

Description and Application

These compact but powerful, direct-coupled (non-fail-safe) ControlSet® actuators provide tri-state/two-position or proportional control for small dampers or valves in HVAC systems. A minimum torque of 40 (MEP-40xx) or 80 (MEP-48xx) in.-lb. is available over the 95° angular rotation.

MEP-4xx2 **proportional** models accept a 2–10 VDC control signal input from a thermostat or controller. “**Anti-jitter**” circuitry significantly reduces hunting and needless wear (from unnecessary miniscule position changes caused by undamped analog input signals) on the actuator and valve packing or damper components. A user-initiated, **auto-mapping** feature provides more precise equipment control by reassigning the 2–10 VDC input signal range over a reduced rotation range (from 45° to 95°). These models also feature a switch-selectable, 1–5 or 2–10 VDC **voltage feedback** output that is proportional to the actuator position.

MEP-4xx1/4xx3 **tri-state/two-position** (three-wire) models are designed for use with floating thermostats, controllers, or building automation systems. The MEP-4x13 models feature a 10K ohm ($\pm 10\%$), three-wire **potentiometer feedback** output. (The tri-state MEP-4003/4003V do not have two-position functionality or the larger green top enclosure.)

MEP-4x21/4x22 models also have a fully adjustable, built-in SPDT **auxiliary switch**, for remote position indication or controller and equipment interface.

MEP-4001V/4002V/4003V actuators have brackets with a patent-pending, **quick-mounting** mechanism. See [\(Quick-Mounting\) “V” Models Valve Cross-Reference on page 4](#) 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.

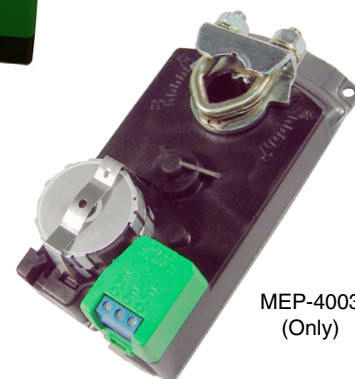
NOTE: For similar actuators with **fail-safe**, see the [MEP-4200/4500/4900 Series Data Sheet](#).



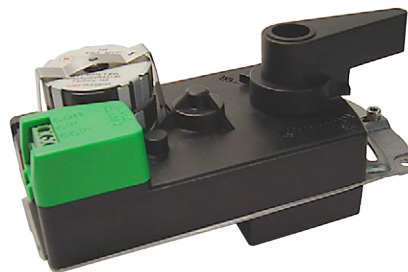
MEP-4002



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



MEP-4003
(Only)



MEP-4003V with Quick Mount



(Size Shown
Relative to a
Quarter)

Features

- ◆ MEP-4xx2 proportional models include “anti-jitter” circuitry, optional auto-mapping of the full input signal range over a reduced actuator stroke, and switch-selectable voltage feedback
- ◆ MEP-4xx1/4xx3 tri-state/two-position (three-wire) models available (tri-state only on MEP-4003)
- ◆ 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
- ◆ Quick-mounting valve body option on MEP-4001V/4002V/4003V

Models

Model Number	Torque		Control		Built-in Options			
	40 in-lb. min. (4.5 N•m)	80 in-lb. min. (9 N•m)	Tri-state (Floating) or (3-wire) 2-Position	2 to 10 VDC Proportional	Feedback: 10k ohm Potentiometer	Feedback: 1-5 or 2-10 VDC	Auxiliary Switch (Adjustable, SPDT)	
MEP-4001(V)*	✓		✓					
4002(V)*				✓		✓		
4003(V)**								
4013			✓					
4021								
4022				✓	✓	✓		
MEP-4801		✓	✓					
4802				✓		✓		
4813			✓		✓			
4821								
4822				✓		✓		✓

*MEP-4001V/4002V/4003V have the quick-mount option.

**The MEP-4003/4003V do not have two-position functionality or the larger green top enclosure.

NOTE: Before Jan. 2014, MEP-40x2/48x2 models had 0–10 VDC inputs and 0–5 or 0–10 VDC feedback instead. When replacing an older 0–10 VDC actuator with a 2–10 VDC actuator, make note of the differences.

Accessories and More Information

For torque selection, accessories, troubleshooting, and other information, see the [MEP-4xxx Applications Guide](#).

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](#).

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

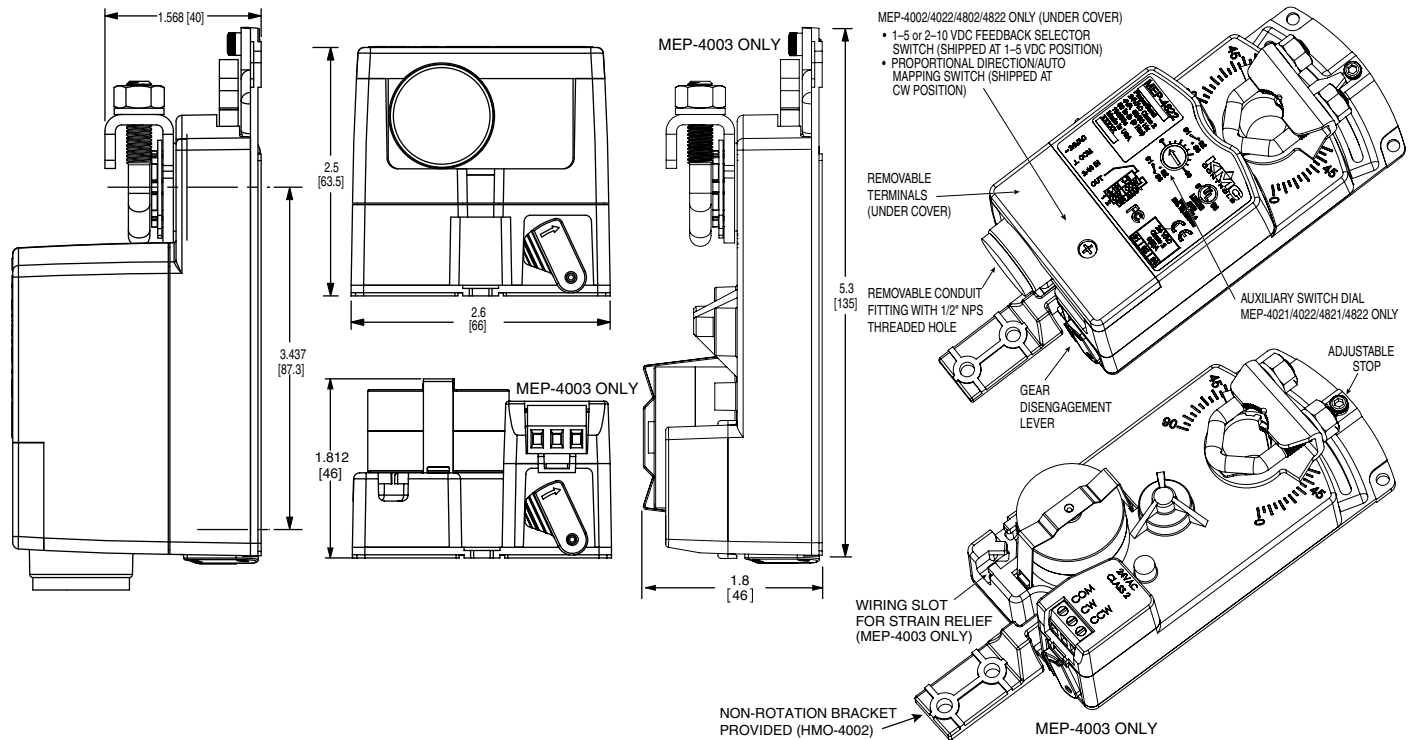
For similar actuators with fail-safe, see the [MEP-4200/4500/4900 Series Data Sheet](#).



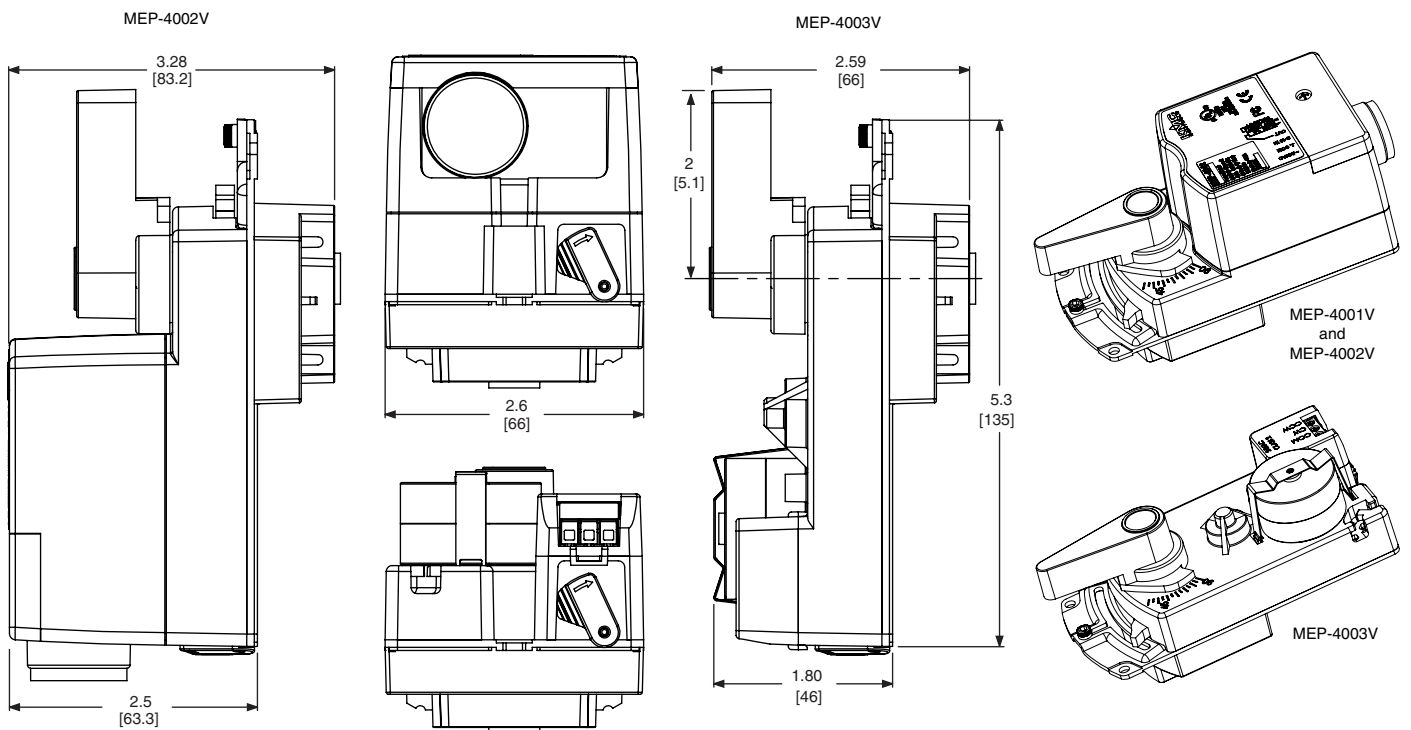
Specifications

Supply Voltage	24 VAC (+20%/–15%), Class 2 only
Supply Power	Tri-state/two-position, 2 VA; proportional, 4 VA
Control Signal	Tri-state/two-position, 24 VAC; proportional, 2 to 10 VDC
Frequency	50/60 Hz
Feedback Output	Tri-state/2-Position Proportional 10K ohm ±10% (on select models) 1 to 5 VDC or 2 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.-lb. (4.5 N•m); (MEP-48xx) 80 in.-lb. (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 adjustable “V” bolt and non-rotational bracket HMO-4002 (supplied); minimum recommended damper shaft length is 1-5/8 inches; HPO-5074 required for mounting “V” actuators to valves
Connections	Wire clamp type; 14 to 22 AWG, copper
Dimensions	MEP-4003 5.3 x 2.6 x 1.8" (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-4001V/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) or less
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; CE compliant; 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-4001V, MEP-4002V, and MEP-4003V with Quick Mount

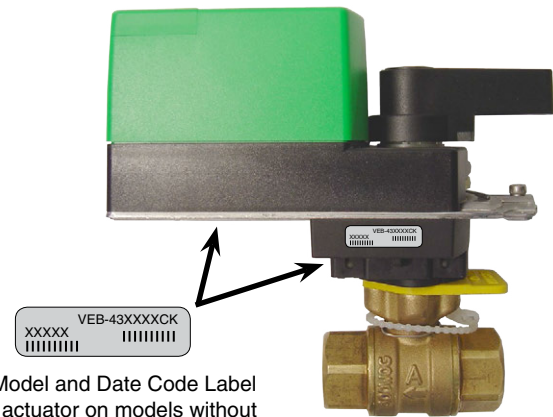
(Quick-Mounting) “V” Models Valve Cross-Reference

MEP-4xxxV actuators have brackets with a patent-pending, **quick-mounting** mechanism that mounts directly on VFB-43...BC and VFB-46...BC series valve bodies. See the **HPO-5074 installation guide** and the **VEB-43** and **VEB-46** series data sheets for additional information.

NOTE: “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 (non-fail-safe) actuators for valves before this date code would be MEP-4002/4003.

With the **HPO-5074 kit**, MEP-4xxxV actuators can be mounted on the following KMC and other valve bodies:

“V” 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)

Typical Application	3-Way H/C Water	2-Way H/C Water	2-Way PIC-V H/C Water
KMC Valve Body	VFB-46__BC*	VFB-43__BC*	N/A
KMC Valve	VEB-46__B__	VEB-43__B__	
Valve Solutions (VSI)	UR3 Series	UR2 Series	SPV Series
Griswold	UR3 Series	UR2 Series	SPV Series
Delta Control Products	ST Series	ST Series	ATI Series
Honeywell	VCN3 Series	VCN2 Series	N/A
Siemens	599 Series	599 Series	
*VFB-4__BC valve bodies come with the HPO-5074 already installed.			

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