16	113	4-7/16	7.0	6.2	94	3-11/16	136	5-11/32	9.0	7.9
1" Sweat	94	3-11/16	113	4-7/16	7.0	6.2	94	3-11/16	136	5-11/32	9.0	6.6
1" NPT int.	94	3-11/16	113	4-7/16	7.0	6.6	94	3-11/16	136	5-11/32	9.0	8.6
1" BSPT int.	94	3-11/16	113	4-7/16	7.0	6.6	94	3-11/16	136	5-11/32	9.0	8.1
28mm Comp.*	116	4-9/16	113	4-7/16	7.0	6.3	116	4-9/16	147	5-13/16	9.0	7.5

\*Includes compression nuts and olives

### Actuator Options

System Wiring	Voltage/Frequency	Timing	Connection
2 wire + common*	24V / 50Hz	6 sec.	Molex 1 m cable
	24V / 60Hz	nominal	
	100 – 130V / 50..60Hz 200 – 240V / 50..60Hz		
3 wire*	24V / 50Hz	6 sec.	Molex 1 m cable
	24V / 60Hz	nominal	
	100 – 130V / 50..60Hz 200 – 240V / 50..60Hz		
3 wire Series 60 Floating*	24V / 50..60Hz	120 sec. nominal	Molex 1 m cable

\*a SPDT auxiliary switch option is available

### Valve Body Options

Body	Sizes	Pipe Connections
2-Way	3/8"	Flare
3-Way	1/2"	Inverted flare
	15 mm	Sweat
	3/4"	BSPP
	22 mm <sup>1</sup>	BSPT
	1"	NPT
	28 mm <sup>1</sup>	Compressed Fitting

\*Includes compression nuts and olives

\* See pipe fitting chart above for all available combinations

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