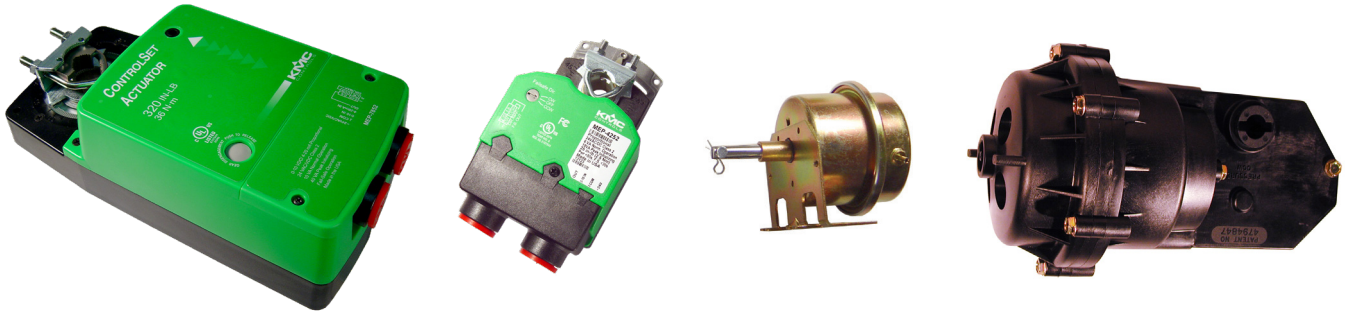


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Actuator Torque Selection

Damper manufacturers should provide information about the required minimum actuator torque. If that information is not available, use the following general guidelines to calculate the required torque. (Square feet for a rectangular duct can be calculated

by multiplying the height and width in inches and then dividing by 144.)

After minimum torque is known, see the actuator information to select the appropriate model.

Damper Type	Up to 1000 FPM	1000 to 2500 FPM	2500 to 3000 FPM
Opposed Blades Without Seals	3 in-lb. per square foot	4.5 in-lb. per square foot	6 in-lb. per square foot
Parallel Blades Without Seals	4 in-lb. per square foot	6 in-lb. per square foot	8 in-lb. per square foot
Opposed Blades With Seals	5 in-lb. per square foot	7.5 in-lb. per square foot	10 in-lb. per square foot
Parallel Blades With Seals	7 in-lb. per square foot	10.5 in-lb. per square foot	14 in-lb. per square foot

Introduction

This selection guide aids in choosing the best actuator for new or replacement applications. See the data sheets, installation guides, and application guides for details of individual products. The application determines the type of actuator needed.

Electronic vs. Pneumatic

New installations almost always use electronic (electric) actuators, but many pneumatic (air) actuators still exist in older installations.

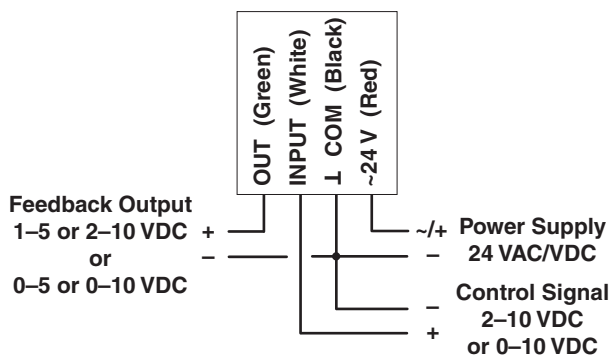
See [Pneumatics for the 21st Century](#) on the KMC Controls web site for general information about pneumatic actuators. See also [Pneumatic to Digital: Open System Conversions](#) for information about using pneumatic actuators with building automation systems.

Fail-Safe vs. Non-Fail-Safe

Pneumatic actuators are inherently fail-safe. Fail-safe electronic actuators incorporate springs or capacitors to provide the power for return when power is removed. See [When Failure Is Not an Option: The Evolution of Fail-Safe Actuators](#) on the KMC Controls web site for more information about fail-safe and the advantages of capacitors over springs.

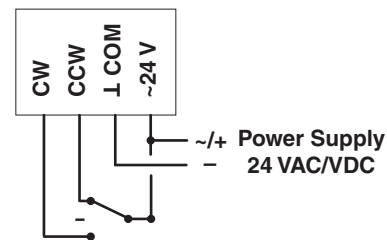
(Electronic) Input Types

Proportional models can accept a 0–10 VDC, 2–10 VDC, and/or a 4–20 mA (dependent on model) control signal input from a thermostat or controller. Their position is proportional to the signal. Some models have a voltage feedback option that provides a signal proportional to the actual position.



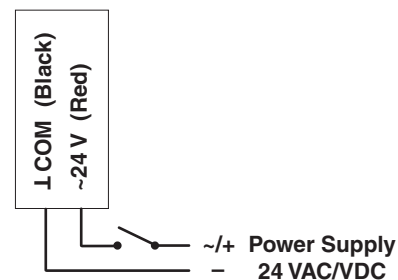
Sample Proportional Wiring (MEP-4xx2)

Tri-state (or “floating”) models move one direction while 24 VAC is applied to a set of terminals, and they move the opposite direction while 24 VAC is applied to a different set of terminals. They hold their position when no power is applied. (Some tri-state models can also be wired for two-position operation if desired.) Some models have a three-wire potentiometer to provide feedback of the actual position.



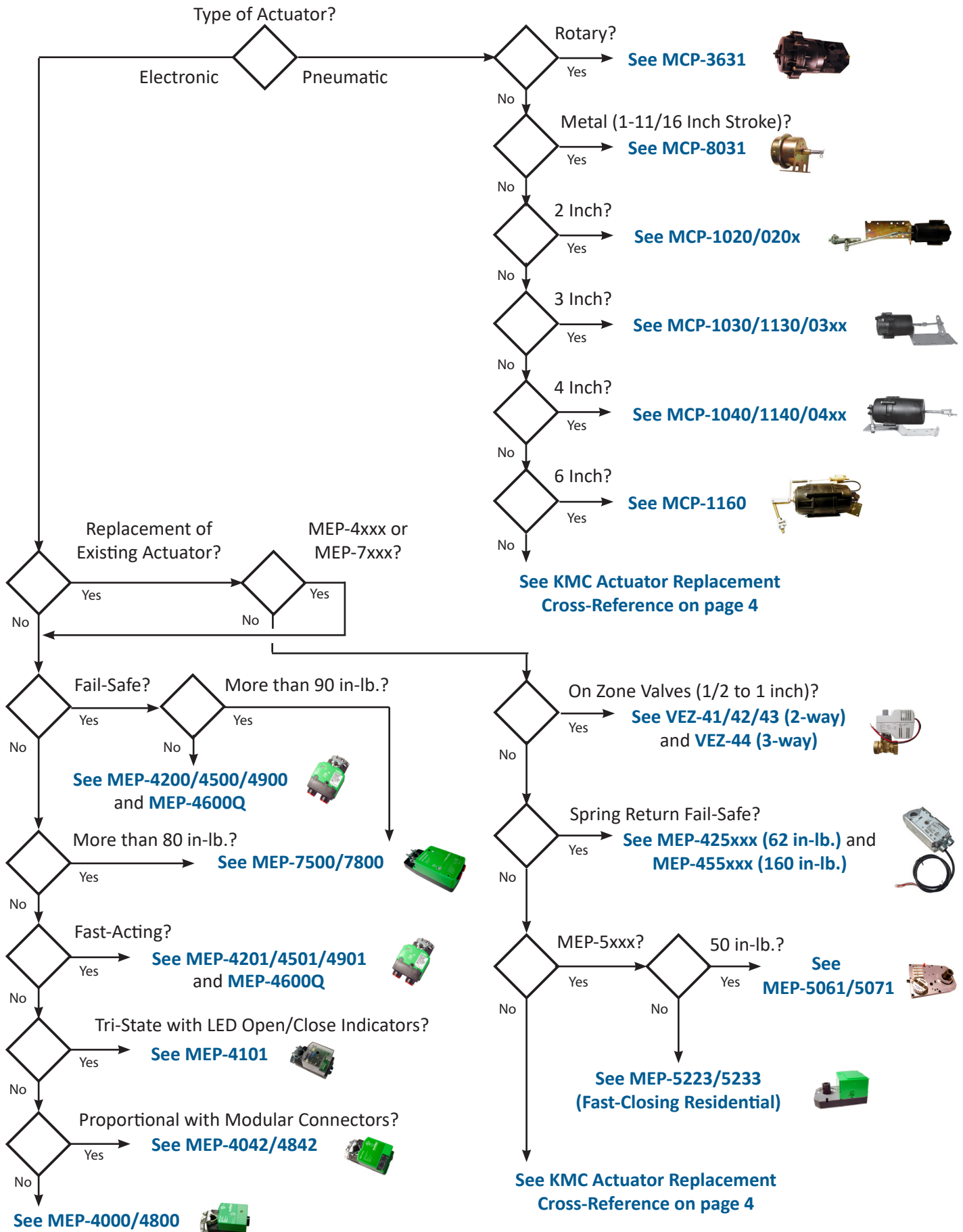
Sample Tri-State Wiring (MEP-4x51)

Two-position actuators move one direction when voltage is applied to a set of terminals, and they return to the original position when power is removed.



Sample Two-Position Wiring (MEP-4xx4)

KMC Actuator Selection



KMC Actuator Replacement Cross-Reference

NOTE: Below is the actuator section excerpted from the KMC Master Cross-Reference Excel file available on the web site. **The Excel file includes many other products besides actuators.**

MCP/MEP-xxxx Actuators Cross-References

(Note that the replacement actuators may have a very different footprint than the discontinued models. See their data sheets for details.)

MCP Series Pneumatic Cross-Reference			
Discontinued Model Number	Description	Replacement Model Number	Description
MCP-5140 Series	4" Damper Actuators with Metal Bodies	MCP-1140 Series	4" Actuators with Plastic Bodies— use if metal is not required
MCP-5160 Series	6" Damper Actuators with Metal Bodies	MCP-1160 Series	6" Actuators with Plastic Bodies— use if metal is not required

MEP-12xx Cross-Reference							
Discontinued Model Number	Torque (in-lb)	Timing (sec/90°)	Control	Replacement Model Number	Torque (in-lb)	Timing (sec/90°)	Control
MEP-1201/1261	135/100	70–150/70–125	Tri-State	MEP-7501	180	90–115	Tri-State
MEP-1202/1262	135/100	70–150/70–125	2–10 VDC or 4–20mA	MEP-7502	180	90–115	0/2–10 VDC* or 4–20mA
MEP-1203/1263	135/100	70–150/70–125	Tri-State	MEP-7503	180	90–115	Tri-State
MEP-1221/1271	135/100	70–150/70–125	Tri-State	MEP-7551	180	90–115	Tri-State
MEP-1222/1272	135/100	70–150/70–125	2–10 VDC or 4–20mA	MEP-7552	180	90–115	0/2–10 VDC* or 4–20mA
MEP-1223/1273	135/100	70–150/70–125	Tri-State	MEP-7553	180	90–115	Tri-State

*NOTE: Before Jan. 2014, MEP-7xx2 proportional models had (besides the 4-20 mA input) a 0–10 VDC input and 0–5 or 0–10 VDC feedback. From 2014 through July 2015, they had a 2–10 VDC input and 1–5 or 2–10 VDC feedback instead. Starting in August 2015, all these options were available and selectable via a jumper and slide switch.

MEP-15xx Cross-Reference							
Discontinued Model Number	Torque (in-lb)	Timing (sec/90°)	Control	Replacement Model Number	Torque (in-lb)**	Timing (sec/90°)	Control
MEP-15xx*	35–55	300	Tri-State	MEP-4001/4003	40	90	Tri-State
With optional CME-1001/1002 SPDT Auxiliary Switch				MEP-4021	40	90	Tri-State
With optional CME-2001 Feedback Potentiometer (10K)				MEP-4013	40	90	Tri-State
*MEP-1504 with 360° rotation has no replacement				**For 80 in-lb. equivalents, use MEP-4801/4821/4813.			

MEP-301x Cross-Reference			
Discontinued Model Number	Control	Replacement Model Number	Control
MEP-3010	Tri-State	MEP-3510	Tri-State
MEP-3011	2-10 VDC Proportional	MEP-3511	0-10 VDC Proportional
MEP-3016	10-2 VDC Proportional	MEP-3516	10-0 VDC Proportional

MEP-50xx Cross-Reference							
Discontinued Model Number	Torque (in-lb)	Timing (sec/90°)	Control	Replacement Model Number	Torque (in-lb)	Timing (sec/90°)	Control
MEP-5001	50	300	Tri-State	MEP-5061	50	300	Tri-State
				MEP-4003/4801*	40/80**	90	Tri-State
MEP-5021	50	90	Tri-State	MEP-5071	50	90	Tri-State
				MEP-4003/4801*	40/80**	90	Tri-State
MEP-5002/5062	50	300	2–10 VDC	MEP-4002/4802*	40/80**	90	0/2–10 VDC***
MEP-5003/5063	50	300	Tri-State	MEP-4001/4801*	40/80**	90	Tri-State
MEP-5005/5065	50	300	Tri-State	MEP-4013/4813	40/80**	90	Tri-State
MEP-5022/5072	50	90	2–10 VDC	MEP-4002/4802*	40/80**	90	0/2–10 VDC***
MEP-5023/5073	50	90	Tri-State	MEP-4001/4801*	40/80**	90	Tri-State
MEP-5061	50	300	Tri-State	MEP-4003/4801*	40/80**	90	Tri-State
MEP-5071	50	90	Tri-State	MEP-4003/4801*	40/80**	90	Tri-State

*MEP-4001V/4002V/4003V actuators have the quick-mount option. When replacing an MEP-5xxx actuator with an MEP-4xxx actuator:

- If on a **damper**, use a non-V model of the MEP-4xxx.
- If on a **ball valve**, two options for replacement are: (1) the MEP-4xxxV with an HPO-5074 **OR** (2) the MEP-4xxx (non-V models) with the HMO-4004.

MEP-53xx Fail-Safe Cross-Reference							
Discontinued Model Number	Torque (in.-lb.)	Timing (sec/90°)	Control	Replacement Model Number (45 in.-lb.)	Replacement	Timing (sec/90°)	Control
MEP-5322	50	45–60	2–10 VDC	MEP-4552/4572	EP-4952/49	< 50 / < 80	0/2–10 VDC*
MEP-5323	50	45–60	Tri-State	MEP-4551	MEP-4951	< 35 / < 45	Tri-State
MEP-5324	50	45–60	Tri-State	MEP-4551 (no feedback)	951 (no fee)	< 35 / < 45	Tri-State
MEP-5372	50	35–50	2–10 VDC	MEP-4552/4572	EP-4952/49	< 50 / < 80	0/2–10 VDC*
MEP-5373	50	35–50	Tri-State	MEP-4551	MEP-4951	< 35 / < 45	Tri-State
MEP-5374	50	35–50	Tri-State	MEP-4551 (no feedback)	951 (no fee)	< 35 / < 45	Tri-State

*Before August 2015 these actuators had 2–10 VDC inputs and 1–5 or 2–10 VDC feedback (only). Starting in August 2015, 0–10 VDC inputs and 0–5 or 0–10 VDC feedback were also available and switch-selectable.

MEP-7xxx Series Cross-Reference							
Discontinued Model Number	Torque (in.-lb)	Timing (sec/90°)	Control	Replacement Model Number	Torque (in.-lb)	Timing (sec/90°)	Control
MEP-7001/7011	150	110–180/90–140	Tri-State	MEP-7501	180	90–115	Tri-State
MEP-7002/7012	150	110–180/90–140	2–10 VDC or 4–20mA	MEP-7502	180	90–115	0/2–10 VDC* or 4–20mA
MEP-7003/7013	150	110–180/90–140	Tri-State	MEP-7503	180	90–115	Tri-State
MEP-7051/7061	150	110–180/90–140	Tri-State	MEP-7551	180	90–115	Tri-State
MEP-7052/7062	150	110–180/90–140	2–10 VDC or 4–20mA	MEP-7552	180	90–115	0/2–10 VDC* or 4–20mA
MEP-7053/7063	150	110–180/90–140	Tri-State	MEP-7553	180	90–115	Tri-State
MEP-7201	120	75–90	Tri-State	MEP-7501	180**	90–115	Tri-State
MEP-7202	120	75–90	0–10 VDC or 4–20mA	MEP-7502	180**	90–115	0/2–10 VDC* or 4–20mA
MEP-7203	120	75–90	Tri-State	MEP-7503	180**	90–115	Tri-State
MEP-7251	120	75–90	Tri-State	MEP-7551	180**	90–115	Tri-State
MEP-7252	120	75–90	0–10 VDC or 4–20mA	MEP-7552	180**	90–115	0/2–10 VDC* or 4–20mA
MEP-7253	120	75–90	Tri-State	MEP-7553	180**	90–115	Tri-State
MEP-7701/7711	300	110–180/90–140	Tri-State	MEP-7801	320	90–115	Tri-State
MEP-7702/7712	300	110–180/90–140	2–10 VDC or 4–20mA	MEP-7802	320	90–115	0/2–10 VDC* or 4–20mA
MEP-7703/7713	300	110–180/90–140	Tri-State	MEP-7803	320	90–115	Tri-State
MEP-7751/7761	300	110–180/90–140	Tri-State	MEP-7851	320	90–115	Tri-State
MEP-7752/7762	300	110–180/90–140	2–10 VDC or 4–20mA	MEP-7852	320	90–115	0/2–10 VDC* or 4–20mA
MEP-7753/7763	300	110–180/90–140	Tri-State	MEP-7853	320	90–115	Tri-State

*NOTE: Before Jan. 2014, MEP-7xx2 proportional models had (besides the 4–20 mA input) a 0–10 VDC input and 0–5 or 0–10 VDC feedback. From 2014 through July 2015, they had a 2–10 VDC input and 1–5 or 2–10 VDC feedback instead. Starting in August 2015, all these options were available and selectable via a jumper and slide switch.

**If less torque is required, the MEP-72xx might also be replaced by an equivalent MEP-49xx (90 in.-lb. fail-safe) or MEP-48xx (80 in.-lb. non-fail-safe) actuator. They also have much smaller footprints.

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