

Installation Guide

Mounting

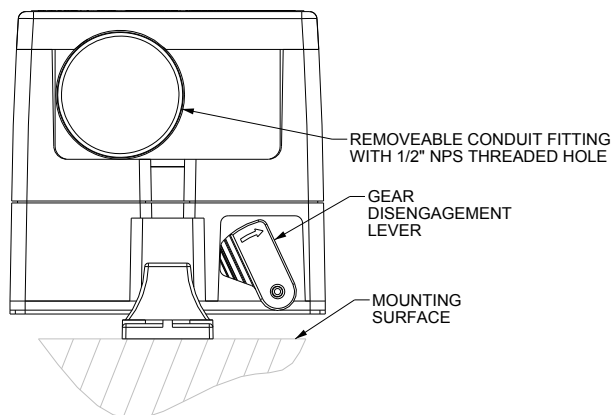
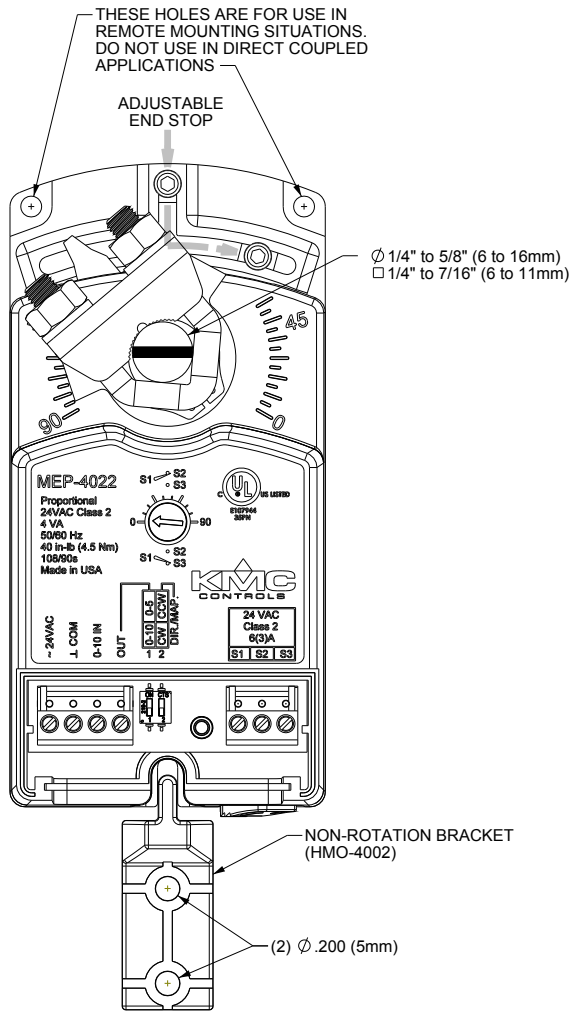


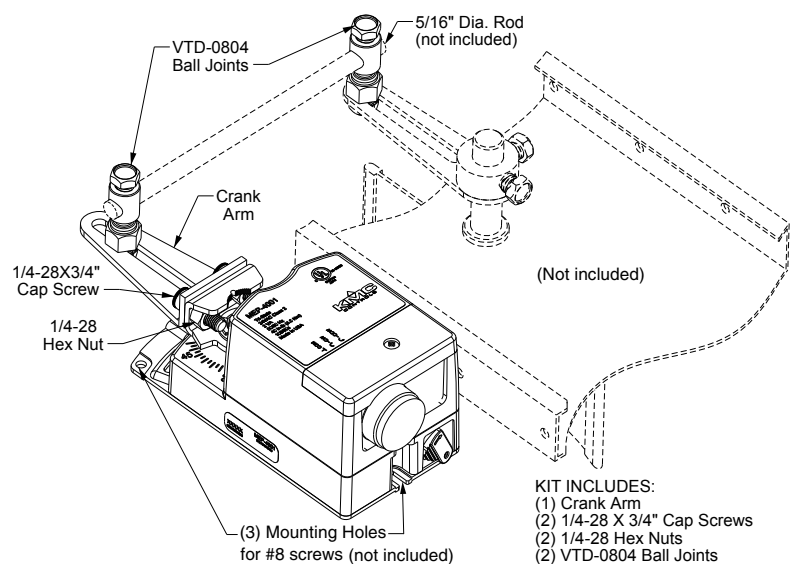
Illustration 1—Overview (Direct-Coupled Mounting)

1. Ensure the damper can move freely through its entire range of motion, and fix any binding before installing the actuator. Turn the damper blade to its fully closed position.
2. Press (to the right) and hold the gear disengagement lever (see Illustration 1), rotate the actuator to the fully closed position, and release the lever.

NOTE: Depending on the damper-seal design, backing the actuator off its stop approximately 5° may provide tight damper shut-off.

3. Align the actuator and slide it onto the shaft.
4. Leaving a gap between the actuator and mounting surface to prevent any binding, finger-tighten the nuts on the V-bolt.
5. Insert the non-rotation bracket (HMO-4002 supplied or HMO-4001 "T" bracket available separately) into the slot at the base of the actuator. (See Illustration 1).
6. Secure the non-rotation bracket with two (2) #8 or #10 self-tapping screws.
7. Evenly tighten the V-bolt nuts 30 to 35 in-lbs. on MEP-4000s, or 60 to 70 in-lbs. on MEP-4800s.
8. If desired, use a 7/64-inch hex key wrench to loosen and position the end-stop screw.

NOTE: The two holes at the top of the actuator are **NOT** for use in direct-coupled applications. They are for remote mounting, such as with the optional HLO-4001 Crank Arm Kit (see Illustration 2).



- KIT INCLUDES:**
- (1) Crank Arm
 - (2) 1/4-28 X 3/4" Cap Screws
 - (2) 1/4-28 Hex Nuts
 - (2) VTD-0804 Ball Joints

Illustration 2—Optional HLO-4001 Kit (Remote Mounting)

Wiring

Consult the model label and the appropriate wiring illustration in Illustrations 3, 4, or 5. See also the Models chart.

MEP-4003 Only

NOTE: The MEP-4003's terminals are not enclosed inside the case as the other models are.

1. Route the cable through the strain relief molded in the lower left of the case. (See Illustration 3.)
2. Connect the wires to the terminal block.

All Except MEP-4003

1. Loosen the screw on the tethered access cover and remove the cover.
2. Slide the conduit fitting plate out.
3. Using a utility knife or drill, cut the red plug to accept wiring or replace the plug with an application-specific fitting.

NOTE: The red plug (or similar fitting) protects internal components from debris, helping to ensure long actuator life.

4. Thread wires through the plugged opening and connect to the terminal block.

NOTE: For your convenience, the wiring terminal block is removable.

5. Connect and adjust the auxiliary switch if required (MEP-4021/4022/4821/4822 only). (See the Auxiliary Switch section.)
6. Reinstall the terminal block on the pins (if removed) and the conduit fitting plate.
7. Adjust the feedback and direction selector if required (MEP-4002/4022/4802/4822 only). See the Feedback and Direction Selector section.
8. Complete the auto-mapping range reset if required (MEP-4002/4022/4802/4822 only). See the Actuator/Signal Range Reset (Auto-Mapping) section.
8. Reinstall the tethered cover and tighten the screw.

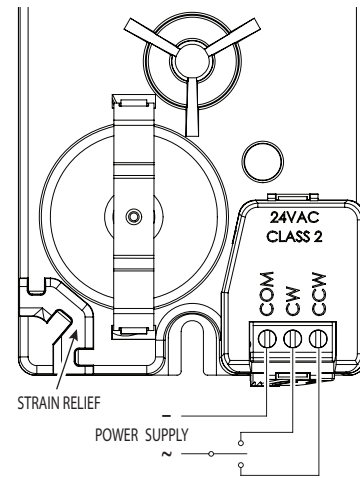


Illustration 3—MEP-4003 (Only) Wiring Detail

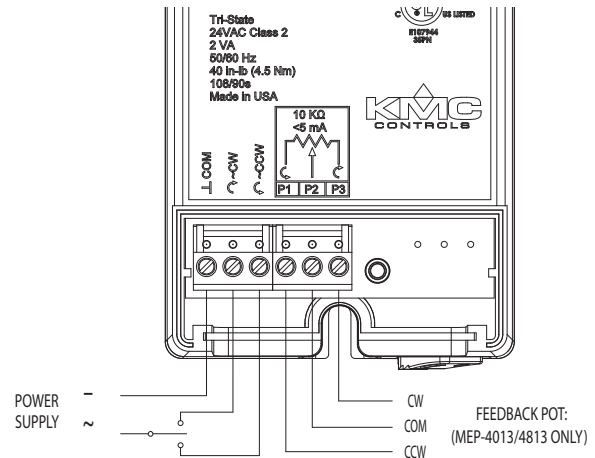


Illustration 4—MEP-4x01/4x13/4x21 Wiring Detail

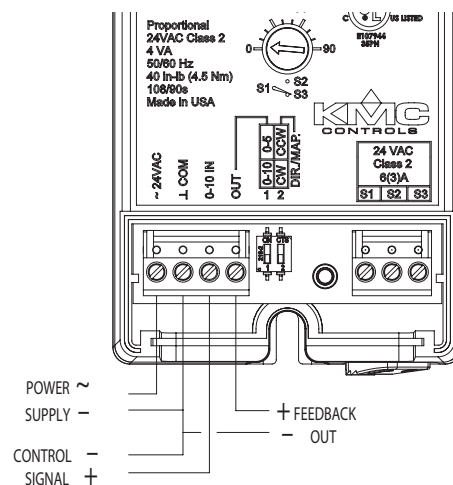


Illustration 5—MEP-4x02/4x22 Wiring Detail

Auxiliary Switch

The MEP-4021/4022/4821/4822 models offer an auxiliary switch (SPDT, 6 A with resistive load or 3 A with motor load @ 24 VAC).

1. While pressing the gear disengagement lever (Illustration 1), rotate the actuator to the point where the auxiliary switch should trigger.
2. Using a small, flat-bade screwdriver, adjust the switch dial to “0”. When the indicator passes the trigger point the contact between S1 and S2 breaks and the S1 and S3 connects.
3. Connect the auxiliary unit to the terminal block (see Illustration 6).

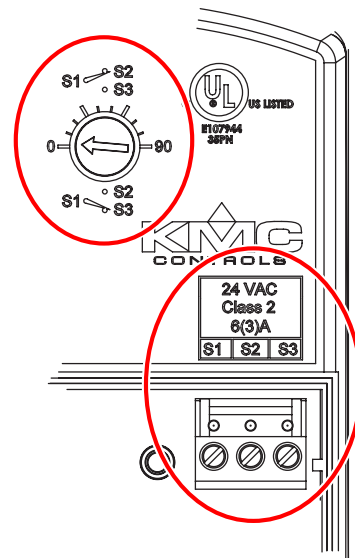


Illustration 6—Auxiliary Switch Dial and Terminal Block

Actuator/Signal Range Reset (Auto-Mapping)

The MEP-4002/4022/4802/4822 proportional models also feature a user-initiated reset program (auto-mapping) feature that reassigns the full 0–10 VDC input signal scale over a reduced stroke range for more precise control. (See Illustrations 5 and 6.)

NOTE: Use this feature for ranges less than 95° but more than 45°.

1. If desired, use a 7/64-inch hex key wrench to loosen and position the end-stop screw.
2. With power applied to the actuator, flip dip switch #2 (from its required CW or CCW increasing voltage direction) to start the reset mode. The actuator will first move to the CCW limit. The complete reset process will take approximately four minutes.
3. Return dip switch #2 to the required increasing voltage direction before the reset finishes. The reset process is complete after the actuator has moved to the CW limit and has begun to position normally.
4. Verify that the actuator travels completely across the new range.

NOTE: Dip Switch #2 has two functions:

1. **It determines the direction to rotate (CW or CCW) with increasing voltage.** The switch is factory set in the CW position. To adjust, remove power prior to changing the switch to the CCW position. Removing power prevents initiation of the auto-mapping feature.
2. **It initiates the auto-mapping feature.** This feature is initiated only by cycling the switch with power applied to the unit. The auto-mapping feature will NOT begin if the switch position is changed with power removed or in the event of a power failure.

Example:

The actuator stroke is 80°, and the unit has completed the auto-mapping program. A 5 VDC input signal will now drive the actuator to the 40° position (50% of its adjusted range) and the feedback voltage will be 2.5 VDC if switch #1 is set at the 0–5 VDC position or 5 VDC if switch #1 is set at 0–10 VDC.

Feedback and Direction Selector

The MEP-4002/4022/4802/4822 models offer selectable actuator direction and selectable proportional feedback of 0–5 VDC or 0–10 VDC (in either direction). The selector switches are shipped from the factory in the 0–5 VDC (#1) and CW movement with increasing voltage (#2) positions (see Illustration 7).

NOTE: If CCW with increasing voltage is required, remove power prior to adjusting switch #2! Removing power prevents the initiation of the auto-mapping feature. See the Actuator/Signal Range Reset (Auto-Mapping) section.

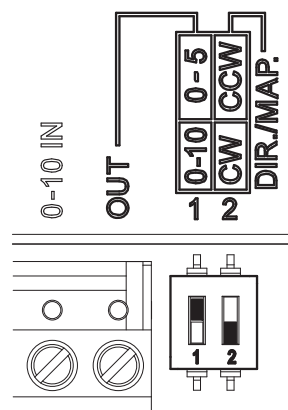


Illustration 7—Feedback Selector Detail MEP-4x02/4x22

Accessories

HMO-4001	Non-rotation “T” bracket
HMO-4002	Replacement non-rotation bracket (included with actuator)
HLO-4001	Crank arm kit
HCO-1151	Weather shield kit

Specifications

Supply Voltage	24 VAC, +20%/–15%, Class 2
Supply Power	Tri-state, 2 VA; Proportional, 4 VA
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
Mounting	Direct to 1/4 to 5/8 inches (6 to 16 mm) round or 1/4 to 7/16 inches (6 to 11 mm) square shaft; minimum recommended damper shaft length is 1-5/8 inches
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); All others: 5.3 x 2.6 x 2.5 inches (135 x 66 x 63.5 mm)

(See the data sheet 036-035-01 for more information.)

Models

Model Number MEP-	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	X			X		X	
4003	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

Maintenance

No routine maintenance is required. The motors are permanently lubricated and all internal gear-train components are oil-impregnated. Careful installation will also ensure long term reliability and performance.

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