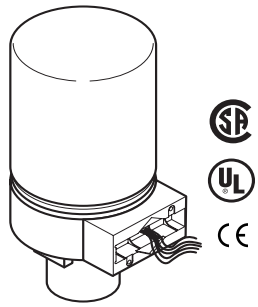
Electronic Positive Positioning Hydraulic Actuator

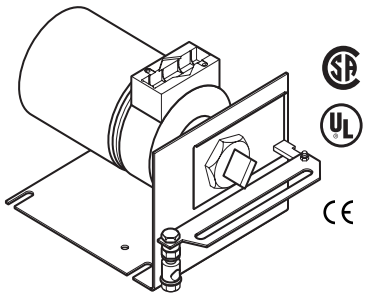
These actuators provide electronic proportional control of dampers, valves, or program switches requiring the return to normal position upon power interruption.

Features:

- Proportional control by variable Vdc input signal.
- Compatibility with 2 to 15 Vdc System 8000 input signals.
- Spring return.
- Fixed 3 Vdc operating span.
- Adjustable 2 to 12 Vdc start point for paralleling or sequencing of actuators.
- 10,000 Ω or greater input impedance.
- 24 Vac, 120 Vac, and 240 Vac models.
- Damper models with linkage or base models that require separate damper or valve linkage.
- Die cast lower housing with 1/2 in. conduit opening and painted steel upper housing.
- Hydraulic actuator with oil immersed motor, transducer, and pump.



MP-5410 Series
Valve Actuator



MP-5430 Series
Damper Actuator

Model Chart

Damper Actuators.

Model No.	Actuator Power Input			Positive Positioner[a]	Timing in Seconds at 72°F (22°C)			Torque Rating lb-in. (N-m)
	AC Voltage +10/-15%	50/60 Hz			No Load Stroke		Retract on Power Loss	
		Watts	VA		To Extend	To Retract		
MP-5430	120	18	10	Yes	60	30	15	15 (1.69)
MP-5433	240							

[a] Internal feedback circuitry provides positive positioning of the damper in relation to the controller signal.

Valve Actuators. Also for Damper Actuators with Field Assembled Damper Linkages.

Model No.	Actuator Power Input			Positive Positioner[a]	Timing in Seconds at 72°F (22°C)			Required Linkage	
					No Load Stroke		Retract on Power Loss	Damper	Valve
	AC Voltage +10/-15%	50/60 Hz			To Extend	To Retract			
		Watts	Amps						
MP-5410	120	18	10	Yes	60	30	15	AM-601[b]	AV-600 or AV-7600-1 AV-601[c]
MP-5411	240								
MP-5413	24								

[a] Internal feedback circuitry provides positive positioning of valve stem in relation to control signal.

[b] With the installation of the AM-601 damper linkage, these valve actuators become functionally the same as the damper actuators listed under Damper Actuators.

[c] May be required for steam and hot water. Refer to Maximum Allowable Ambient Temperature for the Valve Actuator.

Maximum Allowable Ambient Air Temperature for Valve Actuators.

Temperature of Media in the Valve Body (Check the Rating of the Valve) °F (°C)	Maximum Allowable Ambient Air Temperature of MP-541x Series	
	AV-600[a] or AV-7600-1[b] Only for Chilled Water Applications °F (°C)	AV-600[a] or AV-7600-1[b] with AV-601 Extension °F (°C)
366 (180)	Do Not Use	88 (31)
340 (171)		93 (34)
281 (138)		103 (39)
181 (83)		120 (48)
80 (26)	140 (60)[c]	140 (60) [c]

[a] For detailed valve linkage installation instructions, refer to AV-600 Hydraulic Actuator Valve LInkage Kit General Instructions, F-26279.

[b] For detailed valve linkage installation instructions, refer to AV-7600 Hydraulic Actuator Valve LInkage Kit General Instructions, F-26235.

[c] Maximum allowable ambient temperature of the actuator.

CAUTION: Avoid condensation which can facilitate corrosion. With 40°F (4°C) water, the maximum allowable ambient dew point temperature is 68°F (20°C). Piping insulation must not stop drainage at actuator mounting nut. Do not use Hydraulic Actuators with fluid temperatures below 40°F (4°C).

Specifications

Inputs		Compatible with 2 to 15 Vdc from System 8000 controllers.
	Operating span	Approximately 3 Vdc fixed.
	Start point	Adjustable 2 to 12 Vdc. Factory set at 6 Vdc. Impedance 10,000 Ω or greater.
	Power	Refer to Damper Actuators Table and Valve Actuators Table.
	Connections	Color-coded 4 ft (1.2 m) leads.
Outputs		
	Electrical	Internal Power Supply: 20 Vdc, 25 mA.
	Mechanical	Stroke, Damper: Approximately 2 in. (51 mm) over a nominal 6 Vdc (fully retracted) to 9 Vdc (fully extended) input range (includes AM-601 linkage).
		Stroke, Valve: Approximately 9/16 in. (14 mm) over a nominal 6 Vdc (fully retracted) to 9 Vdc (fully extended) input range.
		Nominal Damper Area: Actuator sizing should be done in accordance with damper manufacturer's specifications.
Environmental		
	Ambient temperature limits	Operating: -20 to 140°F (-29 to 60°C). Damper: -20 to 140°F (-29 to 60°C). Valve: Refer to Maximum Allowable Ambient Air Temperature for Valve Actuators.
	Humidity	5 to 95% RH, non-condensing.
	Location	NEMA Type 1.
Dimensions		6-3/4 H x 3-23/32 W x 3-1/4 D in. (171 x 18 x 83 mm).
Agency Listings		
	UL	UL873 File E9429 Temperature Indicating and Regulating Equipment.
	CUL	Canadian Standard (File #LR3728).
	European Community	EMC Directive 89/336/EEC, Low Voltage Directive 72/23/EEC.
General Instructions		Refer to F-24788.

Accessories

Model No.	Description
Damper only	
AM-111	Crank arm for 5/16 in. diameter damper shaft.
AM-112	Crank arm for 3/8 in. diameter damper shaft.
AM-113	Crank arm for 1/2 in. diameter damper shaft.
AM-115	Crank arm for 7/16 in. diameter damper shaft.
AM-122	Linkage connector straight type.
AM-123	Damper clip.
AM-125	5/16 in. diameter x 20 in. damper rod.
AM-125-048	5/16 in. diameter x 48 in. damper rod.
AM-132	Ball joint connector.
AM-161-3	Damper linkage kit.
AM-601	Device includes mounting bracket, damper linkage with spring, and AM-122 straight connector. Required to modify actuators into 2 in. (50.8 mm) stroke damper actuators.
Valve only	
AV-600	Valve linkage 1/2 to 2 in. VB-7xxx and discontinued VB-9xxx valves.
AV-601	Valve linkage extension for hot water and steam applications. Use with AV-7600-1.
AV-7600-1	Valve linkage for VB-7xxx.
TOOLS (factory available)	
TOOL-12	Wrench for adjustment of auxiliary switch.
TOOL-19	Spring compression tool for AV-600.
TOOL-37	1-5/8 in. open end wrench.
TOOL-202	Manual positioner.

Typical Applications

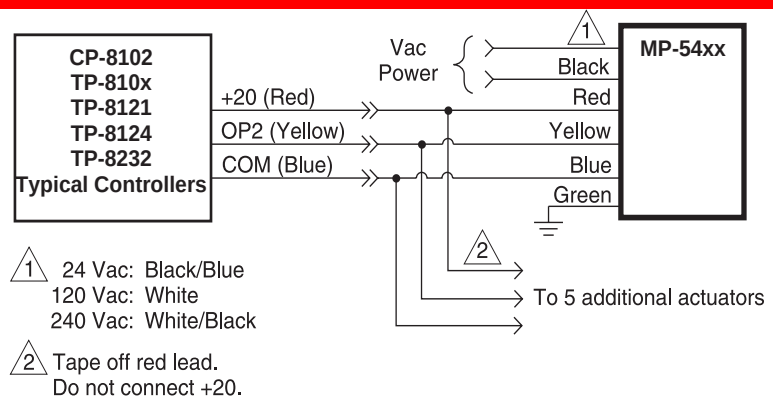


Figure 1 Typical Control Wiring for up to Six MP-54xx Series Actuators to Controllers Requiring External 20 Vdc Power Supply.

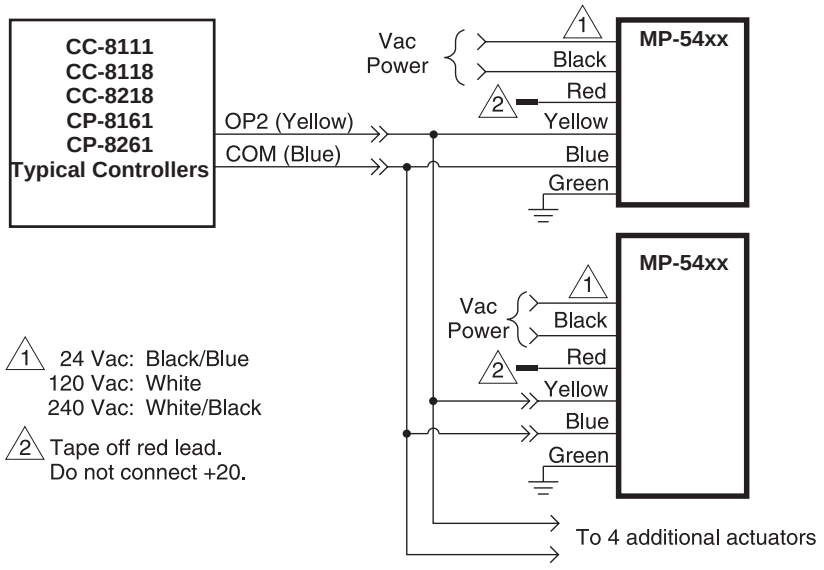


Figure 2 Typical Control Wiring for Up to Six MP-54xx Series Actuators to Controllers Having Internal 20 Vdc Power Supply.

Note:

1. When applied with most DDC controllers, the actuator's 20 Vdc supply (red to blue) is not required.
2. When this actuator is used with a DDC controller, it is important to program the controller's output to provide a minimum control span of 4.5 to 11.5 Vdc to assure full travel to each end of the actuator stroke.