

Description and Application

These compact but powerful direct-coupled actuators provide tri-state or proportional control for small dampers or valves in HVAC systems. A minimum torque of 40 (MEP-40xx) or 80 (MEP-48xx) in-lbs. is available over the 95° angular rotation.

MEP-4002/4022/4802/4822 **proportional** models accept a 0–10 volts DC control signal input from a thermostat, controller, or building automation system. “**Anti-jitter**” circuitry significantly reduces hunting and needless wear on the actuator and valve packing or damper components (from unnecessary miniscule position changes caused by undamped analog input signals). A user-initiated, **auto-mapping feature** provides more precise equipment control by reassigning the 0–10 volts DC input signal range over a reduced rotation range (from 45° to 95°). These models also feature a switch-selectable, 0–5 or 0–10 volts DC **voltage feedback output** that is proportional to the actuator position.

MEP-4001/4003/4013/4021/4801/4813/4821 **tri-state** models are designed for use with **floating** thermostats, controllers, or building automation systems. The MEP-4013/4813 models feature a 10K ohm ($\pm 10\%$), three-wire **potentiometer feedback output**. (Functionally like the MEP-4001, the MEP-4003 does not have the larger green top enclosure.)

MEP-4021/4022/4821/4822 models also have a fully adjustable, built-in SPDT **auxiliary switch**, for remote position indication or controller and equipment interface.

MEP-4002V/4003V actuators have brackets with a patent-pending, **quick-mounting** mechanism that mounts directly on VFB-43...BC and VFB-46...BC series valve bodies (or VFB-43...BX and VFB-46...BX series with HPO-5074 kit). (See “**V Models Valve Cross-Reference on page 6** for more information.)

All other actuators mount directly to 1/4- to 5/8-inch (6 to 16 mm) round shafts or 1/4- to 7/16-inch (6 to 11 mm) square shafts, eliminating the need for expensive and complicated linkages. A non-rotation bracket, to prevent lateral movement, is included with each actuator. A gear disengagement button allows manual positioning of the actuator.



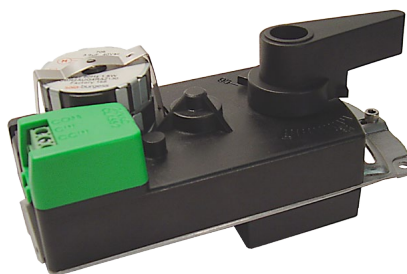
MEP-4002



Still... Made in the U.S.A.



MEP-4003 (Only)



MEP-4003V with Quick Mount



(Size Shown Relative to a Quarter)

Features

- ◆ Proportional models include “anti-jitter” circuitry and optional auto-mapping of the full input signal range over a reduced actuator stroke
- ◆ Switch-selectable feedback on selected models
- ◆ Fully adjustable, built-in auxiliary switch on selected models
- ◆ Removable terminals and removable 1/2-inch NPS conduit fitting (except the MEP-4003)
- ◆ Direct mounting to standard shaft sizes
- ◆ Gear disengagement button and adjustable mechanical end stop
- ◆ Valve body quick-mount option on MEP-4002V/4003V

Models

Model Number	Torque		Control		Built-in Options		
	40 in-lbs. min. (4.5 N•m)	80 in-lbs. min. (9 N•m)	Tri-state (Floating)	0 to 10 VDC Proportional	Feedback: 10k ohm Potentiometer	Feedback: 0–5 or 0–10 VDC	Auxiliary Switch (Adjustable, SPDT)
4001	X		X				
4002(V)*	X			X		X	
4003(V)**	X		X				
4013	X		X		X		
4021	X		X				X
4022	X			X		X	X
4801		X	X				
4802		X		X		X	
4813		X	X		X		
4821		X	X				X
4822		X		X		X	X

*MEP-4002V and MEP-4003V have the quick-mount option.
 **Functionally like the MEP-4001, the MEP-4003 and MEP-4003V do not have the larger green top enclosure.

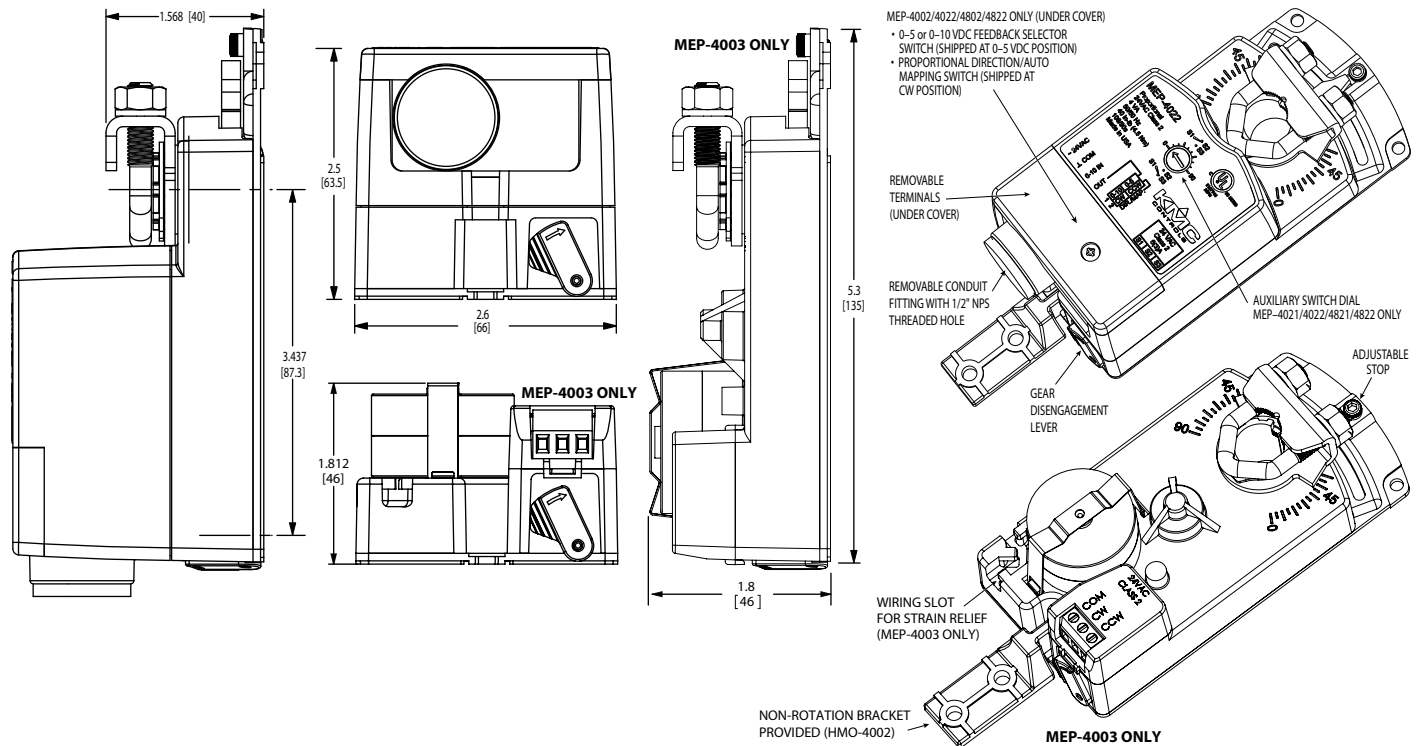
NOTE: For more information on mounting, wiring, auxiliary switches, feedback/direction selectors, and actuator/signal range reset (auto-mapping), see the [MEP-4000/4800 Series Installation Guide](#).

NOTE: For sample proportional single-zone heating/cooling and pressure-dependent VAV applications using the CTE-5202 electronic thermostat, see the [CTE-5202 Applications Guide](#).

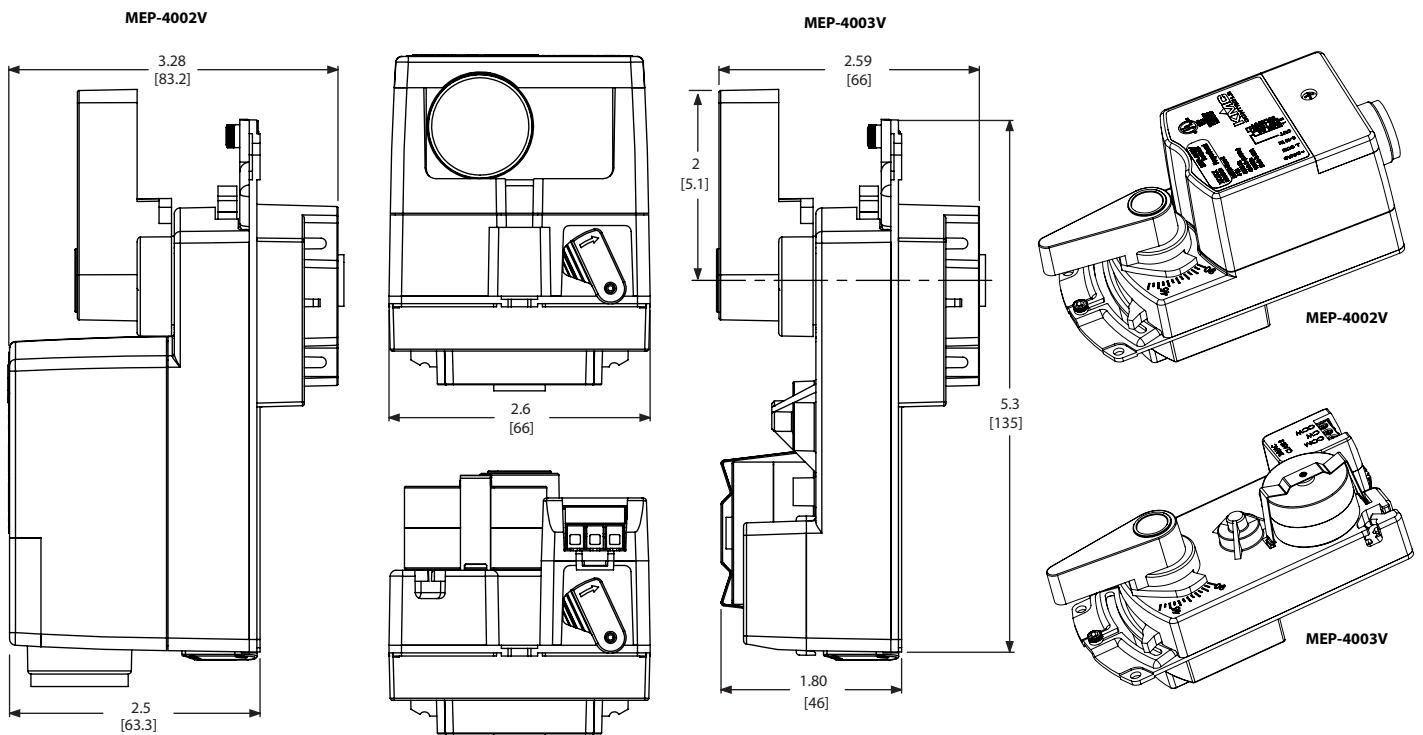
Specifications

Supply Voltage	24 VAC (+20%/–15%), Class 2
Supply Power	Tri-state, 2 VA; Proportional, 4 VA
Control Signal	Tri-state, 24 VAC; Proportional, 0 to 10 VDC
Frequency	50/60 Hz
Feedback Output	Tri-state Proportional
	10K ohm $\pm 10\%$ (on select models) 0 to 5 VDC or 0 to 10 VDC (switch selectable)
Auxiliary Switch	Adjustable 0 to 95°, SPDT 6 A resistive load (3 A motor load) @ 24 VAC (on select models)
Angular Rotation	0 to 95°, fully adjustable with mechanical stop
Motor Timing	90 seconds for 90° @ 60 Hz; 108 seconds for 90° @ 50 Hz
Torque	(MEP-40xx) 40 in-lbs. (4.5 N•m); (MEP-48xx) 80 in-lbs. (9 N•m)
Mounting	Direct to 1/4 to 5/8 inches (6–16 mm) round or 1/4 to 7/16 inches (6–11 mm) square shaft by adjust- able “V” bolt and non-rotational bracket HMO-4002 (supplied); minimum recommended damper shaft length is 1-5/8 inches; for mounting to valves, see the Ac- cessories section
Connections	Wire clamp type; 14 to 22 AWG, copper
Dimensions	
MEP-4003	5.3 x 2.6 x 1.8 inches (135 x 66 x 46 mm)
MEP-4003V	5.3 (w/o handle extended) x 2.6 x 2.59 inches (135 x 66 x 66 mm)
MEP-4002V	5.3 (w/o handle extended) x 2.6 x 3.28 inches (135 x 66 x 83.2 mm)
All others	5.3 x 2.6 x 2.5 inches (135 x 66 x 63.5 mm)
Weight	1.1 lb. (0.50 kg)
Enclosure	Flame-retardant plastic
Noise Level	< 35 dBA max. at 1 meter
Approvals	UL 873 Temperature Indicating and Regulating Equipment; FCC Class B, Part 15, Subpart B; Complies with Canadian ICES-003; SASO PCP Registration KSA R-103260
Environmental Limits	
Operating	–22 to 131° F (–30 to 55° C)
Shipping	–40 to 176° F (–40 to 80° C)
Humidity	5 to 95% RH (non-condensing)

All dimensions are in inches (mm)



(Standard) MEP-4xxx and MEP-4003



MEP-4002V and MEP-4003V with Quick Mount

Accessories

NOTE: See accessory details on this page and the next.

Miscellaneous

CTE-5202	Proportional thermostat
HLO-4001	Crank arm kit
HCO-1151	Weather shield kit

Non-rotation Brackets

HMO-4001	Non-rotation "T" bracket
HMO-4002	Replacement non-rotation bracket (included with actuators except MEP-4002V/4003V)
HMO-4004	Non-rotation bracket kit for VEB ball valves (without Quick Mount)

VEB-4x Series Valves Mounting/Repair Kits*

HPO-5074	Ball valve to actuator quick mount kit for MEP-400xV actuators (only)
HPO-5073	Ball valve to actuator repair kit for standard MEP-4000 series actuators

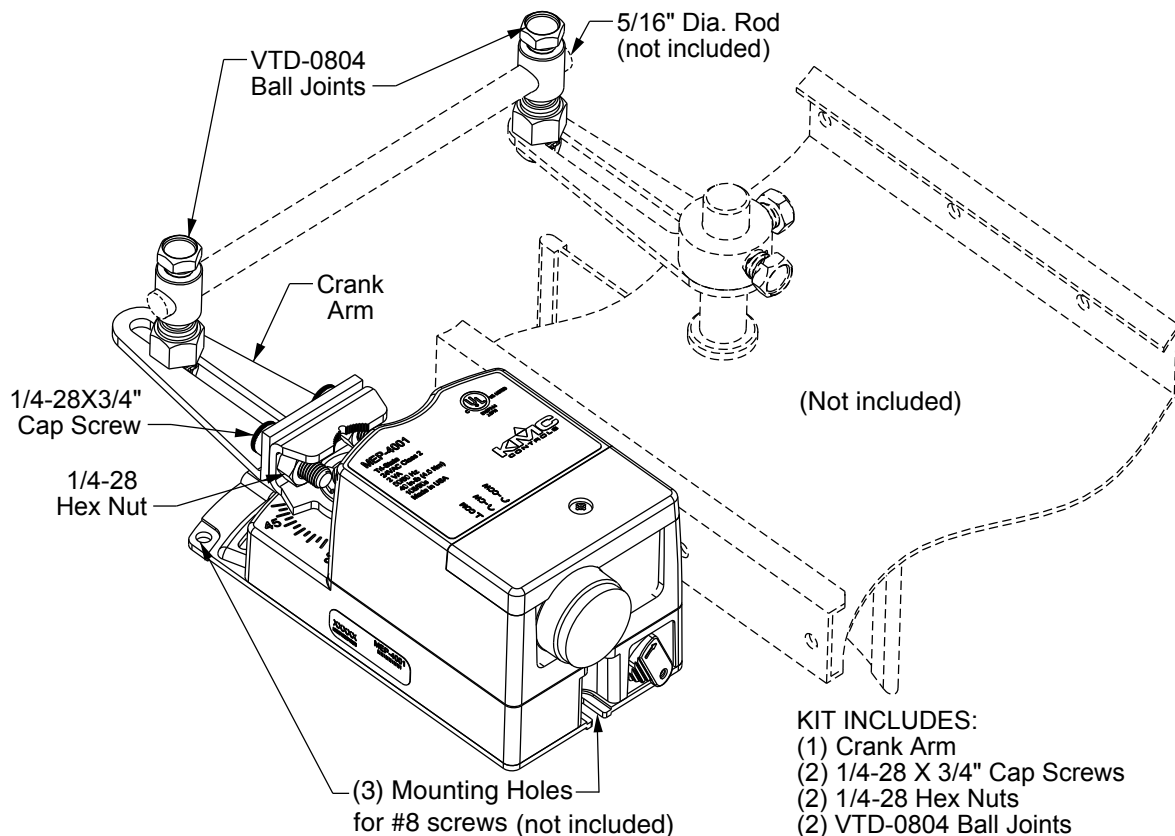
*NOTE: See "V" Models Valve Cross-Reference on page 6 for more information.



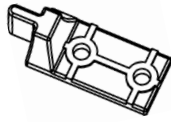
For sample proportional single-zone heating/cooling and pressure-dependent VAV applications using the CTE-5202 electronic thermostat, see the **CTE-5202 Applications Guide**.



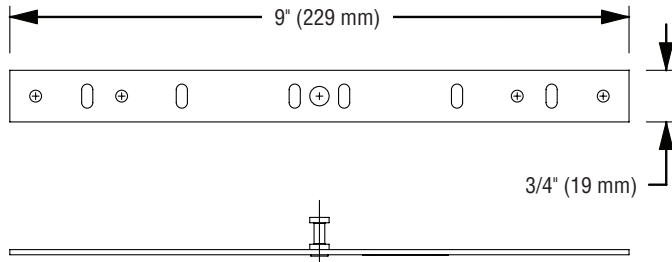
The HCO-1151 enclosure, consisting of a metal mounting plate, plastic cover, non-rotation bracket, plug caps, and screws, is designed to protect actuators from inclement weather.



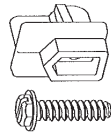
The HLO-4001 crank arm kit is used when direct mounting of the actuator is impractical.



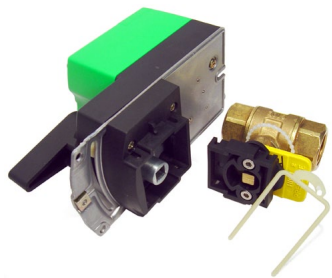
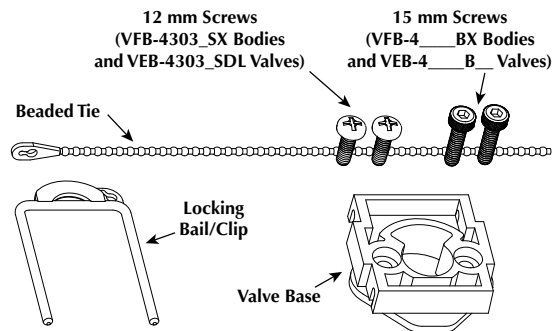
An **HMO-4002** bracket is provided with each actuator (except MEP-4002V/4003V).



The **HMO-4001** non-rotation "T" bracket can be used instead to span an open distance.

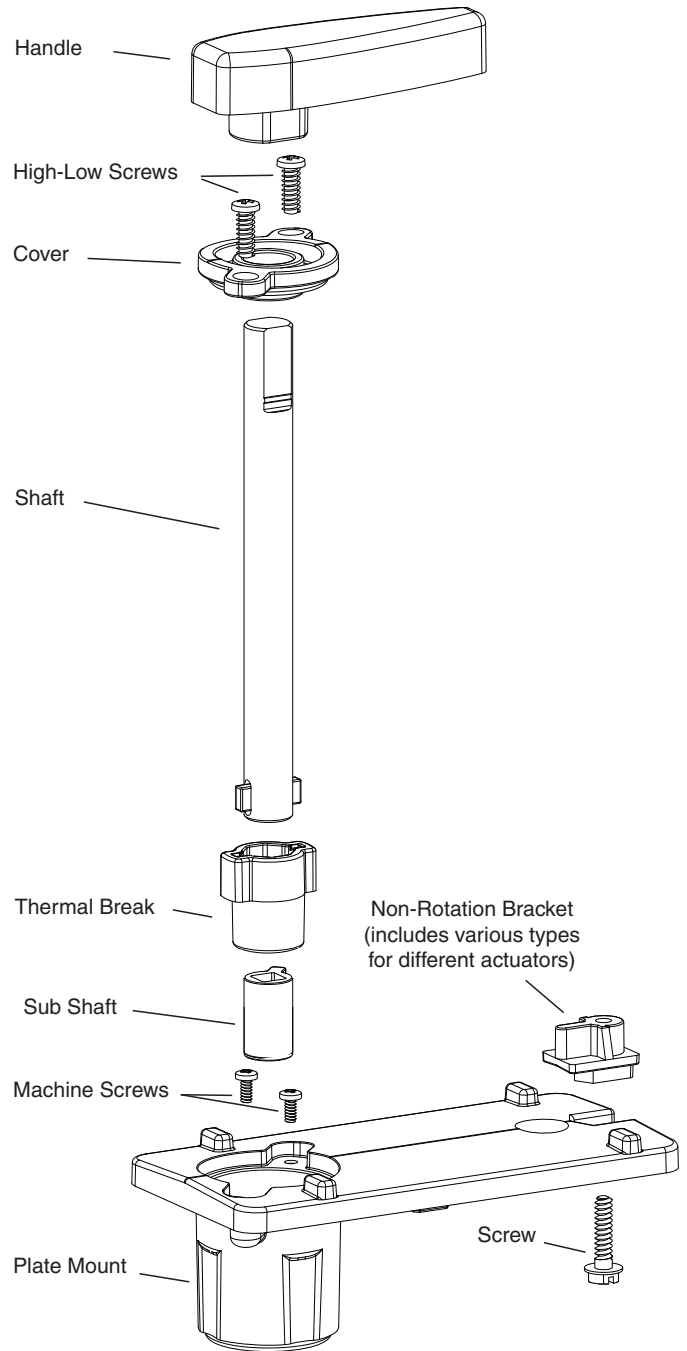


The **HMO-4004** bracket kit is for mounting to ball valves (without Quick Mount).



HPO-5074 assembled on a Valve Body and an MEP-4002V

The **HPO-5074** kit is for adapting valve bodies for use with (only) "quick mounting" MEP-400xV actuators. MEP-400xV actuators have an attached handle and shaft as well as a plastic mounting bracket on the bottom of the actuator. See "[V Models Valve Cross-Reference on page 6](#)" for more information.



The **HPO-5073** repair kit is designed to replace linkages on VEP-43/45/83/85 and VEB-43/46 **ball** valves (without Quick Mount):

- VEP-43ABB7xx through VEP-43GBB7xx
- VEP-45A1x7xx through VEP-45H4x7xx
- VEB-43/46 series ending in CK or CF

Hardware for mounting the linkage to the valve, and the actuator to the linkage, are included with the kit. The actuator must be ordered separately.

"V" Models Valve Cross-Reference

MEP-4002V/4003V actuators have brackets with a patent-pending, **quick-mounting** mechanism that mounts directly on VFB-43...BC and VFB-46...BC series valve bodies (or VFB-43...BX and VFB-46...BX series with the HPO-5074 kit).

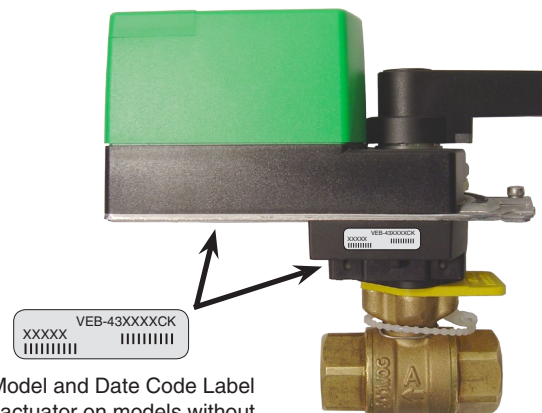
NOTE: These "V" actuators were installed in VEB-43...CF, VEB-43...CK, VEB-46...CF, and VEB-46...CK valves starting in mid-June 2011 (date codes 11166 and later). Replacement actuators for valves before this date code would be MEP-4002/4003.

See the **HPO-5074 installation guide** and the **VEB-43** and **VEB-46** series data sheets for additional information.

With the **HPO-5074 kit**, MEP-4002V/4003V actuators can be mounted on the following KMC and other valve bodies:

Typical Application	3-Way H/C Water	2-Way H/C Water	2-Way PIC-V H/C Water	2-Way Steam (to 30 psi)
KMC Valve Body	VFB-46__BX, VFB-46__BC*	VFB-43__BX, VFB-43__BC*	N/A	VFB-4303_SX
KMC Valve	VEB-46__B__	VEB-43__B__		VEB-4303_SDL
Valve Solutions (VSI)	UR3 Series	UR2 Series	SPV Series	75 Series
Griswold	UR3 Series	UR2 Series	SPV Series	N/A
Delta Control Products	ST Series	ST Series	ATI Series	
Honeywell	VBN3 Series	VBN2 Series	N/A	
Siemens	599 Series	599 Series		
*VFB-4__BC valve bodies come with the HPO-5074 already installed.				

MEP-4002V Actuator Installed on
VEB-43 Series Valve Body with
HPO-5074 Quick-Mount Adapter Kit



Valve Model and Date Code Label
(below actuator on models without
"V" actuators or on the side of the
valve on models with "V" Actuators)

NOTE: For sample proportional single-zone heating/cooling valve applications using the CTE-5202 electronic thermostat, see the **CTE-5202 Applications Guide**.

KMC Controls, Inc.
19476 Industrial Drive
New Paris, IN 46553
574.831.5250
www.kmccontrols.com
info@kmccontrols.com