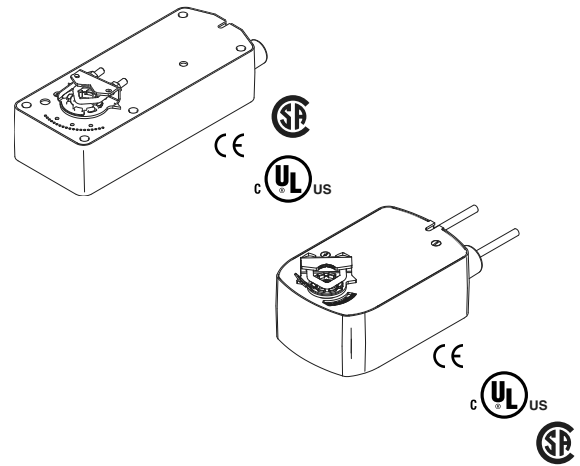


## Spring Return DuraDrive® Two-Position Actuator

For spring return applications that require two-position control of dampers and valves in HVAC system.

Features:

- 35 lb.-in. (4 N-m), 60 lb.-in (7 N-m), 133 lb.-in (15 N-m).
- On-off control.
- Rugged die cast housings rated for NEMA 2/IP54.
- Overload protection throughout rotation.
- Optional built-in auxiliary switch to provide for interfacing or signaling.
- Provides 95° of rotation.
- Visual position indicator provided.
- Rotation limiting available.
- MA41 series manual override.



Model Chart																			
Part Number	Actuator Power Input								Auxiliary Switch	Approximate Timing in Seconds @ 70° (21°C) <sup>a</sup>		Output Torque Rating lb-in (N-m) <sup>b</sup>		Manual Override					
	Voltage	VA		Watts				Powered		Spring Return	Minimum	Maximum Stall							
		50 Hz	60 Hz	Running		DC Amps	Holding												
				50 Hz	60 Hz		50 Hz						60 Hz						
MA41-7153	24 Vac ± 20% 22-30 Vdc	9.8	9.7	7.5	7.5	0.29	2.8	2.8	No	<190	<30	133 (15)	350 (40)	Yes					
MA41-7153-502				Two <sup>c</sup>															
MA41-7150	120 Vac ± 10%	11.7	10.0	8.8	8.4	—	5.0	3.6	No										
MA41-7150-502				Two <sup>c</sup>															
MA41-7151	230 Vac ± 10%	15.5	10.6	9.5	8.5	—	4.6	3.3	No										
MA41-7151-502				Two <sup>c</sup>															
MA41-7073	24 Vac ± 20 % 22-30 Vdc	4.8	4.8	3.2	3.2	0.13	0.8	0.8	No						<80	<40	60 (7)	250 (28)	Yes
MA41-7073-502				Two <sup>c</sup>															
MA41-7070	120 Vac ± 10%	10.7	5.6	4.2	3.6	—	2.0	1.2	No										
MA41-7070-502				Two <sup>c</sup>															
MA41-7071	230 Vac ± 10%	17.0	8.0	5.1	4.0	—	2.7	1.4	No										
MA41-7071-502				Two <sup>c</sup>															
MA40-7043	24 Vac ± 20% 22-30 Vdc	4.4	4.4	2.9	2.9	0.11	0.8	0.8	No	<50	<28	35 (4)	150 (17)	No					
MA40-7043-501				One <sup>d</sup>															
MA40-7040	120 Vac ± 10%	6.4	4.3	3.8	3.4	—	1.6	1.2	No										
MA40-7040-501				One <sup>d</sup>															
MA40-7041	230 Vac ± 10%	5.8	4.6	4.1	3.9	—	1.5	1.2	No										
MA40-7041-501				One <sup>d</sup>															

<sup>a</sup> Timing was measured with no load applied to the actuator.  
<sup>b</sup> De-rating is required at low temperatures.  
<sup>c</sup> One adjustable from 25 to 85° rotation and one set to operate @ 5° fixed.  
<sup>d</sup> One adjustable from 0 to 95° rotation (0 to 1 scale).

# MA40-704x Series, MA41-707x Series, and MA41-715x Series

Specifications	
<b>Inputs</b>	
<b>Control signal</b>	On-off SPST contacts or Triacs (500 mA).
<b>Power</b>	Refer to Model Chart.
<b>Connections</b>	3 ft. (0.9 m) long, appliance cable, 1/2 in. conduit connectors. For M20 Metric conduit, use AM-756 adaptor.
<b>Outputs</b>	
<b>Motor Type</b>	<b>MA40-704x, MA41-707x:</b> Brush. <b>MA41-715x:</b> Brushless DC.
<b>Electrical</b>	<b>MA40-7043-501:</b> One auxiliary switch available, SPDT 6A resistive @ 24 Vac, adjustable 0 to 95° (0 to 1 scale). UL listed, switch meets VDE requirements for 6 (1.5)A, 24 Vac. <b>MA40-7040-501 or MA40-7041-50:</b> One auxiliary switch available, SPDT 6A resistive @ 240 Vac, adjustable 0 to 95° (0 to 1 scale). UL listed, switch meets VDE requirements for 6 (1.5)A, 24 Vac. <b>MA41-715x-502 or MA41-707x-502:</b> Two auxiliary switches available, SPDT 7A resistive @ 250 Vac, one fixed @ 5 ° and one adjustable 25 to 85°. UL Listed, meets VDE requirements for 7 (2.5)A, 250 Vac.
<b>Mechanical</b>	Direction of rotation: CW or CCW rotation is available through reverse mounting. Shaft clamp: Direct coupled using a through hole output hub. <b>MA40-704x:</b> Up to 5/8 in. round, 1/2 in. square shafts. <b>MA41-71xx:</b> Up to 3/4 in. round, 1/2 in. square shafts. See Accessories for larger shaft options. Position Indicator: <b>MA40-704x:</b> Visual indicator, 0 to 1 (0 is the spring return position). <b>MA41-707x, MA41-715x:</b> Pointer (-5 to 90°) and scale are provided for position indication (-5 is normal or spring return position).
<b>Environment</b>	
<b>Ambient Temperature limits</b>	Shipping and storage: -40 to 160°F (-40 to 71°C). Operating: -22 to 140°F (-30 to 60°C).
<b>Humidity</b>	5 to 95% RH, non-condensing.
<b>Locations</b>	<b>MA40-704x:</b> NEMA 2 (IEC 1P54) no restrictions. <b>MA41-707x:</b> NEMA 1 (IEC IP30), NEMA 2 (IEC IP54) with conduit in the down position. <b>MA41-715x:</b> NEMA 1 (IEC IP30), NEMA 2 (IEC IP54) with conduit in the down position.
<b>Dimensions</b>	<b>MA41-707x, MA41-715x:</b> 10-1/2 H x 4 W x 3-1/2 D in. (287 x 100 x 89 mm). <b>MA40-704x:</b> 6-51/64 H x 4 W x 3-1/2 D in. (68 x 100 x 89 mm).
<b>Agency Listings</b>	
<b>UL</b>	UL-873, Underwriters Laboratories Listed (File #E9429 Category Temperature-Indicating and Regulating Equipment).
<b>European Community</b>	EMC Directive (89/336/EEC). Low Voltage Directive (72/23/EEC).
<b>CUL</b>	Canadian Standards C22.2 No. 24-93.
<b>Australia</b>	This product meets requirements to bear the C-Tick mark according to the terms specified by the Communications Authority under the Radio Communications Act 1992.
<b>General Instructions</b>	Refer to F-26642.

# MA40-704x Series, MA41-707x Series, and MA41-715x Series

## Accessories

Model No.	Description
<b>MA41-707x, MA41-715x</b>	
AM-671 <sup>abcd</sup>	Mounting bracket.
AM-672 <sup>abcd</sup>	Mounting bracket.
AM-673 <sup>a</sup>	Mounting bracket.
AM-674	Weather shield.
AM-675	Weather shield base.
AM-676	Universal shaft extension, approximately 9-1/2 in. long (242 mm) for use on 3/8 to 11/16 in. (10 to 17 mm) round shafts, 3/8 to 9/16 in. square shafts. (AM-753 clamps required).
AM-686	Position indicator.
AM-687	V-clamp for 1.05 in. round shafts.
AM-688	Replacement universal clamp.
AM-689	Rotation limiter.
AM-690	Crank arm.
AM-691	Crank arm.
AM-692	V-bolt.
AM-693 <sup>ef</sup>	Crank arm kit.
AM-714	Weather shield.
AM-756	Metric conduit adaptor M20 x 1.5 to 1/2 in. NPT (two per package).
AM-758	Universal short "U" mounting bracket.
AM-759	Universal Long "U" mounting bracket.
AM-760	Universal slotted "L" mounting bracket.
AM-761	Replacement 7-inch anti-rotation bracket.
AM-762	Replacement 9-inch anti-rotation bracket.
AM-763	1/8 inch hex crank for manual override.
AV-602	Vx-7xxx 1/2 to 2 in. valve linkage.
AV-607	Vx-9xxx 2-1/2 to 4 in. valve linkage.
<b>MA40-704x</b>	
AM-673	Mounting bracket.
AM-674	Weather shield.
AM-675	Weather shield base.
AM-676	Universal shaft extension, approximately 9-1/2 in. long (242 mm) for use on 3/8 to 11/16 in. (10 to 17 mm) round shafts, 3/8 to 9/16 in. square shafts. (AM-753 clamps required).
AM-709	Position indicator and stroke limiter.
AM-710	V-clamp for 3/4 in. round shafts.
AM-711	Crank arm adaptor kit.
AM-712 <sup>e</sup>	Crank arm adaptor kit
AM-713 <sup>e</sup>	Bracket.
AM-714	Weather shield
AM-715 <sup>e</sup>	Crank arm adaptor kit.
AM-717	Replacement universal clamp
AM-756	Metric conduit adapter
AM-761	Replacement 7-inch anti-rotation bracket.
AM-762	Replacement 9-inch anti-rotation bracket.
AV-605	Vx-7xxx 1/2 to 2 in. valve linkage.

<sup>a</sup> Drill appropriate mounting holes where needed.

<sup>b</sup> AM-693 crank arm kit required.

<sup>c</sup> Cannot be used with Mx41-634x or Mx40-717x series actuators.

<sup>d</sup> The large "C"-shaped clamps included in AM-693 crank arm kit are required for mounting the actuator. Drill appropriate mounting holes where needed.

<sup>e</sup> Use the self-tapping screws and flat washers provided in kit to mount actuator.

<sup>f</sup> AM-692 V-bolt kit required.

# MA40-704x Series, MA41-707x Series, and MA41-715x Series

## Typical Applications

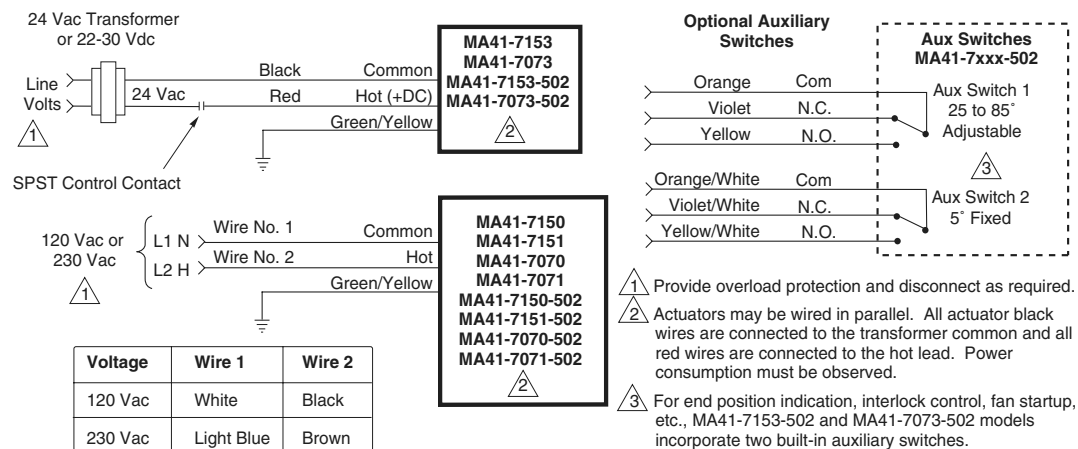


Figure 1 Typical Wiring Diagram for 24, 120, or 240 Vac Basic and Double Auxiliary Switch Models.

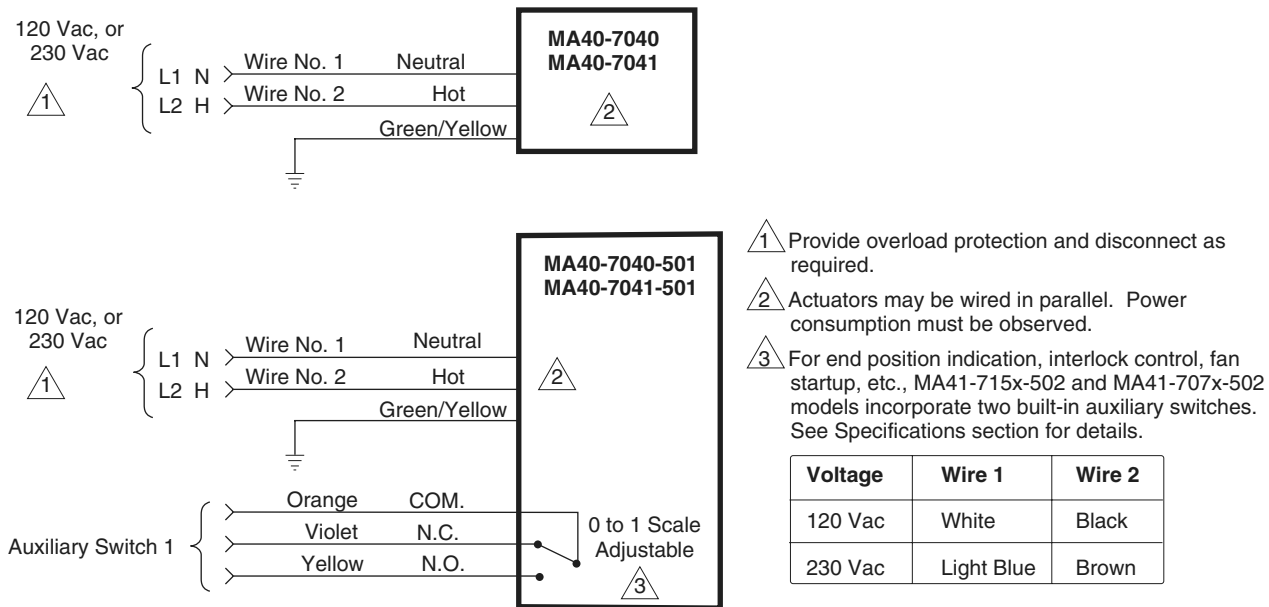


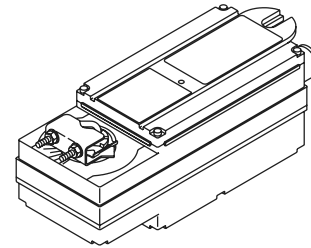
Figure 2 Typical Wiring Diagram for 120 Vac or 230 Vac Basic and Single Auxiliary Switch Models.

# Spring Return DuraDrive® Two-Position Actuator

For spring return applications that require two position control of dampers and valves in HVAC systems.

Features:

- 150 lb.-in. (17 N-m) rated torque.
- On-off control.
- NEMA Type 4 housing (IEC IP56).
- Custom automatic current sensing motor control provides extended reliability and repeatable timing.
- Direct coupled to the damper shaft with dual industrial hardened universal mounting clamps.
- Accurate 93° travel digitally controlled.
- Integral position indication scale.
- Rugged die-cast housing.
- Oil immersed gear train provides continuous lubrication.
- Rated for operating temperature up to 140°F.
- Can be double mounted to accommodate high torque applications.
- 100% duty cycle.



Model Chart											
Damper Actuators											
Model No.	Shaft Size <sup>a</sup>	Stroke	Actuator Power Input				SPDT Auxiliary Switches	Approximate Timing in Seconds @ 70°F (21°C) with No Load		Output Torque Rating lb.-in. (N-m)	
			Voltage	Running		Holding		Powered	Spring Return	Minimum <sup>b</sup>	Maximum Stall
				50/60 Hz	50/60 Hz	50/60 Hz					
			W	VA	W						
MA40-7173	3/8 to 1/2 in. round or square	93° ± 1°	24 Vac ± 20%	5.4	9.6	4.1	No	<145	150 (17)	450 (51)	
MA40-7170 <sup>c</sup>			120 Vac ± 10%	7.2	11.4	9.4					
MA40-7171			240 Vac ± 10%	7.4	11.8	9.5					

<sup>a</sup> Optional AM-753 damper shaft mounting clamps for 5/8 in. square or 3/4 to 1 in. round shafts.

<sup>b</sup> De-rating required for spring return actuators at low temperatures.

<sup>c</sup> The CE directive is not applicable to this model.

### Valve Actuator plus Linkage.

Model No. <sup>a</sup>	Linkage (Included)	Voltage 50/60 Hz	Running		Holding Watts	SPDT Aux. Switches
			Watts	VA		
MA40-7173-200	AV-602	24 Vac ± 20%	5.4	9.6	4.1	No
MA40-7170-200		120 Vac ± 10%	7.2	11.4	9.4	
MA40-7171-200		240 Vac ± 10%	7.4	11.8	9.5	
MA40-7173-220	AV-607	24 Vac ± 20%	5.4	9.6	4.1	
MA40-7170-220		120 Vac ± 10%	7.2	11.4	9.4	
MA40-7171-220		240 Vac ± 10%	7.4	11.8	9.5	
MA40-7173-230	AV-609	24 Vac ± 20%	5.4	9.6	4.1	
MA40-7170-230		120 Vac ± 10%	7.2	11.4	9.4	
MA40-7171-230		240 Vac ± 10%	7.4	11.8	9.5	

<sup>a</sup> Refer to Valve Catalog, F-27384 for correct applications.

# MA40-717x Series

## Specifications

Inputs	
Control signal	On-off SPST control contacts or Triacs (500 mA) rated.
Power	Refer to Model Chart.
Connections	2 ft (61 cm) long appliance cable & 1/2 in. conduit connectors.
Outputs	
Motor Type	Brushless DC.
Mechanical	Direction of rotation: CW or CCW rotation is available through reverse mounting. Dual shaft clamps: Direct coupled using a through hole output hub.
Environment	
Ambient temperature limits	Shipping and storage: -40 to 160°F (-40 to 71°C). Operating: -25 to 140°F (-32 to 60°C).
Humidity	5 to 95% RH, non-condensing.
Locations	NEMA 1, NEMA 4 (IEC IP56) with customer supplied water tight connector.
Agency Listings	
UL	UL-873, Underwriters Laboratories Listed (File #9429 Category Temperature-Indicating and Regulating Equipment).
European Community	EMC Directive (89/336/EEC). Low Voltage Directive (72/23/EEC). Not applicable to MA40-7170.
CSA	Canadian Standards C22.2 No. 4-93.
Australia	This product meets requirements to bear the C-Tick mark according to the terms specified by the Communications Authority under the Radio Communications Act 1992.
General Instructions	
	Refer to F-26742.

## Accessories

Model No.	Description
AM-674	Weather shield.
AM-676	Universal shaft extension, approximately 9-1/2 in. long (242 mm) for use on 3/8 to 11/16 in. (10 to 17 mm) round shafts, 3/8 to 9/16 in. square shafts. (AM-753 clamps required).
AM-751	Standard anti-rotation bracket 9 in. long x 13/16 in. wide (229 x 21 mm), included with actuator.
AM-752	Optional anti-rotation bracket 4 in. long x 1-11/16 in. wide (102 x 43 mm), for narrow spaces.
AM-753	Optional damper shaft mounting clamps for 5/8 in. square shaft, 3/4 in. and 1 in. round shafts (two per package).
AM-754	Standard universal mounting clamps for 3/8 to 1/2 in. (10 to 13 mm) round and square shafts, two included with actuator.
AM-756	Metric conduit adaptor M20 x 1.5 to 1/2 in. NPT (two per package).
AV-602	Vx-7xxx 1-1/2 to 2 in. valve linkage.
AV-607	Vx-9xxx 2-1/2 to 4 in. valve linkage.

## Typical Applications

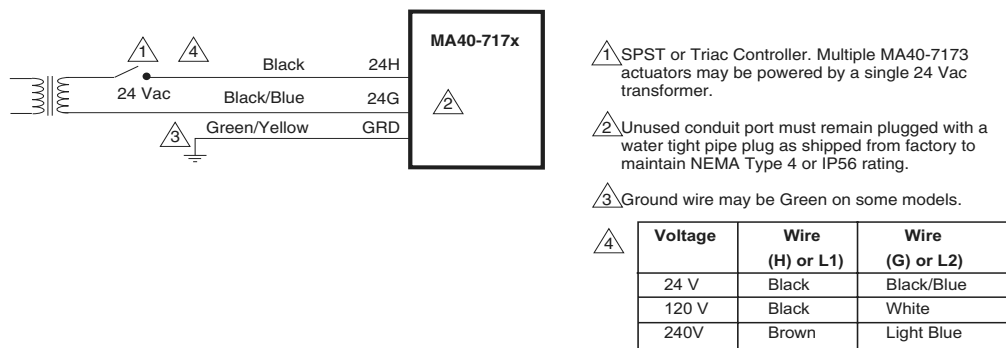


Figure 1 Typical Wiring Diagram for MA40-717x.