

### APPLICATION

For Two-position operation of damper, valves, and other equipment which require the return to normal position upon power interruption.

## WARNING

Specifications do not apply to MZ-31X-15X or MA-41X-15X which are not listed in this document.

# **SPECIFICATIONS**

Control Circuit: Two-wire.

## Shaft Rotation:

MA-305, MA-405, CW 180° when power is applied.

MA-31X, MA-41X, CW 170° when power is applied.

Spring Return: CCW to original position when actuator is de-energized.

Auxiliary Switch (-500 Models): SPDT makes (or breaks) circuit at powered end of stroke.

**Environment:** 

### Ambient Temperature Limits,

Shipping & Storage -40 to 136°F (-40 to 58°C). Humidity, 5 to 95% R.H., non-condensing.

Locations, NEMA Type 4 with gasket (provided) and water-tight conduit connectors (not provided( installed. Connections: Coded screw terminals.

Case: Die cast alumminum with two 1/2" conduit openings. Mounting: Allow 6" (152 mm) clearance behind the actuator wiring compartment. See Table 1 for additional data. **Dimensions:** 

Base Actuators, 5-3/4" high x 5-3/8" wide x 6-9/16" deep (146 mm x 136 mm x 167 mm).

Hazardous Location Actuators, 8-7/8" high x 8-1/2" wide x 10-5/8" deep (225 mm x 216 mm x 167 mm).

itch (-500 Mode

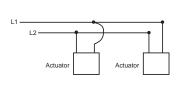
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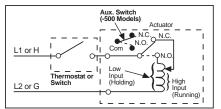
L1 or H		Aux. Sw Actuator
L2 or G	IJ Thermostat or Switch	I Motor Field
		<u> </u>



AV-391

AV-392

AV-395



MA-305-318-405-419 - 02-05

### Figure 1. Wiring for MA-305 and 405 Series **TABLE 1. SPECIFICATIONS**

**Multiple Actuator** Field Wiring / Pneumatic Piping

#### Figure 2. Wiring for MA-318, 416, 418 and 419 Series

Actuator Part Number	Pov Sup Vac	ply	Aux. * Switch	Input (Watts)	VA Running	Holding	Rated Torque Ib-in. (N-m)	No Load Timing † at 75°F (24°C)		l Damper sq. ft. (m²) Opposed	Mounting	Application
MA-305	24		No		56	56						
MA-305-500	24		Yes		56	56	40 (4.0)			44 (4)	Upright	Damaan
MA-405	120		No	25	48	48	16 (1.8)	20	9 (0.8)	11 (1)	Position Preferred	Damper Actuators
MA-405-500	120		Yes		48	48						
MA-318	24		No		92	32						
MA-318-500	24	60	Yes		92	32						
MA-416	208		No	1	104	38						
MA-416-500	208		Yes	70	104	38						
MA-418	120		No	Running	108	42	60 (6 8)	20	22 (2.4)	42 (4)	Outright	Damper
MA-418-500	120	]	Yes	25	108	42	60 (6.8)	20	33 (3.1)	43 (4)	Shaft Horizontal	and Valve Actuators
MA-419	240	]	No	Holding	120	39						
MA-419-500	240	1	Yes	1	120	39						
MA5-419	240	50	No	1	120	39						
MA5-419-500	240	1	Yes	1	120	39						

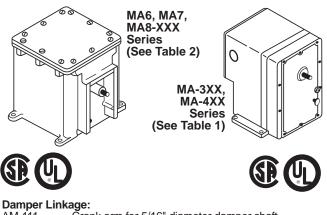
\*2 FLA 12 I RA @ 240 / 120 Vac 1 FLA 6 I RA @ 240 Vac

\*\*Damper ratings are nominal and based on standard (not low leakage) dampers at 1" (25.4 mm) W.C. pressure and 2000 FPM (10 m/s).

+ Spring return timing with full load opposing spring approximately 60 sec.

MA-305 & MA-318 Series MA-405 thru MA-419 Series

Oil Submerged Actuators, Two-Position General Instructions



#### AM-111 Crank arm for 5/16" diameter damper shaft

- Crank arm for 3/8" diameter damper shaft AM-112
- AM-113 Crank arm for actuator or 1/2" diameter damper shaft
- AM-115 Crank arm for 7/16" diameter damper shaft
- AM-116 Splined crank arm for actuator Linkage connector straight type
- AM-122
- AM-123 Damper Clip AM-125
- 5/16" diameter x 20" damper rod AM-125-048 5/16" diameter x 48" damper rod
- AM-132 Ball joint connector
- AM-161 Damper linkage kit
- AM-161-1 Damper linkage kit
- AM-301 90° mounting bracket (except MA6, MA7, MA8-XXX)

1/2" to 1-1/4" VB-92XX or VB-93XX

1-1/2" & 2" VB-92XX or VB-93XX

2-1/2" to 4" VB-92XX or VB-931X

#### Valve Linkage for 60 lb-in. (6.8 N-m) actuators only (excdept MA7, MA8-XXX): ÀV-29 & AV-300 2-1/2" & 3" VB-9323

### TABLE 2. PART NUMBERS FOR HAZARDOUS LOCATION APPLICATIONS\* (Class 1, Groups C & D, and Class 2, Groups E, F & G

(Class 1, Groups C & D, and Class 2, Groups E, F & G hazardous locations; ref. EN-56-2)

Standard Part Numbers	Damper Actuator Part Numbers for Hazardous Locations	Valve Actuator Part Numbers for Hazardous Locations
MA-305	MA6-305	
MA-305-500	MA6-305-500	
MA-405	MA6-405	
MA-405-500	MA6-405-500	
MA-318	MA6-318	MA8-318
MA318-500	MA6-318-500	MA8-318-500
MA-416	MA6-416	MA8-416
MA-416-500	MA6-416-500	MA8-416-500
MA-418	MA6-418	MA8-418
MA-418-500	MA6-418-500	MA8-418-500
MA-419	MA6-419	MA8-419
MA-419-500	MA6-419-500	MA8-419-500
MA6-419	MA7-419	MA7-419
MA5-419-500	MA7-419-500	MA7-419-500

 $^{\ast}$  Models for hazardous locations are only available as factory enclosure / actuator assemblies.

# THEORY OF OPERATION

MA-305 or MA-405 series actuator output shaft rotates  $180^{\circ}$  clockwise (CW) when energized and spring returns counterclockwise (CCW) to  $0^{\circ}$  when de-energized.

MA-31X and MA-41X series actuator output shaft rotates 170° clockwise (CW) when energized and spring returns counterclockwise (CCW) to 0° when de-energized.

MA-305 and MA-405 series actuator motors are assembled to a gear train and stall at the end of the power stroke.

MA-318, MA-416, MA-418 and MA-419 series actuators have an end of travel switch which reduces the running input from 70 watts to 25 watts at the end of the CW rotation.

## **PRE-INSTALLATION**

### Inspection

Inspect the carton for damage. If damaged notify the appropriate carrier immediately. Inspect the device for obvious damage. Return damaged products.

## **Required Installation Items**

- Wiring diagram
- Tools (not provided)
  Volt-ohm meter
  Appropriate screwdriver for mounting screws
  Appropriate drill and drill bit for mounting screws
- Appropriate accessories
- Mounting screws (not provided)

# INSTALLATION

Always link the actuator to the load to allow the actuator to reach full end of travel.

### CAUTION

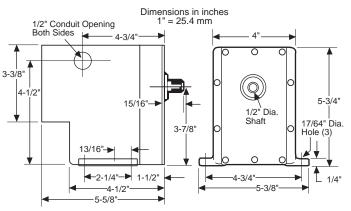
- 1. Installer mmust be a qualified experienced technician.
- Disconnect power supply before installation to prevent electrical shock and equipment damage.
- 3. Make all connections in accordance with the wiring diagram and in accordance with national and local electrical codes.
- 4. Do not exceed ratings of the device
- Avoid locations where excessive vibration or corrosive fumes are present. The case of the actuator is intended for use primarily to provide a degree of protection against windblown dust, rain, sleet, and external ice formation (NEMA Type 4).

# **Mounting Location**

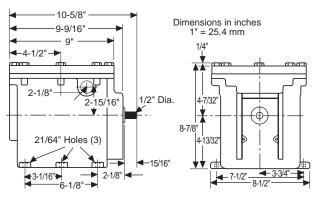
Allow 6" (152 mm) clearance behind the actuator wiring compartment. Locate actuator in a weather protected area. Three mounting holes are provided in the base of the actuator. (See Figures 3 through 5 for mounting dimensions.)

MA-305 and MA-405 series actuators can be mounted in any position. The MA-318, MA-416, MA-418 and MA-419 series actuators must be mounted so that the output shaft lies in a horizontal position.

To ensure water and weather resistance, install the cover gasket (provided) and water-tight conduit fittings.







### Figure 4. Hazardous Location Housing Mounting Dimensions for Control Actuators

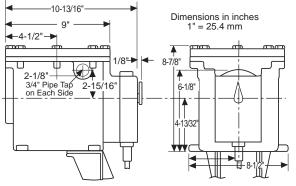


Figure 5. Hazardous Location Housing Mounting Dimensions for Valve Actuators (See Valve Data for Valve Dimensions)