

### Description

VEB-46 series, three-way, **mixing or diverting**, NPT, control ball valves are designed for the control of hot or chilled water in HVAC applications. Valves range in size from **1/2 to 3 inches** and most feature an optimizing insert, which reduces and characterizes the ball opening for lower Cv ratings similar to globe valves.

The body design also provides a standard "T" pattern to simplify installation. They include a field-repairable blowout-proof stem and leak-proof shut-off. The reduced torque seals and O-rings eliminate the need for high torque actuators. KMC's low-torque MEP-4xxxV actuators work on all valve sizes.

Valve bodies and MEP-4xxxV actuators have brackets with a patented, **quick-mounting** mechanism that creates a universal connection to VSI, Griswold, and other valve bodies. Complete **valve assemblies** are available with **proportional** MEP-4002V/4252V/4552V actuators. For **tri-state and two-position** operation, order valve **bodies** and "V" model **actuators** separately. Refer to the **MEP-4000/4800 series** and **MEP-4200/4500/4900 series** data sheets for more actuator information.

### Features

- ◆ Mixing or diverting applications
- ◆ Choice of fail-safe (with switch-selectable direction) or non-fail-safe operation
- ◆ Proportional input (or, if valve body and actuator are ordered separately, tri-state/two-position)
- ◆ Equal percentage flow characteristics with optimizer insert (except indicated models)
- ◆ Cv ratings similar to globe valves
- ◆ Standard "T" pattern connections (except 3")
- ◆ Field-repairable valve design

### Accessories/Repair Parts

HPO-5074	Ball valve to actuator quick-mount kit
MEP-4xxxV	Quick-mount actuators (see the chart on the next page)



MEP-455xV  
Fail-Safe Actuator



MEP-4001V/4002V  
Actuator  
Installed on  
Valve with  
Quick Mount



VFB-46  
Series  
Valve Body

### Models

VFB-46 YYY BC (valve body with quick mount only)

VEB-46 YYY BC Z (valve body and actuator assembly)

#### Actuators

- K: Proportional, MEP-4002V
- L: Fail-safe, proportional—  
MEP-4252V on 1/2 and 3/4" valves  
MEP-4552V on 1 to 3" valves

#### Size / Cv

02C: 1/2" / 0.59 Cv	04N: 1" / 22.3 Cv
02E: 1/2" / 1.0 Cv	05E: 1-1/4" / 12.7 Cv
02G: 1/2" / 2.4 Cv	05J: 1-1/4" / 34.1 Cv*
02J: 1/2" / 4.3 Cv	06E: 1-1/2" / 23.5 Cv
02L: 1/2" / 8.0 Cv	06H: 1-1/2" / 61.1 Cv
03G: 3/4" / 2.4 Cv	08B: 2" / 38.2 Cv
03J: 3/4" / 3.8 Cv	08N: 2" / 108.5 Cv
03M: 3/4" / 11.0 Cv*	10E: 2-1/2" / 74.1 Cv
04H: 1" / 8.6 Cv	10F: 2-1/2" / 99.5 Cv*
	12B: 3" / 100 Cv
	12F: 3" / 200 Cv*

\*Full-port, no optimizer insert

Actuator Model Number	Control Signal				Operating Voltage		Fail-Safe
	2 Position (Only)	Tri-State (Only)	Tri-State or 2-Position	Proportional 0/2–10 VDC*	24 VAC**	100–240 VAC	
MEP-4001V			✓		✓		
<b>MEP-4002V</b>				✓	✓		
MEP-4003V		✓			✓		
MEP-4x51V***			✓		✓		✓
<b>MEP-4x52V***</b>				✓	✓		✓
MEP-4x54V***	✓				✓		✓
MEP-4x55V***	✓					✓	✓

\*Proportional MEP-4002V, MEP-4252V, and MEP-4552V actuators are available premounted on the valve bodies.  
\*\*MEP-4x51V/4x52V/4x54V actuators can also operate from 24 VDC in addition to 24 VAC.  
\*\*\*For 1/2" or 3/4" valves, x = 2. For 1" to 3" valves, x = 5.

**NOTE:** VEB-46 assemblies are available with **mounted proportional** MEP-4002V, MEP-4252V, and MEP-4552V actuators only.

**NOTE:** For **two-position or tri-state options**, select a VFB-46 series valve body and attach any quick-mount “V” actuator from the table above. Specify VFB-46YYYBC (e.g., VFB-4605JBC) with YYY the appropriate size and Cv from the models chart. The VFB valve body and the quick-mount “V” actuator must be ordered separately.

## Specifications

<b>Service</b>	Hot or chilled water, up to 50% glycol
<b>Connections</b>	Female NPT
<b>Body Rating</b>	360 psi (2482 kPa)
<b>Max. Close-Off</b>	1/2 to 1" = 50 psi (345 kPa); 1-1/4 to 2-1/2" = 40 psi (276 kPa); 3" = 70 psi (482 kPa)
<b>Max. Differential Pressure</b>	Same values as Max. Close-Off (see above)
<b>Flow Characteristics</b>	Equal percentage (with optimizer insert)
<b>Rangeability</b>	500 to 1
<b>Leakage Rating</b>	ANSI Class IV (0.01% of Cv)
<b>Material</b>	
Body	Forged brass ASTM B283-06
Stem	Brass
Ball	Nickel plated brass
Flow inserts	Glass filled polymer
Stem Seals	EPDM O-rings
Ball Seals	Teflon seals w/ EPDM O-rings

### Temperature Limits

Medium	-22 to 250° F (-30 to 121° C)
Ambient	0 to 120° F (-18 to 49° C)
Shipping	-40 to 140° F (-40 to 60° C)

### Actuators

See the [MEP-4000/4800 series](#) and [MEP-4200/4500/4900 series](#) data sheets for “V” model information that includes multiple input, operating voltage, and fail-safe options

### ▲ CAUTION

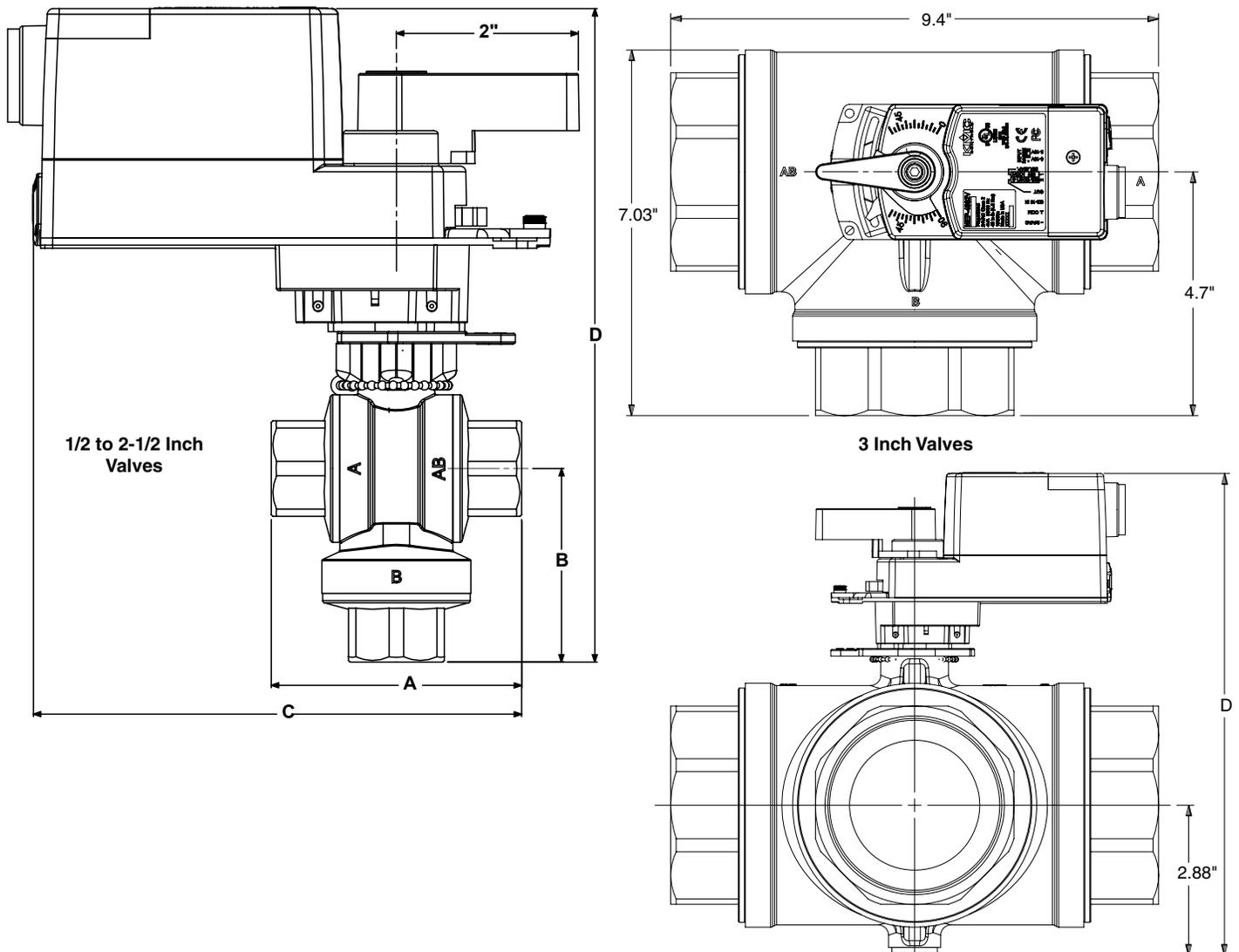
Using mineral oil lubricants or other incompatible substances in system fluids may damage EPDM rubber seals in valves. Before using any lubricant or additive in a water or ethylene glycol base, consult the substance manufacturer for compatibility with EPDM (Ethylene Propylene Diene Monomer).

## Dimensions

Size NPT*	Model	A*	B*	C (Overall Length)*		D (Overall Height)*			Width (Not Shown)*		Weight*	
				MEP-400xV	MEP-4x5xV	MEP-4001V 4002V	MEP-4003V	MEP-4x5xV	MEP-400xV	MEP-4x5xV	MEP-400xV	MEP-4x5xV
1/2"	VEB-4602	2.64	2.02	5.10	5.41	6.41	5.73	6.72	2.60	3.40	2.62	2.82
3/4"	VEB-4603	2.80	2.00	5.18	5.50	6.39	5.71	6.70			2.62	2.82
1"	VEB-4604	3.06	2.43	5.31	5.63	6.96	6.28	7.28			3.32	3.52
1-1/4"	VEB-4605	3.62	2.83	5.59	5.90	7.59	6.91	7.90			4.52	4.72
1-1/2"	VEB-4606	4.06	3.18	5.81	6.13	8.46	7.78	8.77	3.00		6.22	6.42
2"	VEB-4608B	4.00	3.30	5.78	6.10	8.89	8.21	9.20	3.50	3.50	6.22	6.42
	VEB-4608N	5.00	3.80	6.28	6.59	9.39	8.71	9.70			9.52	9.72
2-1/2"	VEB-4610	5.30	4.10	6.43	6.75	9.69	9.01	10.00			10.12	10.32
3"	VEB-4612	**		**	**	9.26	8.58	9.57	**	**	24.02	24.22

\*Dimensions in inches and weight in pounds

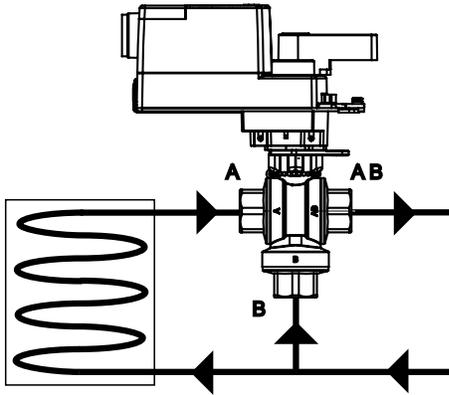
\*\*See 3-inch chart.



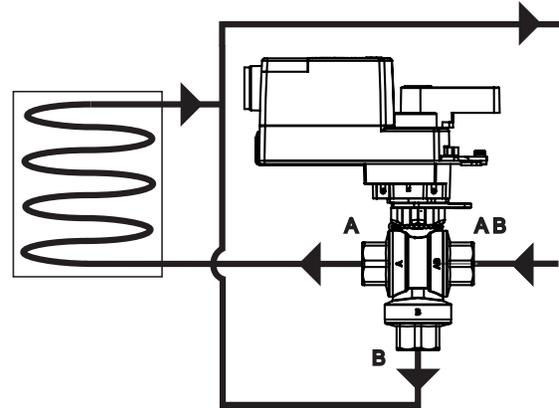
(Actuators and mounting vary)

## Mixing and Diverting Flow Action

**MIXING Flow Action:**  
Full CCW = Port A to AB  
Full CW = Port B to AB



**DIVERTING Flow Action:**  
Full CCW = Port AB to A  
Full CW = Port AB to B



**KMC Controls, Inc.**

19476 Industrial Drive

New Paris, IN 46553

574.831.5250

[www.kmccontrols.com](http://www.kmccontrols.com)

[info@kmccontrols.com](mailto:info@kmccontrols.com)