Two-Position Actuators

These actuators are used for electric two-position control of globe valves and dampers which require a return to the normal position upon power interruption.

Features:
- Two-position actuators controlled by an SPST controller.
- Spring return.
- Available 24, 120, and 240 Vac models.
- An actuator with the part number suffix "-500" has a built-in, adjustable, SPDT auxiliary switch.
- Available 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 and pump.

Model Chart
Damper Actuators.

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Actuator Power Input</th>
<th>Timing in Seconds at 72°F (22°C)</th>
<th>Damper Output Torque Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>AC Voltage (±10%)</td>
<td>50/60 Hz Watts VA</td>
<td></td>
</tr>
<tr>
<td></td>
<td>To Extend (No Load Stroke)</td>
<td>Retract on Power Loss</td>
<td></td>
</tr>
<tr>
<td>MA-5330</td>
<td>120</td>
<td>10</td>
<td>16.8</td>
</tr>
<tr>
<td>MA-5333</td>
<td>24</td>
<td>8.8</td>
<td>15.6</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Actuator Power Input</th>
<th>10 Amps Aux Switch</th>
<th>Timing in Seconds at 72°F (22°C)</th>
<th>Required Linkagea</th>
<th>Damper Output Torque Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>AC Voltage (+10/-15%)</td>
<td>50/60 Hz Watts VA</td>
<td>To Extend (No Load Stroke)</td>
<td>Retract on Power Loss</td>
<td>Damper</td>
</tr>
<tr>
<td>MA-5210</td>
<td>120</td>
<td>16.8</td>
<td>No</td>
<td>60</td>
<td>15</td>
</tr>
<tr>
<td>MA-5210-500</td>
<td>240</td>
<td>19.2</td>
<td>No</td>
<td>60</td>
<td>15</td>
</tr>
<tr>
<td>MA-5211</td>
<td>24</td>
<td>15.6</td>
<td>No</td>
<td>60</td>
<td>15</td>
</tr>
<tr>
<td>MA-5213</td>
<td>24</td>
<td>15.6</td>
<td>Yes</td>
<td>60</td>
<td>15</td>
</tr>
<tr>
<td>MA-5213-500</td>
<td>24</td>
<td>15.6</td>
<td>Yes</td>
<td>60</td>
<td>15</td>
</tr>
</tbody>
</table>

a Damper models are provided with factory-installed damper linkages. Only base models require separately-ordered linkages.

Specifications

<table>
<thead>
<tr>
<th>Actuator inputs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control circuit</td>
</tr>
<tr>
<td>Power input</td>
</tr>
<tr>
<td>Connections</td>
</tr>
</tbody>
</table>
## Actuator outputs

### Electrical
- **Auxiliary switch (MA-5xxx-500)**, 10 amps, 120/240 Vdc adjustable SPDT, factory set to close the N.C. contact at the retracted end of stroke.

### Mechanical
- **Stroke damper**: Approximately 2 in. (51 mm) from fully retracted to fully extended (includes AM-601 linkage).
- **Stroke valve**: Approximately 9/16 in. (14.3 mm) from fully retracted to fully extended.

### Nominal damper area
- Actuator sizing should be done in accordance with damper manufacturer's specifications.

## Environment

### Ambient temperature limits
- **Shipping and storage**: -40 to 140°F (-40 to 60°C).
- **Operating, damper**: 0 to 140°F (-18 to 60°C).
- **Operating, valve**: Refer to Restrictions on Maximum Ambient Temperature for Valve Actuators Table.

### 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 Dia. in. (171 x 94 x 83 mm).

## Agency Listings

### UL 873
- File #E9429 Category Temperature-Indicating and Regulating Equipment.

### CSA
- Canadian Standard C22.2 #24-93.

### European Community

## General Instructions
- Refer to F-15070.

## Restrictions on Maximum Ambient Temperature for Valve Actuators.

<table>
<thead>
<tr>
<th>Maximum Temperature of Media in the Valve Body (Check Rating of the Valve) °F (°C)</th>
<th>Maximum Ambient Temperature of MA-521X Series</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AV-7600-1 (Only) °F (°C)</strong></td>
<td><strong>AV-7600-1 and AV-601 °F (°C)</strong></td>
</tr>
<tr>
<td>366 (186)</td>
<td>90 (32)</td>
</tr>
<tr>
<td>340 (171)</td>
<td>100 (38)</td>
</tr>
<tr>
<td>281 (138)</td>
<td>115 (46)</td>
</tr>
<tr>
<td>181 (83)</td>
<td>140 (60) a</td>
</tr>
<tr>
<td>80 (26)</td>
<td>140 (60) a</td>
</tr>
</tbody>
</table>

a Maximum ambient temperature of the actuator must never exceed 140°F (60°C).

## Accessories

### Damper Linkages
- **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 diameter x 20 in. damper rod.
- **AM-125-048**: 5/16 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 MA-521X series) valve actuators into 2 in. (51 mm) stroke damper actuators.
- **AM-602**: Spacer.

### Valve Linkages
- **AV-600**: Valve linkage for VB-7xxx to 2 in. and discontinued VB-9xxx valves to 1-1/4 in.
- **AV-601**: Valve linkage extension for hot water and steam applications; use with AV-600.
- **AV-7600-1**: Valve linkage for VB-7xxx valves with booster springs.

### TOOLS (factory-available)
- **TOOL-12**: Wrench for adjustment of auxiliary switch.
- **TOOL-19**: Spring compression tool for AV-600.
Typical Applications

<table>
<thead>
<tr>
<th>Aux. Switch Leads (-500 Actuators only)</th>
<th>Thermostat or Switch</th>
<th>Ground</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Brown) N.O.</td>
<td>Black</td>
<td></td>
</tr>
<tr>
<td>(Orange) N.C.</td>
<td>L2</td>
<td>Green</td>
</tr>
<tr>
<td>(Red/White) C</td>
<td>L1</td>
<td></td>
</tr>
</tbody>
</table>

MA-5xxx Actuator

- Actuator extends when contacts are closed and retracts when contacts are open.

Actuator Voltage (Vac) | Color(s) of L2 Lead
---|---------------------
24 | Black/Blue
120 | White
240 | White/Black

Figure 1 Wiring for MA-5xxx Series Actuators.