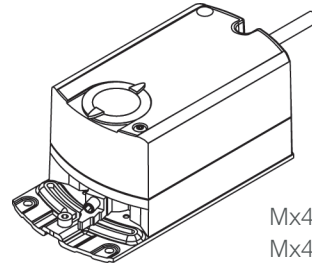


# SmartX Mx4x-6xxx, Mx4x-7xxx Series Actuators and Accessories

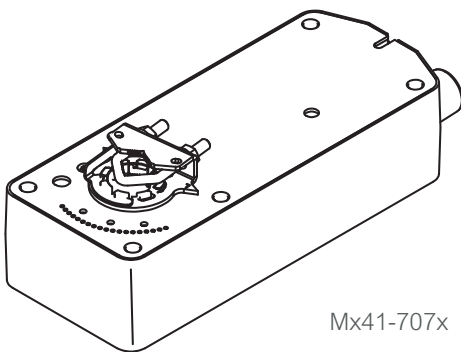
## Applications

Direct-coupled SmartX Actuators are designed to accept two-position, floating, or proportional control from a DDC system or from a thermostat, for control of HVAC applications. The actuators are designed to be used in both damper and valve control applications. Typical applications include air handling units, unit ventilators, fan coil units, VAV terminals, control dampers, inlet guide vanes, and linked valve assemblies.

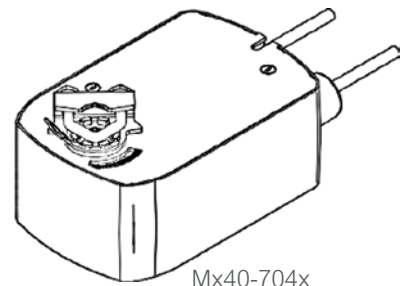
Use the following guide to select actuators for damper applications. Refer to the Applicable Literature table for valve literature.



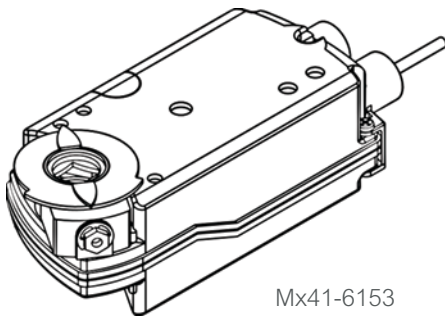
Mx41-6043  
Mx41-6083



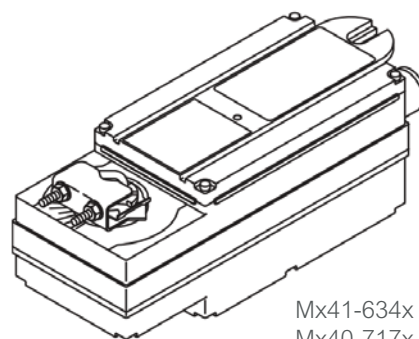
Mx41-707x  
Mx41-715x



Mx40-704x



Mx41-6153



Mx41-634x  
Mx40-717x

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product.support@schneider-electric.com  
www.schneider-electric.com

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## Applicable Literature

F-Number	Description	Audience Sales Personnel Application Engineers. Other details:	Purpose All documents describe actuator features, specifications, possible applications, and step-by-step mounting instructions. Other details:	
F-27211	MF41-6043/MS41-6043 Series, MF41-6083/ MS41-6083 Series Non-Spring Return Direct Coupled Actuator Installation Instructions	Installers Service Personnel Start-up Technicians		
F-27212	MF41-6153, MS41-6153 Non-Spring Return Direct Coupled Actuator Installation Instructions			
F-27213	MF41-6043/MF41-6083 Series Non-Spring Return Rotary 24 Vac Three-Position Control Electronic Damper Actuators General Instructions			
F-27214	MS41-6043/MS41-6083 Series Non-Spring Return Rotary 24 Vac Modulating Control 0...10 Vdc Electronic Damper Actuators General Instructions			
F-27215	MF41-6153/MS41-6153 Series Non-Spring Return Rotary Electronic Damper Actuators General Instructions			
F-26744	MF41-6343 SmartX Series Non-Spring Return Direct Coupled Actuator General Instructions			
F-26745	MS41-634x SmartX Series Non-Spring Return Direct Coupled Actuator General Instructions			
F-26742	MA40-717x SmartX Series Spring Return Direct Coupled Actuator General Instructions			
F-26748	MS40-717x SmartX Series Spring Return Direct Coupled Actuator General Instructions			
F-26749	MF40-7173 SmartX Series Spring Return Direct Coupled Actuator General instructions			
F-26644	MF4x-7xx3, MF4x-7xx3-50x Schneider Electric SmartX Series Spring Return Direct Coupled Actuator General Instructions			
F-26642	MA4x-7xx3, MA4x-7xx3-50x, MA4x-7xxx, MA4x-7xxx-50x SmartX Series Spring Return Direct Coupled Actuator General Instructions			
F-26645	MS4x-7xx3, MS4x-7xx3-50x SmartX Series Spring Return Direct Coupled Actuator General Instructions			
F-27160	Mx4x-6xxx-220/-230 and Mx4x-7xxx-220 Actuator/Linkage Assemblies for 2-1/2" ..6" Globe Valves General Instructions			Also provides checkout instructions.
F-26750	MA4x-xxxx-2xx, MF4x-xxxx-2xx, MS4x-xxxx-2xx Series Actuator/Linkage Assemblies for 1/2" ..2" Globe Valves General Instructions			Globe Valves
F-27087	Vx-2x13-5xx-9-xx Series, VB-2x13-500-9-xx Series Ball Valve Assemblies and Ball Valve Body/Linkage Assemblies Installation Instructions			Ball valves
F-26752	Vx-7000 and Vx-9000 Series, Mx4x-6xxx and Mx4x-7xxx Series, Linked Globe Valve Assemblies and Actuator/Linkage Assemblies with SmartX Actuators Selection Guide			Linked Globe Valve assemblies with SmartX actuators.
F-27086	Vx-2x13-5xx-9-xx Series Ball Valve Assemblies and VB-2x13-500-9-xx Series Ball Valve Body/Linkage Assemblies Selection Guide.	Linked Ball Valve assemblies with SmartX actuators.		
F-27216	MF41/MS41-6043 Series 24 Vac, 35 lb-in. Non-Spring Return, Direct-Coupled Electronic Damper Actuators Submittal Sheet	Mx41-6043 series actuators.		
F-27217	MF41/MS41-6083 Series 24 Vac, 70 lb-in., Non-Spring Return Direct-Coupled Electronic Damper Actuators Submittal Sheet	Mx41-6083 series actuators.		
F-27218	MF41/MS41-6153 Series, 24 Vac, 133 lb-in., Non-Spring Return, Direct-Coupled Electronic Damper Actuators Submittal Sheet	Mx41-6153 series actuators.		
F-26785	Vx-2000, Vx-7000, VB-2000, Mx4x-7xxx, and Mx40-6xxx Series Ball and Globe Linked Valve Assemblies, Valve/Linkage Assemblies, and Actuator/Linkage Assemblies Cross-Reference Guide	Part number cross referencing of phased-out devices with the new Actuator/Linkage Assemblies, and Ball and Globe Linked Valve Assemblies.		
F-11080	Valve Selection Chart Water	Installers Service Personnel Start-up Technicians	Provides charts, equations, and diagrams to assist in the configuration of valve system applications. TOOL-150, valve sizing slide rule may be purchased separately.	
F-11366	Valve Selection Chart Steam (two-way valves only)			
F-13755	CA-28 Control Valve Sizing			
F-26080	EN-205 Water System Guidelines			Describes Schneider Electric approved water treatment practices.

## Using this Selection Guide

This selection guide contains the following sections:

- Actuator Part Numbering System - This section explains the SmartX actuator part numbering system.
- Actuator Selection Chart - Use this chart as a quick reference guide. Refer to Actuator Selection section for specifications data, as well as mounting dimensions.
- Actuator Accessories Chart - Use this section to choose the appropriate accessories for the selected actuator.
- Actuator Specifications and Mounting Dimensions - Use this section to choose the appropriate actuator for the application. This section includes actuator specifications data, as well as mounting dimensions.
- Damper Actuator Cross-Reference - Refer to this section for actuator replacement data.

# Actuator Part Numbering System

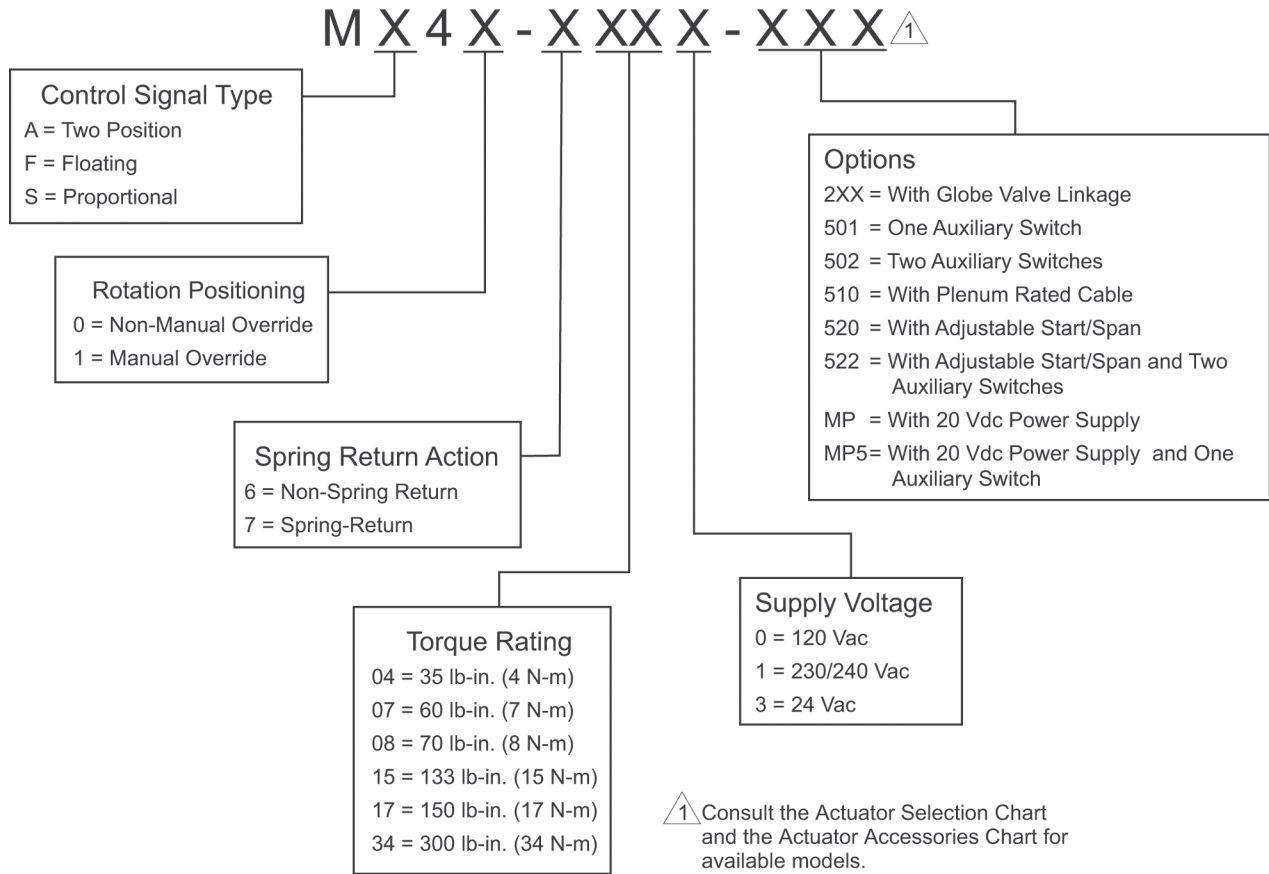


Table 1: Mx40-704x, Mx4x-707x, and Mx4x-715x

- <sup>a</sup> De-rating required for spring return actuators at low temperatures.
- <sup>b</sup> One adjustable from 15...95° rotation (MIN...1 scale).
- <sup>c</sup> With plenum-rated cable.
- <sup>d</sup> Equipped with manual override.
- <sup>e</sup> One adjustable from 25°...85° rotation and one set to operate @ 5° fixed.

Actuator Type	Part Numbers	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	Min.	Max. Stall	
			50 Hz		60 Hz		DC Amps	50 Hz	60 Hz						
			VA	W	VA	W		W	W						
Two-Position	MA40-7043	Page 16	24 Vac ± 20% 22...30 Vdc	4.4	2.9	4.4	2.9	0.11	0.8	0.8	No	<50	<26	35 (4)	150 (17)
	MA40-7043-501			One											
	MA40-7040		120 Vac ± 10%	6.4	3.8	4.3	3.4	—	1.6	1.2	No				
	MA40-7040-501			One <sup>b</sup>											
	MA40-7041		230 Vac ± 10%	5.8	4.1	4.6	3.9	—	1.5	1.2	No				
MA40-7041-501	One <sup>b</sup>														
Floating	MF40-7043	Page 16	24 Vac ± 20% 22...30 Vdc	5.9	4.4	5.9	4.4	0.17	2.9	2.9	No	<130	<25	35 (4)	150 (17)
	MF40-7043-501 <sup>c</sup>			One <sup>b</sup>											
Proportional	MS40-7043 <sup>c</sup>	Page 16	24 Vac ± 20% 22...30 Vdc	5.6	4.2	5.6	4.2	0.15	2.4	2.4	No				
	MS40-7043-501 <sup>c</sup>			One <sup>b</sup>											
	MS40-7043-MP		24 Vac 22...30 Vdc	6.6	5.0	6.6	5.0	0.17	3.2	3.2	No				
	MS40-7043-MP5			One <sup>b</sup>											
Two-Position	MA41-7073	Page 18	24 Vac ± 20% 22...30 Vdc	4.8	3.2	4.8	3.2	0.13	0.8	0.8	No	<80	<40	60 (7)	250 (28)
	MA41-7073-502 <sup>d</sup>			Two											
	MA41-7070 <sup>d</sup>		120 Vac ± 10%	10.7	4.2	5.6	3.6	—	2.0	1.2	No				
	MA41-7070-502 <sup>d</sup>			Two <sup>e</sup>											
	MA41-7071 <sup>d</sup>		230 Vac ± 10%	17.0	5.1	8.0	4.0	—	2.7	1.4	No				
	MA41-7071-502 <sup>d</sup>			Two <sup>e</sup>											
Floating	MF41-7073 <sup>d</sup>	Page 18	24 Vac ± 20% 22...30 Vdc	6.2	4.8	6.2	4.8	0.18	2.8	2.8	No	<195	<30	60 (7)	250 (28)
	MF41-7073-502 <sup>d</sup>			Two <sup>e</sup>											
Proportional	MS41-7073 <sup>d</sup>	Page 18	24 Vac ± 20% 22...30 Vdc	5.8	4.6	5.8	4.6	0.17	2.3	2.3	No				
	MS41-7073-502 <sup>d</sup>			Two <sup>e</sup>											

- <sup>a</sup> De-rating required for spring return actuators at low temperatures.
- <sup>b</sup> One adjustable from 15...95° rotation (MIN...1 scale).
- <sup>c</sup> With plenum-rated cable.
- <sup>d</sup> Equipped with manual override.
- <sup>e</sup> One adjustable from 25°...85° rotation and one set to operate @ 5° fixed.

Actuator Type	Part Numbers	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	Min.	Max. Stall	
			50 Hz		60 Hz		DC Amps	50 Hz	60 Hz						
			VA	W	VA	W		W	W						
Two-Position	MA40-7153 MA41-7153 <sup>d</sup>	Page 20	24 Vac ± 20% 22...30 Vdc	9.8	7.5	9.7	7.5	0.29	2.8	2.8	No	<190	<30	133 (15)	350 (40)
	MA40-7153-502 MA41-7153-502 <sup>d</sup>			Two <sup>e</sup>											
	MA40-7150 MA41-7150 <sup>d</sup>		120 Vac ± 10%	11.7	8.8	10.0	8.4	—	3.6	5.0	No				
	MA40-7150-502 MA41-7150-502 <sup>d</sup>			Two <sup>e</sup>											
	MA40-7151 MA41-7151 <sup>d</sup>		230 Vac ± 10%	15.5	9.5	10.6	8.5	—	4.6	3.3	No				
	MA40-7151-502 MA41-7151-502 <sup>d</sup>			Two <sup>e</sup>											
Floating	MF40-7153 MF41-7153 <sup>d</sup>	24 Vac ± 20% 22...30 Vdc	9.8	7.7	9.7	7.7	0.30	3.3	3.3	No					
	MF40-7153-502 MF41-7153-502 <sup>d</sup>		Two <sup>e</sup>												
Proportional	MS40-7153 MS41-7153 <sup>d</sup>	24 Vac ± 20% 22...30 Vdc	9.8	7.4	9.7	7.4	0.28	2.9	2.9	No					
	MS40-7153-502 MS41-7153-502 <sup>d</sup>		Two <sup>e</sup>												

## Table-2. Mx40-717x Series Spring-Return Actuators

De-rating required for spring return actuators at low temperatures.

Part Numbers		Power Input @ 50/60 Hz				SPDT Auxiliary Switches	Approximate Timing in Seconds @ 70 °F (21 °C) with No Load		Output Torque Rating lb.-in. (N-m)		
		Voltage	Running Watts	VA			Powered	Spring Return	Min.	Max. Stall	
				Running	Holding						
MA40-7173	Page 22	24 Vac ± 20%	5.3	7.4	5.1	No	162	72	150 (17)	545 (61.8)	
		22...30 Vdc	5.0	5.0	3.0	No					
MA40-7170	120 Vac ± 10%	6.2	8.4	6.6	No						
MA40-7171	240 Vac ± 10%	6.5	9.8	8.5	No						
MF40-7173	24 Vac ± 20%	5.8	8.1	5.3	No						
	22...30 Vdc	5.7	5.7	3.6	No						
MS40-7173	24 Vac ± 20%	5.5	7.8	4.7	No	147					65
	22...30 Vdc	5.0	5.6	2.5	No						
MS40-7170	120 Vac ± 10%	6.4	8.5	5.2	No						
MS40-7171	240 Vac ± 10%	7.2	10.8	9.0	No						

### Table-3. Non-Spring Return Actuators

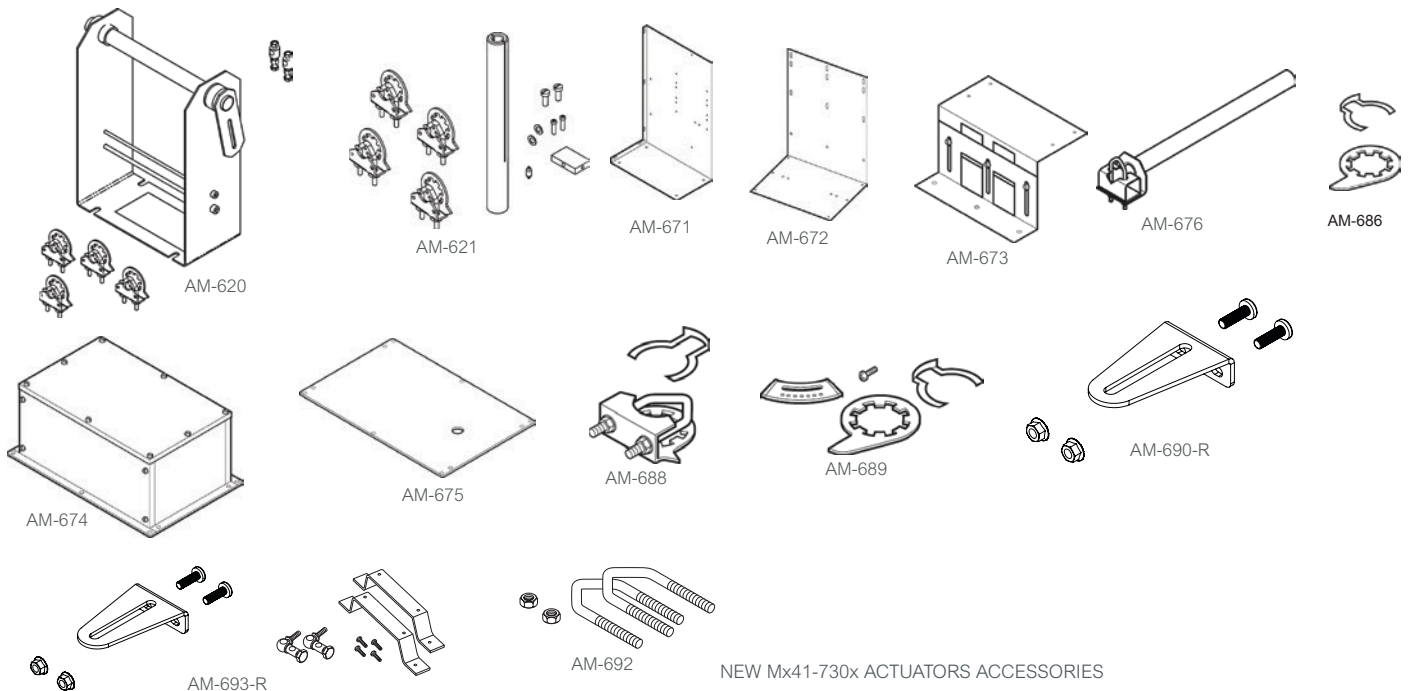
- <sup>b</sup> Equipped with plenum-rated cable.
- <sup>c</sup> Equipped with two built-in auxiliary switches.
- <sup>d</sup> Equipped with 1k W feedback potentiometer.
- <sup>e</sup> Equipped with adjustable start/span.
- <sup>f</sup> Equipped with adjustable start/span and two auxiliary switches.
- <sup>g</sup> Minimum voltage at high temperatures: 24 Vac, +20%, -10% at 90...130 °F ambient.
- <sup>h</sup> Minimum voltage at high temperatures: 24 Vac, +20%, -5% (MF models) and 24 Vac, +20%, -10% (MS models) at 85...130 °F ambient.

Part Numbers		Power Input @ 50/60 Hz				SPDT Auxiliary Switches <sup>a</sup>	Approximate Timing in Seconds @ 70 °F (21 °C) with No Load	Actuator Output Torque Rating (Min. lb.-in. (N-m))
		Voltage	Watts	VA				
				Running	Holding			
MF41-6043	Page 11	24 Vac +20/-15%	2.0	2.3	—	No	90 @ 60 Hz 108 @ 50 Hz	35 (4)
MF41-6043-502 <sup>b</sup>			2.0	2.3	—	2		
MF41-6043-510 <sup>b</sup>			2.0	2.3	—	No		
MS41-6043 <sup>b</sup>			3.0	3.3	1.2	No		
MS41-6043-502 <sup>bc</sup>			3.0	3.3	1.2	2		
MS41-6043-520 <sup>b</sup>			3.0	3.3	1.2	No		
MS41-6043-522 <sup>b</sup>			3.0	3.3	1.2	2		
MF41-6083 <sup>b</sup>	Page 13	24 Vac +20/-15%	2.0	2.3	—	No	125 @ 60 Hz 150 @ 50 Hz	70 (8) <sup>g</sup>
MF41-6083-502 <sup>bc</sup>			2.0	2.3	—	2		
MF41-6083-510 <sup>b</sup>			2.0	2.3	—	No		
MS41-6083 <sup>b</sup>			3.0	3.3	1.2	No		
MS41-6083-502 <sup>bc</sup>			3.0	3.3	1.2	No		
MS41-6083-520 <sup>be</sup>			3.0	3.3	1.2	No		
MS41-6083-522 <sup>bf</sup>			3.0	3.3	1.2	2		
MF41-6153	Page 15	24 Vac +20/-15%	3.0	3.0	—	No	133 (15) <sup>h</sup>	
MS41-6153			4.0	5.0	1.2	No		
MF41-6343	Page 28	24 Vac ± 20%	3.9	5.7	4.1	No	162	300 (34)
		22...30 Vdc	4.1	4.1	3.0			
MS41-6343		24 Vac ± 20%	3.6	5.6	4.0	No	148	
		22...30 Vdc	3.4	3.4	2.2			
MS41-6340		120 Vac ±10%	4.7	7.5	6.2			
MS41-6341	240 Vac ±10%	5.0	9.0	8.1				

<sup>a</sup> Auxiliary switch ratings are as follows:

	Auxiliary Switch Ratings	
		Mx41-6043, Mx41-6083
AC Rating	24 Vac, 4 A resistive, 2 A inductive	24 Vac, 6 A resistive, 2 A inductive
DC Rating	12...30 Vdc, DC 2 A	

## Actuator Accessories



### NEW Mx41-730x ACTUATORS ACCESSORIES

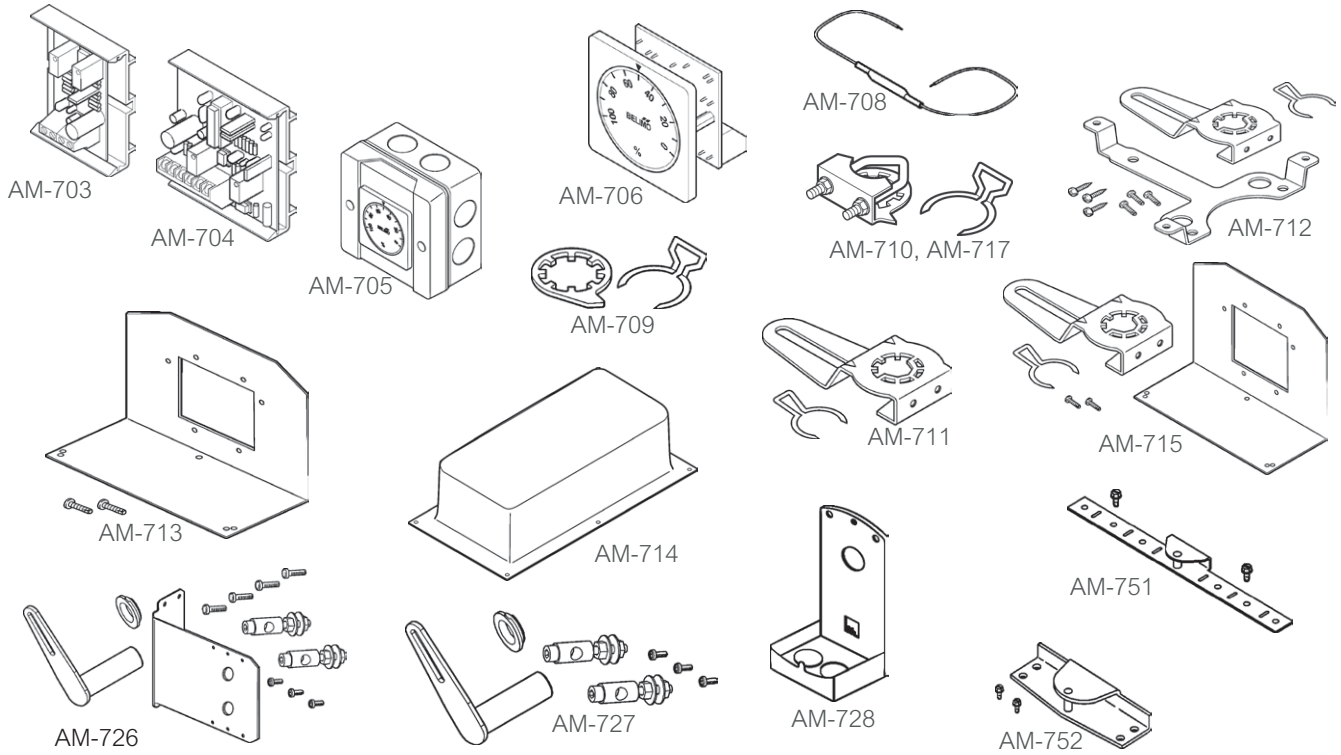
- AM-708 500 ohm resistor for connection to 4 to 20 mA input signals
- AM-801 Mx41-730x-xxx Actuator Crank Arm Kit
- AM-802 Mx41-730x-xxx Actuator Crank Arm Kit with Actuator Mounting Bracket and Two Ball Joints
- AM-803 9-3/4" damper Shaft Extension for 5/16" to 1" Diameter Round Shafts
- AM-804 Jackshaft Linkage (requires AM-805 Support Plate for Mx41-73xx Actuators)
- AM-805 Support Plate for Mx41-73xx Actuators
- BEL-ZTH US Handheld Interface Module for Field Programming of the MS41-7303-xxx Models

## Actuator Accessories Table

Part Numbers	Description	Spring Return Actuators (Series [x] or individuals)								Non-Spring Return Actuators (Series [x] or individuals)								General Instructions Document
		MA40-704x MF40-7043	MS40-7043	MA4x-707x MF4x-7073	MS4x-7073	MA4x-715x MF4x-7153	MS4x-7153	MA40-717x MF40-7173	MS40-717x	MF41-6043	MS41-6043	MF41-6083	MS41-6083	MF41-6153	MS41-6153	MF41-6343	MS41-634x	
AM-620	Actuator Remote Mount					X	X	X	X					X	X	X	X	-
AM-621	Round Shaft Extension					X	X	X	X					X	X	X	X	-
AM-671 <sup>abcd</sup>	Mounting Bracket	X	X	X	X	X	X											F-25096
AM-672 <sup>abcd</sup>		X	X	X	X	X	X											
AM-673 <sup>c</sup>		X	X	X	X	X	X											
AM-674	Weather Shield & Base	X	X	X	X	X	X	X	X							X	X	F-25097
AM-675		X	X	X	X	X	X											
AM-676	Shaft Extension	X	X	X	X	X	X	X	X							X	X	F-25098
AM-686	Position Indicator			X	X	X	X											
AM-687 <sup>e</sup>	V-clamp			X	X	X	X											
AM-688	Replacement Universal Clamp			X	X	X	X											
AM-689	Rotation Limiter			X	X	X	X											
AM-690-R <sup>i</sup>	Crank Arm Kit			X	X	X	X											
AM-691					X	X	X	X										
AM-692 <sup>f</sup>	V-bolt			X	X	X	X											
AM-693-R <sup>gh</sup>	Crank Arm Kit			X	X	X	X											

<sup>a</sup> AM-693 crank arm kit required.  
<sup>b</sup> Cannot be used with Mx41-634x or Mx40-717x series actuators.  
<sup>c</sup> Drill appropriate mounting holes where needed.  
<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> For shafts to 1.05" diameter or 5/8" square.  
<sup>f</sup> For shafts to 3/4" and 1.05" diameter (with AM-690 and AM-691, respectively).  
<sup>g</sup> Use the self-tapping screws and flat washers provided in kit to mount actuator.  
<sup>h</sup> AM-692 V-bolt kit required. The AM-693-R damper linkage kit is used in conjunction with the AM-687 or AM-688 universal clamps to provide a mechanical linkage between the damper actuator and the damper shaft when a direct coupling is not possible.

<sup>†</sup>Used in conjunction with the AM-687 or AM-688 universal clamps for crankarm functionality in non-direct mounting applications.



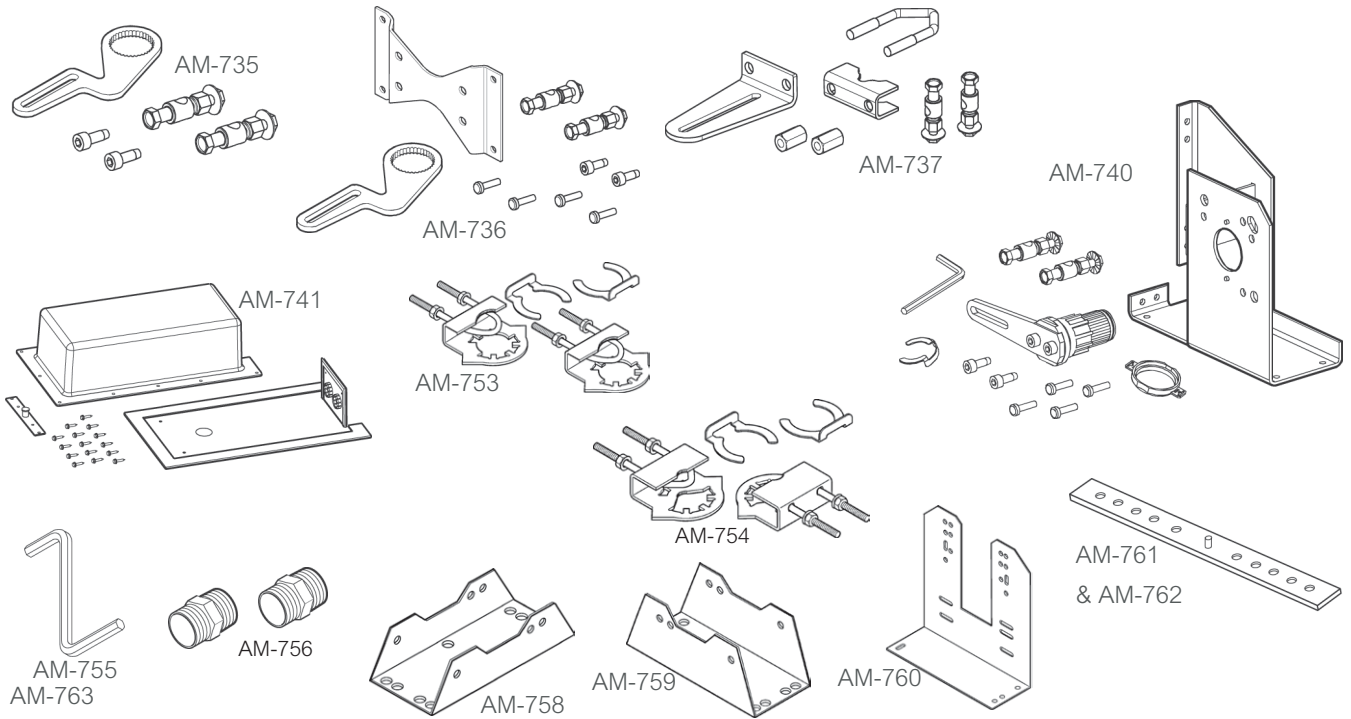
## Actuator Accessories Table

Part Numbers	Description	Spring Return Actuators (Series [x] or individuals)							Non-Spring Return Actuators (Series [x] or individuals)						General Instructions Document		
		MA40-704x MF40-7043	MS40-7043	MA4x-707x MF4x-7073x	MS4x-7073x	MA4x-715x MF4x-7153x	MS4x-7153x	MA40-717x MF40-7173	MS40-7173	MF41-6043	MS41-6043	MF41-6083	MS41-6083	MF41-6153		MS41-6153	MF41-6343
AM-703	Span Adjustment		X		X		X	X				X	X		X		F-26895
AM-704	Modulation Interface		X		X		X	X				X	X		X		F-26895
AM-705	Positioner		X		X		X	X	X	X	X	X	X		X		F-26895
AM-706				X		X		X	X	X	X	X	X		X		F-26895
AM-708	500 Ω Resistor		X		X		X			X	X	X					
AM-709	Position Indicator & Stroke Limiter	X	X														
AM-710 <sup>a</sup>	V-clamp	X	X														F-26896
AM-711	Crank Arm Adaptor Kit	X	X														
AM-712			X	X													
AM-713	Bracket	X	X														
AM-714	Weather Shield	X	X	X	X	X	X										F-25097
AM-715	Crank Arm Adaptor Kit	X	X														F-26896
AM-717	Replacement Universal Clamp	X	X														F-26896
AM-726	Crank Arm Adaptor								X	X	X	X					
AM-727										X	X	X	X				
AM-728 <sup>b</sup>	Conduit Adaptor								X	X	X	X					
AM-751	Anti-rotation Bracket							X	X						X	X	
AM-752								X	X						X	X	

<sup>a</sup>For shafts to 3/4" diameter round or up to 1/2" square.

<sup>b</sup>Cannot be used when creating a linked valve/actuator assembly.





## Actuator Accessories Table

Part Numbers	Description	Spring Return Actuators (Series [x] or individuals)							Non-Spring Return Actuators (Series [x] or individuals)						General Instructions Document		
		MA40-704x MF40-7043	MS40-7043	MA4x-707x MF4x-7073x	MS4x-7073x	MA4x-715x MF4x-7153x	MS4x-7153x	MA40-717x MF40-7173	MS40-7173	MF41-6043 MS41-6043	MF41-6083	MS41-6083	MF41-6153	MS41-6153		MF41-6343	MS41-634x
AM-735	Crank Arm Kit												X	X			F-27246
AM-736	Crank Arm Kit with Bracket												X	X			F-27247
AM-737	Universal Crank Arm <sup>a</sup>												X	X			F-27248
AM-740	Replacement Kit												X	X			F-27249
AM-741	Weather Shield								X	X	X	X	X				F-27250
AM-753 <sup>b</sup>	Mounting Clamp							X	X						X	X	F-26898
AM-754 <sup>c</sup>								X	X						X	X	
AM-755	Manual Override Crank														X	X	
AM-756	Metric Conduit Adaptor	X	X	X	X	X	X	X	X						X	X	F-26899
AM-758	Short "U" Mounting Bracket			X	X	X	X										F-25096
AM-759	Tall "U" Mounting Bracket			X	X	X	X										
AM-760	Slotted "L" Mounting Bracket			X	X	X	X										
AM-761	7-inch Anti-Rotation Bracket	X	X														F-26986
AM-762	9-inch Anti-Rotation Bracket	X	X	X	X	X	X	X	X						X	X	F-25098
AM-763	Manual Override Crank			X <sup>d</sup>	X <sup>d</sup>	X <sup>d</sup>	X <sup>d</sup>										F-25098
TF-711-02	Sealtight Conduit Connector							X	X						X	X	—
TF-713-02								X	X						X	X	—
TF-5521	Pipe Plug							X	X						X	X	—

<sup>a</sup>For Honeywell Floor Mount Mod Motor.

<sup>b</sup>For shafts 3/4" round and 5/8" square.

<sup>c</sup>For shafts 3/8"...1/2" round and square.

<sup>d</sup>Only used on Mx41-707x-xxx, Mx41-715x-xxx.

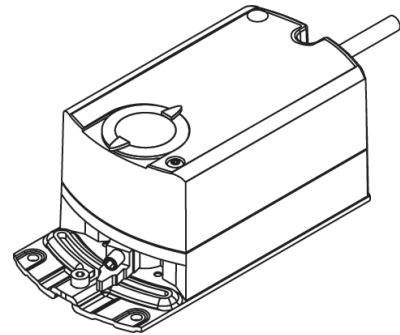
## Actuator Specifications and Mounting Dimensions

### MF41-6043 and MS41-6043 Actuators

For non-spring return applications requiring floating or proportional modulation control of dampers and valves in HVAC systems.

Features:

- Direct mount to round, square, or hexagonal damper shaft
- Rated at 44 lb-in. (5 N-m) torque, minimum
- Does not require any limit switches
- Manual override allows positioning for installation and manual operation
- MF41-6043 provides floating point control (3-position)
- MS41-6043 provides proportional control compatible with 0 to 10 Vdc
- 5-year warranty



### Actuator Specifications

#### Inputs

Control Signal	MF41-6043 — Floating three-position control, 24 Vac. MS41-6043 — Proportional, 0 to 10 Vdc; input resistance 100 kW.
----------------	---

Power Requirements	All 24 Vac circuits are Class 2.
--------------------	----------------------------------

Part Numbers	Power Input @ 50/60 Hz			
	Voltage	Running VA	Holding VA	Watts
MF41-6043	24 Vac +20/-15%	2.3	—	2.0
MS41-6043	24 Vac +20/-15%	3.3	1.2	3.0

Connections	3 ft. (0.9 m) long, 18 AWG leads, plenum-rated.
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#### Motor Type

Synchronous

#### Outputs

Electrical	AC Rating: 24 Vac, 4 A resistive, 2 A inductive DC Rating: 12...30 Vdc, DC 2 A Timing: 90 sec. at 60 Hz, 108 sec. at 50 Hz
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Mechanical	Output torque rating: 44 lb-in. (5 N-m). Stroke: Normal angle of rotation is 90°, limited to a maximum of 95°. Field adjustable to limit travel on either end of stroke. Set for 5° preload at the factory. Position indicator: Adjustable pointer is provided for position indication. See the Note in "Switch Range." Output shaft setscrew: tightening torque 55...60 lb-in. (6.3...6.8 N-m). Nominal Damper Area: Actuator sizing should be done in accordance with damper manufacturer's specifications
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#### Environment

Temperature Limits	Shipping and storage: -40...158 °F (-40...70 °C) ambient. Operating: -25...130 °F (-32...55 °C) ambient.
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Humidity	5...95% RH, non-condensing.
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Locations	NEMA Type 2.
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#### Agency Listings

UL	UL-873, Underwriters Laboratories.
European Community	EMC Directive (89/336/EEC). Emissions (EN50081-1). Immunity (EN50081-2).
cUL	Canadian Standards C22.2 No. 24-93.

#### Accessories

## Actuator Specifications

AM-726	Rotary-to-Linear Bracket
AM-727	Rotary-to-Linear Crank Arm
AM-728	Conduit Adapter
AM-741	Weather Shield Kit

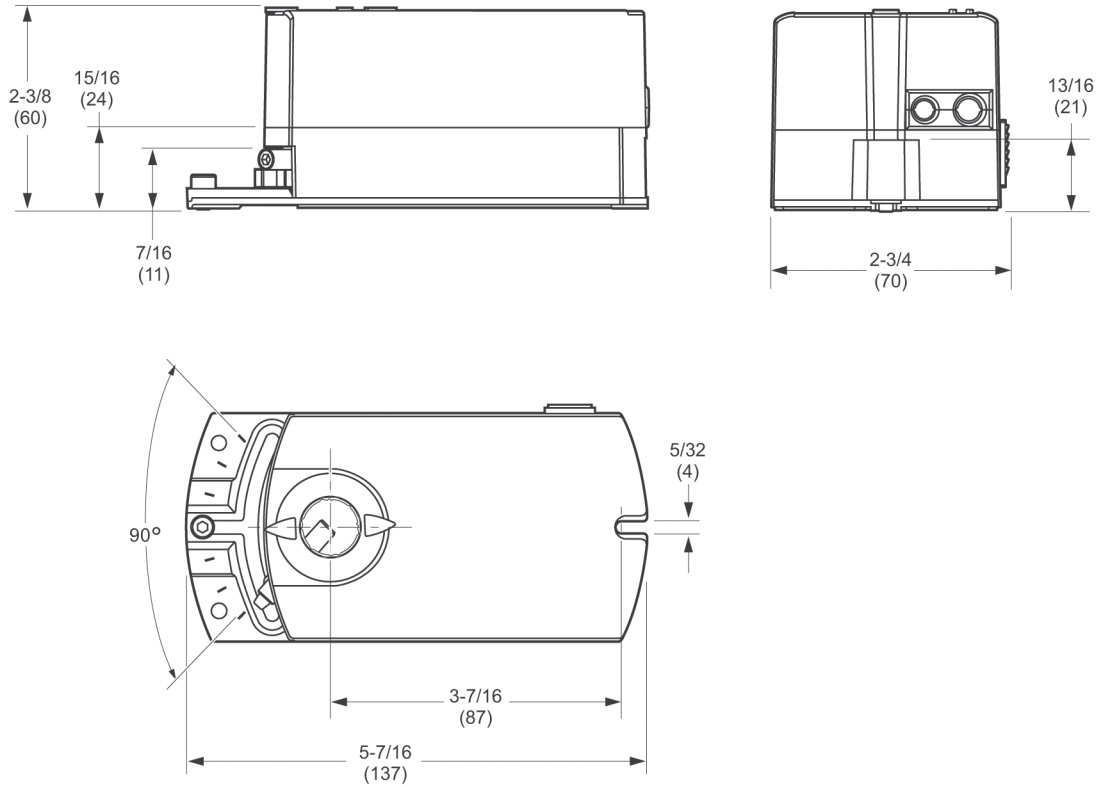


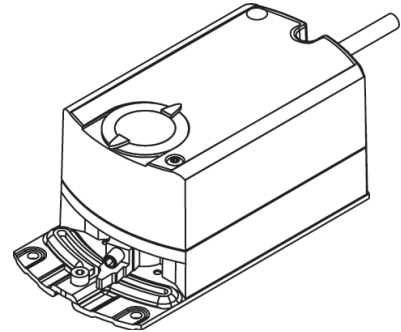
Figure-1 MF41-6043 and MS41-6043 Mounting Dimensions

## MF41-6083 and MS41-6083 Actuators

For non-spring return applications requiring floating or proportional modulation control of dampers and valves in HVAC systems.

Features:

- Direct mount to round, square, or hexagonal damper shaft
- Rated at 88 lb-in. (10 N-m) torque, minimum
- Does not require any limit switches
- Manual override allows positioning for installation and manual operation
- MF41-6083 provides floating point control (3-position)
- MS41-6083 provides proportional control compatible with 0 to 10 Vdc
- Models available with: independently adjustable dual auxiliary switches; adjustable start point (offset) and span
- 5-year warranty



### Actuator Specifications

#### Inputs

Control Signal	MF41-6083 — Floating three-position control, 24 Vac.
	MS41-6083 — Proportional, 0 to 10 Vdc; input resistance 100 kW. Control signal adjustment available with MS41-6083-520 and MS41-6083-522: Start point (offset) — Between 0 and 5 Vdc (factory setting = 0 Vdc) Span — 2...30 Vdc

Power Requirements	All 24 Vac circuits are Class 2.
--------------------	----------------------------------

Part Numbers	Power Input @ 50/60 Hz			
	Voltage	Running VA	Holding VA	Watts
MF41-6083	24 Vac +20/-15%	2.3	—	2.0
MS41-6083	24 Vac +20/-15%	3.3	1.2	3.0

Connections	3 ft. (0.9 m) long, 18 AWG leads, plenum-rated.
-------------	---

#### Motor Type

Synchronous

#### Outputs

Electrical	Position output signal — Feedback potentiometer available with MF41-6083-510: 0...1000W < 10 mA  Output voltage: 0...10 Vdc Maximum output current: 1 mA
	Dual auxiliary switches available with MF41-6083-502, MS41-6083-502, MF41-6083-522, and MS41-6083-522. AC Rating: 24 Vac, 4 A resistive, 2 A inductive DC Rating: 12...30 Vdc, DC 2 A Switching hysteresis: 2° Switch Range: Switch A — 0...90° range in 5° intervals Recommended range usage — 0...45° Factory setting — 5° Switch B — 0...90° range in 5° intervals Recommended range usage — 45...90° Factory setting — 85° Timing: 125 sec. at 60 Hz, 150 sec. at 50 Hz

Mechanical	Output torque rating: 88 lb-in. (10 N-m).
	Stroke: Normal angle of rotation is 90°, limited to a maximum of 95°. Field adjustable to limit travel on either end of stroke. Set for 5° preload at the factory.
	Position indicator: Adjustable pointer is provided for position indication. See the Note in "Switch Range."

Output shaft setscrew: tightening torque 55...60 lb-in. (6.3...6.8 N-m).

## Actuator Specifications

Nominal Damper Area: Actuator sizing should be done in accordance with damper manufacturer's specifications

### Environment

Temperature Limits      Shipping and storage: -40...158 °F (-40...70 °C) ambient.  
 Operating: -25...130 °F (-32...55 °C) ambient.

Humidity      5...95% RH, non-condensing.

Locations      NEMA Type 2.

### Agency Listings

UL      UL-873, Underwriters Laboratories.

European Community      EMC Directive (89/336/EEC). Emissions (EN50081-1). Immunity (EN50081-2).

cUL      Canadian Standards C22.2 No. 24-93.

### Accessories

AM-726      Rotary-to-Linear Bracket

AM-727      Rotary-to-Linear Crank Arm

AM-728      Conduit Adapter

AM-741      Weather Shield Kit

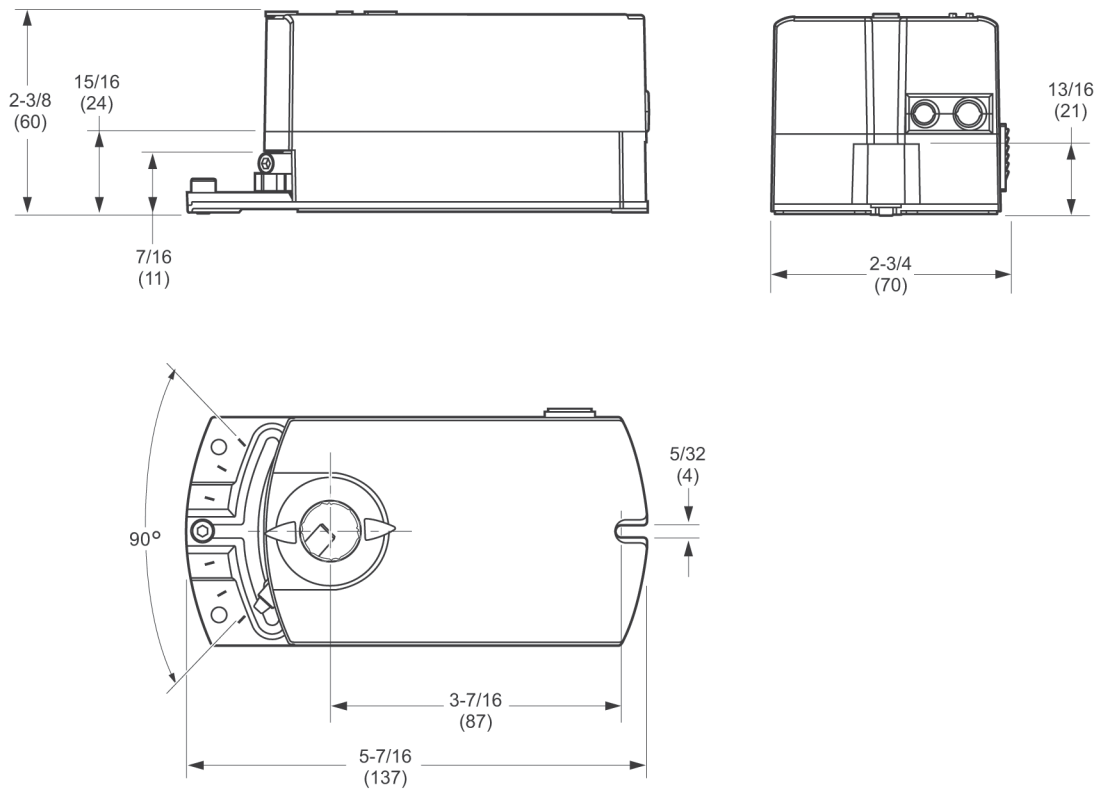


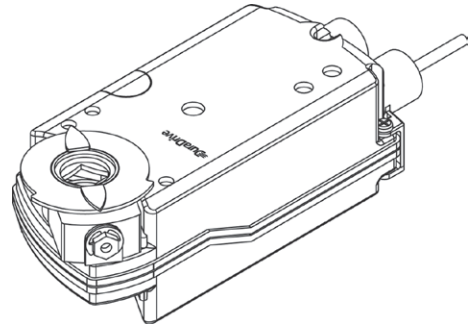
Figure-2. MF41-6083 and MS41-6083 Mounting Dimensions

## MF41-6153 and MS41-6153 Actuators

For non-spring return applications requiring floating or proportional modulation control of dampers and valves in HVAC systems.

Features:

- Direct mount to round or square damper shaft
- 133 lb-in (15 N-m) torque rating
- Does not require any limit switches
- Manual override to allow positioning for installation and manual operation
- MF41-6153 provides floating point control (drive open-hold-drive closed)
- MS41-6153 provides proportional control compatible with 0...10 Vdc or 0...20 mA dc
- 5-year warranty



### Actuator Specifications

#### Inputs

Control Signal	MF41-6153 — Three position. MS41-6153 — Proportional, 0...10 Vdc, input resistance 100 kW.
----------------	---

Power Requirements	All 24 Vac circuits are Class 2.
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Part Numbers	Power Input @ 50/60 Hz			
	Voltage	Running VA	Holding VA	Watts
MF41-6153	24 Vac +20/-15%	3.0	—	3.0
MS41-6153	24 Vac +20/-15%	5.0	1.2	4.0

Connections	3 ft. (91 cm) long plenum-rated cables, 18 AWG color coded leads.
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#### Motor Type

Synchronous.

#### Outputs

Electrical	Timing: Approx. 125 sec. at 60 Hz; 150 sec. at 50 Hz.
------------	---

Dual Auxiliary Switch Ratings  
 AC Rating 24 Vac, AC 6A resistive, AC 2A inductive.  
 DC Rating 12...30 Vdc, DC 2A.  
 Switch Ranges  
 Switch A 0°...90° with 5° intervals.  
 Recommended Range Usage 0°...45°.  
 Factory Setting 5°.  
 Switch B 0°...90° with 5° intervals.  
 Recommended Range Usage 45°...90°.  
 Factory Setting 85°.  
 Switch Hysteresis 2°.

Mechanical	Output torque rating: 133 lb-in (15 N-m).
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Stroke: Angle of rotation is limited to a nominal 90° (maximum 95°), field adjustable to limit travel on either end of stroke. Set for 5° preload at the factory.

Position indicator: Adjustable pointer is provided for position indication.

Damper Shaft Clamp: Direct coupled using a through hole output hub.

Shaft Sizes: 1/4" to 3/4" (6.4 mm...20.5 mm) diameter round  
 1/4"...1/2" (6.4 mm...13 mm) square

Minimum Shaft Length: 3/4" (20 mm)

Nominal Damper Area: Actuator sizing should be done in accordance with damper manufacturer's specifications.

Weight: 2.2 lb (1 kg)

## Actuator Specifications

### Environment

Temperature Limits	Shipping and storage: -40...158 °F (-40...70 °C) ambient. Operating: -25...130 °F (32...55 °C)
Humidity	5...95% RH, non-condensing.
Locations	NEMA 1 (IEC IP54).

### Agency Listings (Actuator)

UL	UL-873, Underwriters Laboratories.
European Community	EMC Directive (89/336/EEC). Immunity (EN61000-6-2). Emission (EN 50081-1).
cUL	Canadian Standards C22.2 No. 24-93.

### Accessories

AM-735	Crank Arm Kit
AM-736	Crank Arm Kit with Bracket
AM-737	Universal Crank Arm for Honeywell Floor Mount Mod Motor
AM-740	Replacement Kit
AM-741	Weather Shield Kit

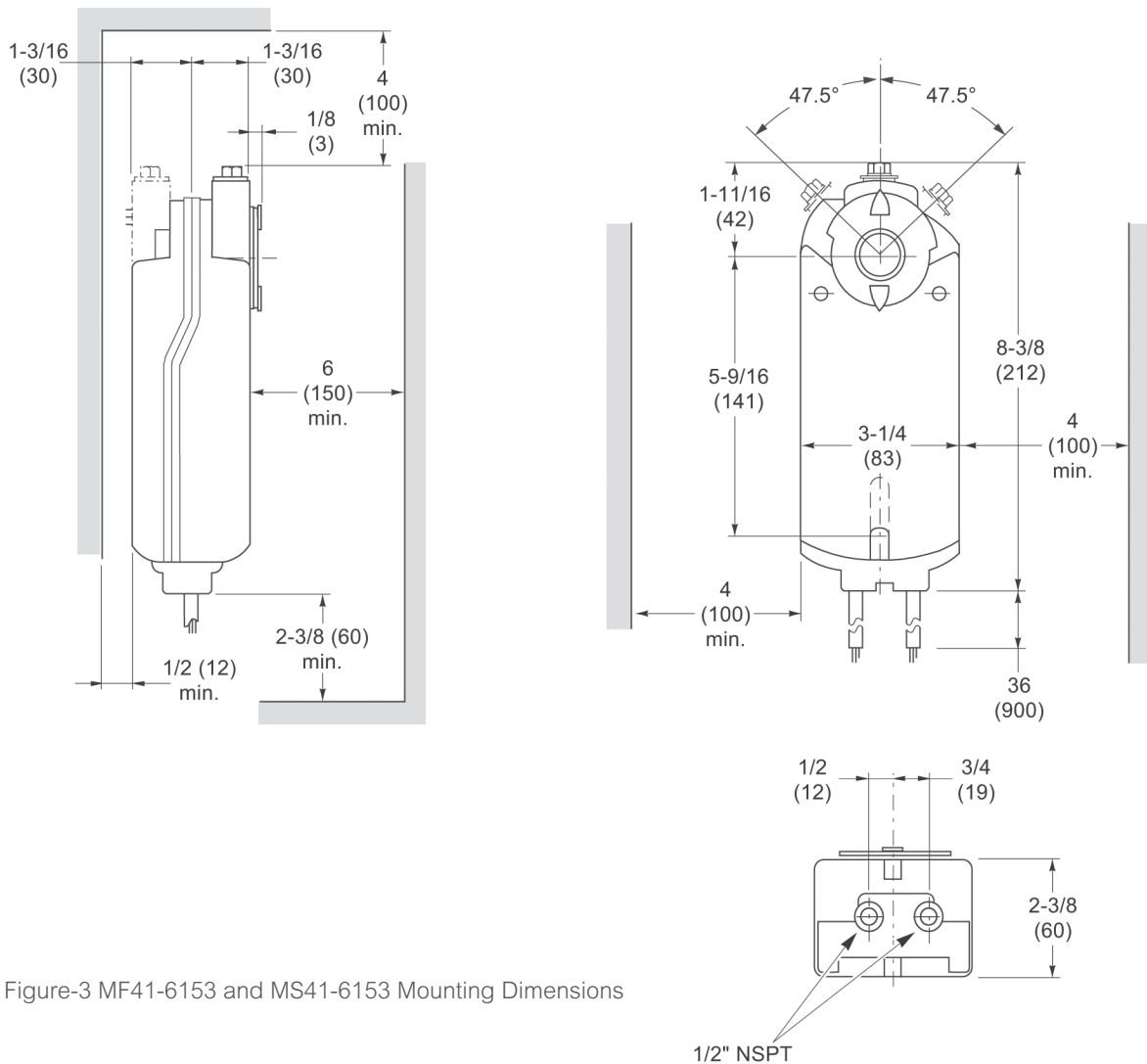


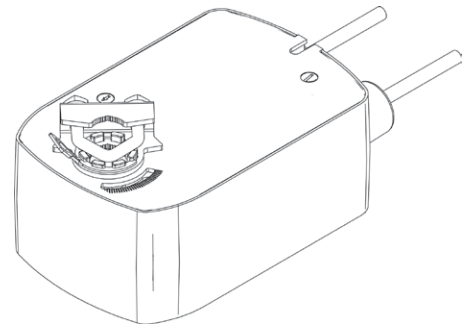
Figure-3 MF41-6153 and MS41-6153 Mounting Dimensions

## MA40-704x, MF40-7043, and MS40-7043 Series Actuators

For spring return applications requiring floating, two-position, or proportional modulation control of dampers and valves in HVAC systems.

Features:

- Direct mount to round or square damper shaft
- 35 lb-in (4 N-m) torque rating
- Overload protection throughout rotation
- Optional built-in auxiliary switches
- True mechanical clockwise or counterclockwise spring return operation for reliable, positive close-off in airtight applications
- Visual position indicator
- Direct acting or reverse acting control mode available on proportional models
- Rotation limiting available
- Rugged die-cast housing for NEMA 2/IP54 rating
- 5-year warranty



### Actuator Specifications

#### Inputs

Control Signal	MA40-704x and MA40-704x-501 — On-off, SPST control contacts or Triacs (500 mA rated). MF40-7043 and MF40-7043-501 — Floating point control, 24 Vac. MS40-7043 and MS40-7043-501 — Spring return, proportional, 2...10 Vdc or 4 to 20 mA dc with a 500 W resistor.
Power Requirements	All 24 Vac circuits are Class 2. All circuits 30 Vac and above are Class 1.

Part Numbers	Voltage 50/60 Hz	Running					Holding	
		50 Hz		60 Hz		DC Amps	50 Hz	60 Hz
		VA	W	VA	W		W	W
MA40-7043 and MA40-7043-501	24 Vac ± 20% 22...30 Vdc	4.4	2.9	4.4	2.9	0.11	0.8	0.8
MS40-7043 and MS40-7043-501	24 Vac ± 20% 22...30 Vdc	5.6	4.2	5.6	4.2	0.15	2.4	2.4
MS40-7043-MP MS40-7043-MP5	24 Vac ± 20% 22...30 Vdc	6.6	5.0	6.6	5.0	0.17	3.2	3.2
MF40-7043 and MF40-7043-501	24 Vac ± 20% 22...30 Vdc	5.9	4.4	5.9	4.4	0.17	2.9	2.9
MA40-7040 and MA40-7040-501	120 Vac ± 10%	6.4	3.8	4.3	3.4	—	1.6	1.2
MA40-7041 and MA40-7041-501	230 Vac ± 10%	5.8	4.1	4.6	3.9	—	1.5	1.2

Connections	MA40-704x and MA40-704x-501 — 3 ft. (91 cm) long, appliance cables, 1/2 in. conduit connector. For M20 Metric conduit, use AM-756 adaptor. MF40-7043 and MF40-7043-501, MS40-7043 and MS40-7043-501 — 3 ft. (91 cm) long, plenum-rated cables, 1/2 in. conduit connector. For M20 Metric conduit, use AM-756 adaptor.
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#### Motor Type

Brush—MA40-704x.  
Brushless DC—MF40-7043, MS40-7043.

#### Outputs

Electrical	Control Mode: Switch provided for selection of direct acting or reverse acting control mode on proportional models. Timing: Approximate timing for MA40-704x series is 50 seconds. Approximate timing for MF40-7043 series or M40-7043 series is 130 seconds. One auxiliary switch available with Mx40-7043-501 and MS40-7043-MP5, SPDT 6A resistive @ 24 Vac, adjustable 0...95° (0...1 scale). Switch meets VDE requirements for 6 (1.5)A, 24 Vac.
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## Actuator Specifications

One auxiliary switch available with MA40-7040-501 or MA40-7041-501, SPDT 6A resistive @ 250 Vac, adjustable 15...95° (MIN...1 scale). Switch meets VDE requirements for 6 (1.5)A, 250 Vac.

Position Feedback Voltage "AO": 2...10 Vdc (maximum 0.5 mA) output signal for position feedback or operation of up to four slave actuators.

### Mechanical

Output Torque Rating: 35 lb-in. (4 N-m) minimum, 150 lb-in. (17 N-m) maximum.

Stroke: Rotation is limited to 95° ± 5° maximum, adjustable from 40...95° with a mechanical stop.

Position Indicator: Visual indicator, 0...1 (0 is the spring-return position).

Direction of Rotation: CW or CCW rotation is available through reversible mounting.

Damper Shaft Clamp: Direct coupled using a through hole output hub.

Damper Shaft Size: Up to 5/8" in diameter and 1/2" square. With AM-710, up to 3/4" in diameter and 1/2" square.

Nominal Damper Area: Actuator sizing should be done in accordance with damper manufacturer's specifications.

## Environment

Temperature Limits Shipping and storage: -40...160 °F (-40...71 °C) ambient.  
Operating: -22...140 °F (-30...60 °C).

Humidity 5...95% RH, non-condensing.

Locations NEMA 2 (IEC IP54).

## Agency Listings

UL UL 873, Underwriters Laboratories (File #9429 Category Temperature-Indicating and Regulating Equipment).

cUL Canadian Standards C22.2 No. 24.

European Community EMC Directive (89/336/EEC). Low Voltage Directive (72/23/EEC).

Australia This product meets requirements to bear the RSM Mark according to the terms specified by the Communications Authority under the Radiocommunications Act 1992.

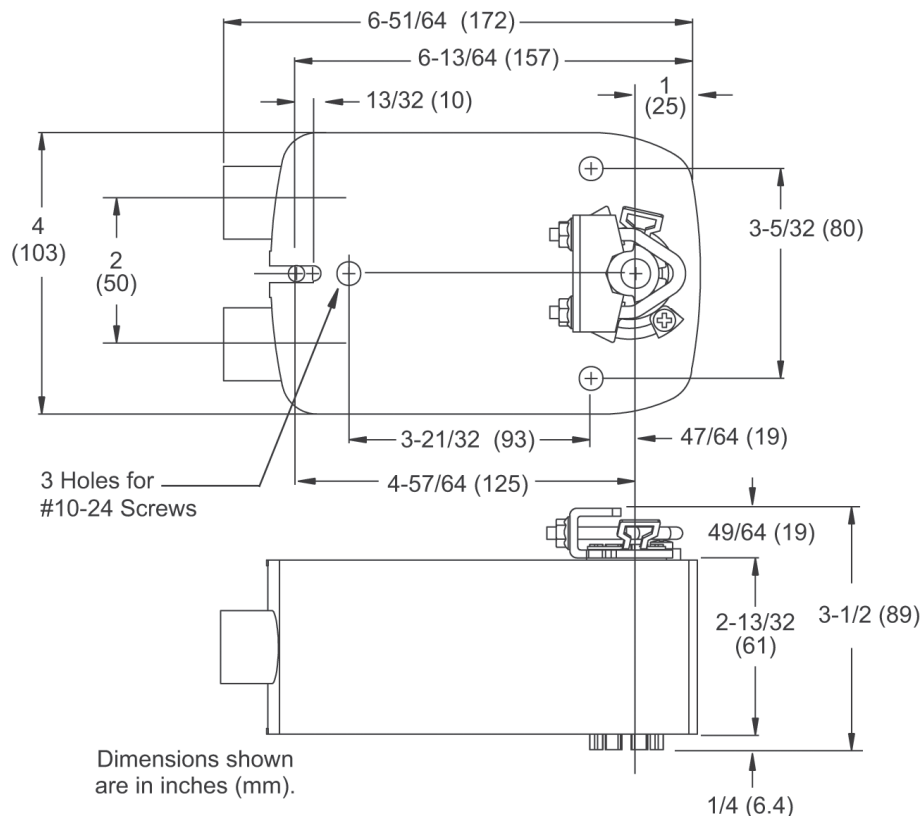


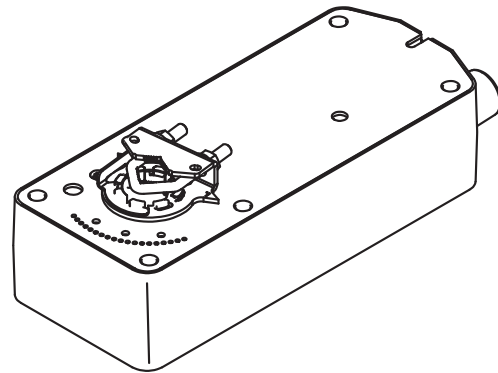
Figure-4 MX40-704X Series Mounting Dimensions.

## MA41-707X, MF41-7073, and MS41-7073 Series Actuators

For spring return applications requiring floating, two-position, or proportional modulation control of dampers and valves in HVAC systems.

### Features:

- Direct mount to round or square damper shaft
- 60 lb-in (7 N-m) torque rating
- Overload protection throughout rotation
- Optional built-in auxiliary switches
- Provides true mechanical clockwise or counterclockwise spring return operation for reliable positive close-off in airtight applications
- Visual position indication
- Direct acting or reverse acting control mode available on proportional models
- Rotation limiting available
- Rugged die-cast housing for NEMA 2/IP54 rating
- Manual override
- 5-year warranty



## Actuator Specifications

### Inputs

Control Signal	MA41-707x and MA41-707x-502 — On-off. SPST control contacts or Triacs (500 mA rated). MF41-7073 and MF41-7073-502 — Floating point control, 24 Vac. MS41-7073 and MS41-7073-502 — Spring return, proportional, 2...10 Vdc or 4...20 mA dc with a 500 Ω resistor.
----------------	--

Power Requirements	All 24 Vac circuits are Class 2. All circuits 30 Vac and above are Class 1.
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Part Numbers	Voltage 50/60 Hz	Running					Holding	
		50 Hz		60 Hz		DC Amps	50 Hz	60 Hz
		VA	W	VA	W		W	W
<b>MA41-7073 and MA41-7073-502</b>	24 Vac ± 20% 22...30 Vdc	4.8	3.2	4.8	3.2	0.13	0.8	0.8
<b>MS41-7073 and MS41-7073-502</b>	24 Vac ± 20% 22...30 Vdc	5.8	4.6	5.8	4.6	0.17	2.3	2.3
<b>MF41-7073 and MF41-7073-502</b>	24 Vac ± 20% 22...30 Vdc	6.2	4.8	6.2	4.8	0.18	2.8	2.8
<b>MA41-7070 and MA41-7070-502</b>	120 Vac ± 10%	10.7	4.2	5.6	3.6	—	2.0	1.2
<b>MA41-7071 and MA41-7071-502</b>	230 Vac ± 10%	17.0	5.1	8.0	4.0	—	2.7	1.4

Connections	3 ft. (91 cm) long, appliance cables, 1/2 in. conduit connectors. For M20 Metric conduit, use AM-756 adaptor.
-------------	---

### Motor Type

Brush—MA41-707x.  
Brushless DC—MF41-7073, MS41-7073.

### Outputs

Electrical	Control Mode: Switch provided for selection of direct acting or reverse acting control mode on proportional models. Timing: Approximate timing for MA41-707x series is 80 seconds. Approximate timing for MF41-7073 series or MS41-7073 series is 195 seconds. Two auxiliary switches available with Mx41-7071-502 or Mx41-7070-502, SPDT 7A resistive @ 250 Vac, one fixed @ 5° and one adjustable 25...85°. Switch meets VDE requirements for 7 (2.5)A, 250 Vac.
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**Actuator Specifications**

Two auxiliary switches available with Mx41-7073-502, SPDT 7A resistive @ 24 Vac, one fixed @ 5° and one adjustable 25 to 85°. Switches meet VDE requirements for 6 (1.5)A, 24 Vac.

Position Feedback Voltage "AO", 2...10 Vdc (maximum 0.5 mA) output signal for position feedback or operation of up to four slave actuators.

**Mechanical**

Output Torque Rating: 60 lb-in. (7 N-m) minimum, 250 lb-in. (28 N-m) maximum.

Stroke: Rotation is limited to 95° ± 5° maximum, adjustable from 30...95° with AM-689 rotation limiter.

Position Indicator: Pointer and (-5...90°) scale are provided for position indication (-5° is the normal, or spring-return, position).

Direction of Rotation: CW or CCW rotation is available through reversible mounting.

Damper Shaft Clamp: Direct coupled using a through hole output hub.

Damper Shaft Size: Up to 3/4" in diameter and 1/2" square. With AM-687, up to 1.05" in diameter and 5/8" square.

Nominal Damper Area: Actuator sizing should be done in accordance with damper manufacturer's specifications.

Manual Override: For Mx41-707x manual override rotation is adjustable from -5°...85° by using manual override crank.

**Environment**

Temperature Limits Shipping and storage: -40...160 °F (-40...71 °C) ambient.  
Operating: -22...140 °F (-30...60 °C).

Humidity 5...95% RH, non-condensing.

Locations NEMA 1. NEMA 2 (IEC IP54) with conduit connector in the down position.

**Agency Listings**

UL UL 873, Underwriters Laboratories (File #9429 Category Temperature-Indicating and Regulating Equipment).

cUL Canadian Standards C22.2 No. 24.

European Community EMC Directive (89/336/EEC). Low Voltage Directive (72/23/EEC).

Australia This product meets requirements to bear the RSM Mark according to the terms specified by the Communications Authority under the Radiocommunications Act 1992.

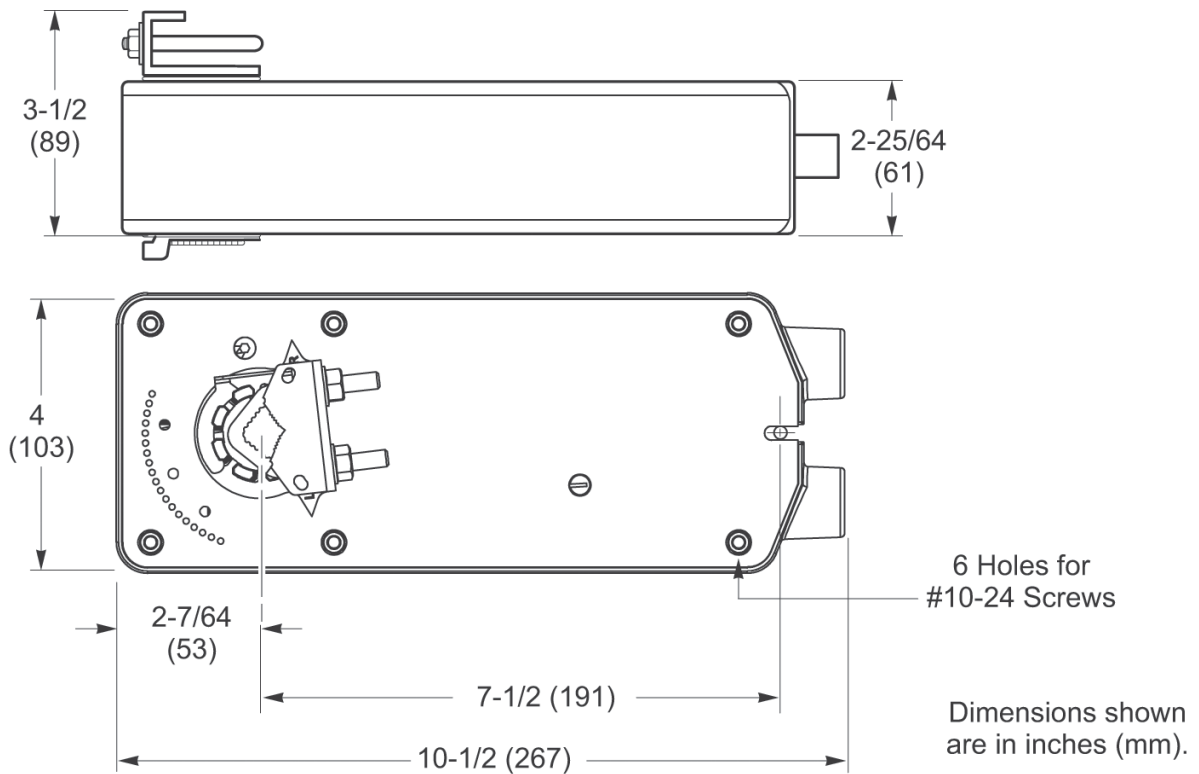


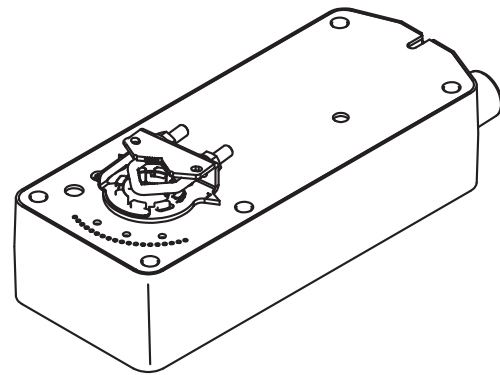
Figure-5 Mx41-707x Series Mounting Dimensions

## MA41-715X, MF41-7153, and MS41-7153 Series Actuators

For spring return applications requiring floating, two-position, or proportional modulation control of dampers and valves in HVAC systems.

Features:

- Direct mount to round or square damper shaft
- 133 lb-in (15 N-m) torque rating
- Overload protection throughout rotation
- Optional built-in auxiliary switches
- True mechanical clockwise or counterclockwise spring return operation for reliable positive close-off in airtight applications
- Visual position indicator
- Direct acting or reverse acting control mode available on proportional models
- Rotation limiting available
- Rugged die-cast housings for NEMA 2/IP54
- Manual override
- 5-year warranty



### Actuator Specifications

#### Inputs

Control Signal MA41-715x and MA41-715x-502 — On-off. SPST control contacts or Triacs (500 mA rated).  
 MF41-7153 and MF41-7153-502 — Floating point control 24 Vac.  
 MS41-7153 and MS41-7153-502 — Proportional, 2...10 Vdc or 4 to 20 mA dc with a 500 W resistor.

Power Requirements All 24 Vac circuits are Class 2. All circuits 30 Vac and above are Class 1.

Part Numbers	Voltage 50/60 Hz	Running					Holding	
		50 Hz		60 Hz		DC Amps	50 Hz	60 Hz
		VA	W	VA	W		W	W
<b>MA41-7153 and MA41-7153-502</b>	24 Vac ± 20% 22...30 Vdc	9.8	7.5	9.7	7.5	0.29	2.8	2.8
<b>MS41-7153 and MS41-7153-502</b>	24 Vac ± 20% 22...30 Vdc	9.8	7.4	9.7	7.4	0.28	2.9	2.9
<b>MF41-7153 and MF41-7153-502</b>	24 Vac ± 20% 22...30 Vdc	9.8	7.7	9.7	7.7	0.30	3.3	3.3
<b>MA41-7150 and MA41-7150-502</b>	120 Vac ± 10%	11.7	8.8	10.0	8.4	—	3.6	5.0
<b>MA41-7151 and MA41-7151-502</b>	230 Vac ± 10%	15.5	9.5	10.6	8.5	—	4.6	3.3

Connections 3 ft. (91 cm) long, appliance cable, 1/2 in. conduit connectors. For M20 Metric conduit, use AM-756 adaptor.

#### Motor Type

Brushless DC—MA41-715x, MF41-7153, MS41-7153.

#### Outputs

Electrical Control Mode: Switch provided for selection of direct acting or reverse acting control mode on proportional models.

Timing: Approximate timing is 190 seconds.

Two auxiliary switches available with MA41-7151-502 or MF41-7150-502, SPDT 7A resistive @ 250 Vac, one fixed @ 5° and one adjustable 25...85°. Switch meets VDE requirements for 7 (2.5)A, 250 Vac.

## Actuator Specifications

	Two auxiliary switches available with Mx41-7153-502, SPDT 7A resistive @ 24 Vac, one fixed @ 5° and one adjustable 25...85°. Switches meet VDE requirements for 6 (1.5)A, 24 Vac.
	Position Feedback Voltage, 2...10 Vdc (maximum 0.5 mA) output signal for position feedback or operation of up to four slave actuators.
Mechanical	Output Torque Rating: 133 lb-in. (15 N-m) minimum, 350 lb-in. (40 N-m) maximum.
	Stroke: Rotation is limited to 95° ± 5° maximum, adjustable from 30...95° with AM-689 rotation limiter.
	Position Indicator: Pointer and (-5...90°) scale are provided for position indication (-5° is the normal, or spring-return, position).
	Direction of Rotation: CW or CCW rotation is available through reversible mounting.
	Damper Shaft Clamp: Direct coupled using a through hole output hub.
	Damper Shaft Size: Up to 3/4" in diameter and 1/2" square. With AM-687, up to 1.05" in diameter and 5/8" square.
	Nominal Damper Area: Actuator sizing should be done in accordance with damper manufacturer's specifications.
	Manual Override: For Mx41-715x rotation is adjustable from -5°...85° by using manual override crank.

### Environment

Temperature Limits	Shipping and storage: -40...160 °F (-40...71 °C) ambient. Operating: -22...140 °F (-30...60 °C).
Humidity	5...95% RH, non-condensing.
Locations	NEMA 1. NEMA 2 (IEC IP54) with conduit connector in the down position.

### Agency Listings

UL	UL 873, Underwriters Laboratories (File #9429 Category Temperature-Indicating and Regulating Equipment).
cUL	Canadian Standards C22.2 No. 24.
European Community	EMC Directive (89/336/EEC). Low Voltage Directive (72/23/EEC).
Australia	This product meets requirements to bear the RSM Mark according to the terms specified by the Communications Authority under the Radiocommunications Act 1992.

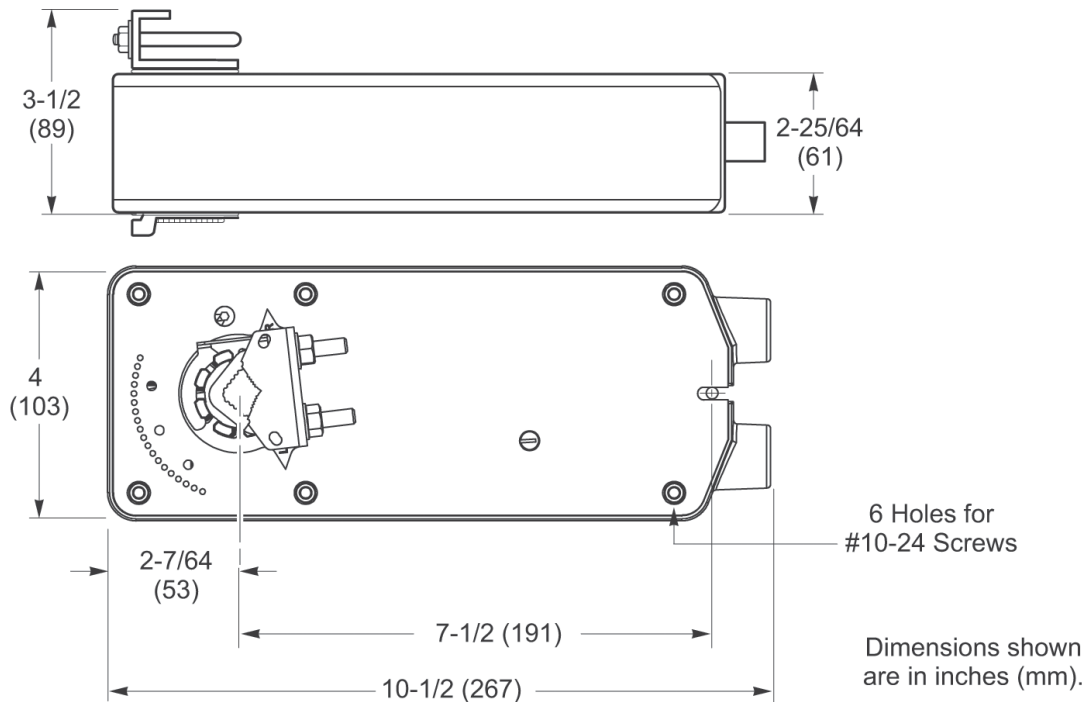


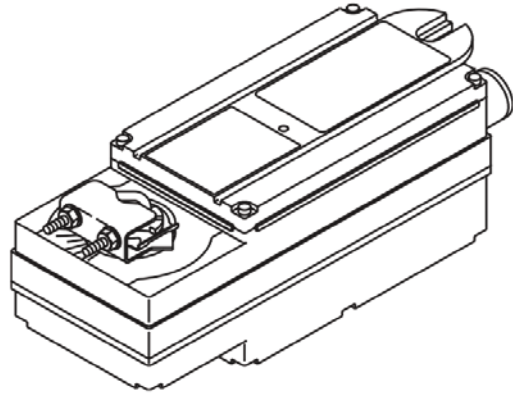
Figure-6 Mx41-715x Series Mounting Dimensions

## MA40-717X, MF40-7173, and MS40-717x Series Actuators

For spring return applications requiring floating, two-position, or proportional modulation control of dampers and valves in HVAC systems.

Features:

- Direct mount to round or square damper shaft
- 150 lb-in (17 N-m) torque rating
- Overload protection throughout rotation
- Oil immersed gear train provides continuous lubrication
- NEMA 4 housing (IEC IP56)
- Automatic current sensing motor control provides extended reliability and repeatable timing
- Provides true mechanical clockwise or counterclockwise spring return operation for reliable positive close-off in airtight applications
- MA40-717x models provide on-off control
- MF40-7173 models provide floating point control (drive open-hold-drive closed)
- MS40-717x models provide proportional control compatible with 2...10 Vdc or 4...20 mA dc with the addition of a 500 ohm resistor (not included)
- 5-year warranty
- Can be double mounted (gang mounting) to accommodate high torque application requirements (2 to 4 actuators)
- MS40-717x models provide position feedback signal



### Actuator Specifications

#### Inputs

Control Signal	MA40-717x — Two wire, SPST or Triacs. MF40-7173 — SPDT floating control output, Triacs (500 mA rated), or 2 SPST contacts. MS40-717x — proportional, 2...10 Vdc or 4...20 mA dc with the addition of a 500 ohm resistor (not included).
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#### Power Requirements

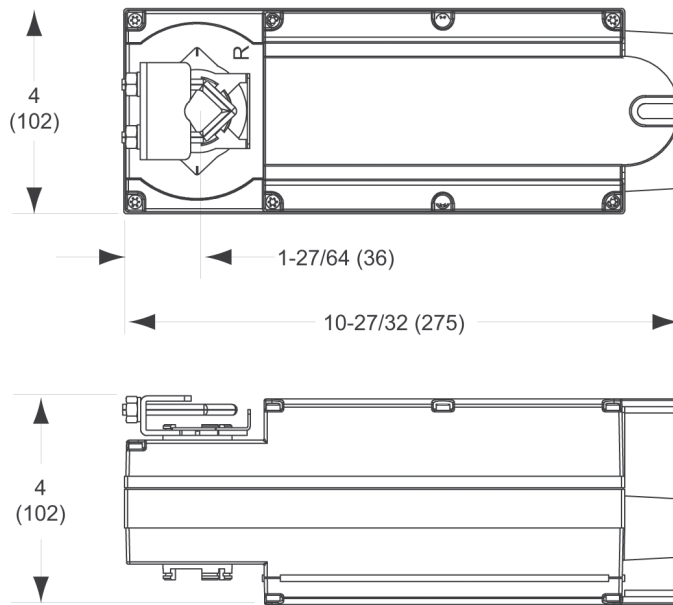
All 24 Vac and 22...30 Vdc circuits are Class 2. All circuits 30 Vac and above are Class 1.

Part Numbers	Power Input @ 50/60 Hz			
	Voltage	Running VA	Holding VA	Watts
<b>MA40-7173</b>	24 Vac ±20%	7.4	5.1	5.3
	22...30 Vdc	5.0	3.0	5.0
<b>MS40-7173</b>	24 Vac ±20%	7.8	4.7	5.5
	22...30 Vdc	5.6	2.5	5.0
<b>MF40-7173</b>	24 Vac ±20%	8.1	5.3	5.8
	22...30 Vdc	5.7	3.6	5.7
<b>MA40-7170</b>	120 Vac ±10%	8.4	6.6	6.2
<b>MS40-7170</b>	120 Vac ±10%	8.5	5.2	6.4
<b>MA40-7171</b>	240 Vac ±10%	9.8	8.5	6.5
<b>MS40-7171</b>	240 Vac ±10%	10.8	9.0	7.2

Impedance	2...10 Vdc, 121KW. 4...20 mA dc, 500W (user supplied) (MS40-717x models only).
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## Actuator Specifications

<b>Connections</b>	
Class 1:	24 inch (61 cm) long appliance cables, 18 AWG color coded leads. 1/2 in. conduit connector. For M20 Metric conduit, use AM-756 adaptor.
Class 2 Power and Control:	36 inch (91 cm) Long, 22 AWG color coded appliance cable pigtail leads. 1/2 in. conduit connector. For M20 Metric conduit, use AM-756 adaptor.
<b>Motor Type</b>	
Brushless DC	
<b>Outputs</b>	
Electrical	Stroke: Electronically limited to 92° ±1° (MS). MF-MA Mechanically limited To 101° ±1°. Timing: Approximate timing is 147 sec. (MS); 162 sec. for MF and MA models.
Mechanical	Output Torque Rating: 150 lb-in. (17 N-m) minimum, 545 lb-in. (61.8 N-m) maximum. Position Indicator: Pointer and scale are provided for position indication (0° is the normal, or spring-return, position). Direction of Rotation: CW or CCW rotation is available through reversible mounting. Damper Shaft Clamp: Direct coupled using a through hole output hub. Damper Shaft Size: Up to 3/4" in diameter, 1/2" square. With AM-687, up to 1.05" in diameter and 5/8" square. Nominal Damper Area: Actuator sizing should be done in accordance with damper manufacturer's specifications.
<b>Environment</b>	
Temperature Limits	Shipping and storage: -40...160 °F (-40...71 °C) ambient. Operating: -25...140 °F (-32...60 °C).
Humidity	5...95% RH, non-condensing.
Locations	NEMA 1 (IEC IP10). NEMA 4 (IEC IP 56) with customer supplied water tight conduit connectors.
<b>Agency Listings</b>	
UL	UL 873, Underwriters Laboratories (File #9429 Category Temperature-Indicating and Regulating Equipment).
European Community	EMC Directive (2004/108/EC). Low Voltage Directive (72/23/EEC).
cUL	Canadian Standards C22.2 No. 24-93.
Australia	This product meets requirements to bear the RSM Mark according to the terms specified by the Communications Authority under the Radiocommunications Act 1992.



Dimensions shown are in inches (mm).

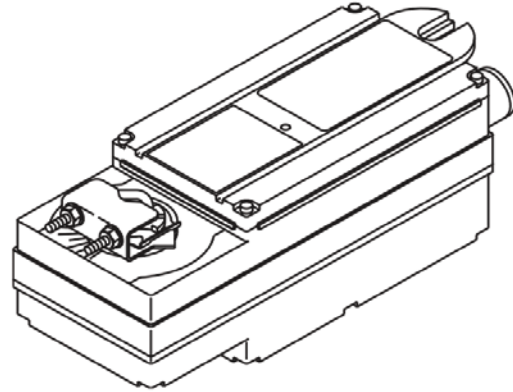
Figure-7 MX40-717X Series Mounting Dimensions

## MF41-6343 and MS41-634x Series Actuators

For non-spring return applications requiring floating or proportional modulation control of dampers and valves in HVAC systems.

Features:

- Direct mount to round or square damper shaft
- 300 lb-in (34 N-m) torque rating
- Overload protection throughout rotation
- Oil immersed gear train provides continuous lubrication
- NEMA 4 housing (IEC IP56)
- Manual override to allow positioning for installation and manual operation
- Automatic current sensing motor control provides extended reliability and repeatable timing
- MF41-6343 models provide floating point control (drive open-hold-drive closed)
- MS41-634x models provide proportional control compatible with 2...10 Vdc or 4...20 mA dc with the addition of a 500 ohm resistor (not included)
- 5-year warranty
- Can be double-mounted (gang mounted) to accommodate high torque application requirements (2 to 4 actuators)
- MS41-634x models provide position feedback signal



### Actuator Specifications

#### Inputs

Control Signal MF41-6343 — SPDT floating control output, Triacs (500 mA rated), or 2 SPST contacts.  
 MS41-634x — proportional, 2...10 Vdc or 4...20 mA dc with the addition of a 500 ohm resistor (not included).

Power Requirements All 24 Vac and 22...30 Vdc circuits are Class 2. All circuits 30 Vac and above are Class 1.

Part Numbers	Power Input @ 50/60 Hz			
	Voltage	Running VA	Holding VA	Watts
<b>MS41-6343</b>	24 Vac ±20%	5.6	4.0	3.6
	22...30 Vdc	3.4	2.2	3.4
<b>MS41-6340</b>	120 Vac ±10%	7.5	6.2	4.7
<b>MS41-6341</b>	240 Vac ±10%	9.0	8.1	5.0
<b>MF41-6343</b>	24 Vac ±20%	5.7	4.1	3.9
	22...30 Vdc	4.1	3.0	4.1

#### Connections

Class 1: 24 inch (61 cm) long appliance cables, 1/2 in. conduit connector. For M20 Metric conduit, use AM-756 adaptor.  
 Class 2 Power and Control: 36 inch (91 cm) long, 22 AWG color coded appliance cable pigtail leads. 1/2 in. conduit connector. For M20 Metric conduit, use AM-756 adaptor.

**Motor Type** Brushless DC

#### Outputs



## Actuator Specifications

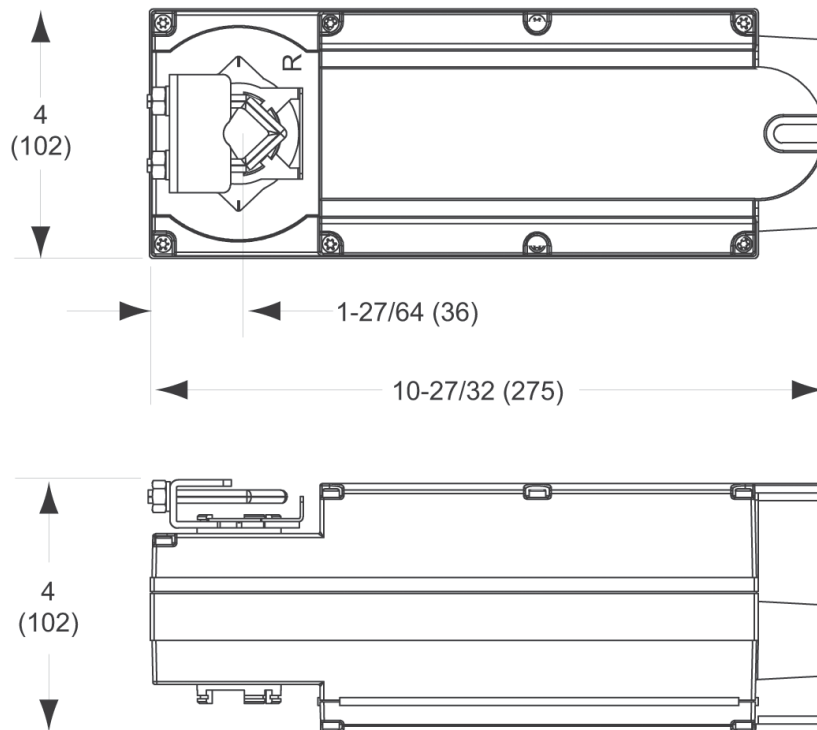
Electrical	Stroke: Electronically limited to 92° ±1° (MS). MF Mechanically limited To 101° ±1°.
	Timing: Approximate timing is 148 sec. (MS) and 162 sec. for MF models.
Mechanical	Output torque rating: 300 lb-in. (34 N-m) minimum, 650 lb-in. (73.7 N-m) maximum.
	Position indicator: Pointer and scale are provided for position indication).
	Direction of rotation: CW or CCW rotation is available through reversible mounting.
	Damper Shaft Clamp: Direct coupled using a through hole output hub.
	Damper Shaft Size: 3/8" ... 1/2" round and 3/8" ... 1/2" square. With AM-754, up to 1.05" in diameter and 5/8" square.
	Nominal Damper Area: Actuator sizing should be done in accordance with damper manufacturer's specifications.
Manual Override: Activated by the manual override crank.	

## Environment

Temperature Limits	Shipping and storage: -40...160 °F (-40...71 °C) ambient. Operating: -25...140 °F (-32...60 °C).
Humidity	5...95% RH, non-condensing.
Locations	NEMA 1 (IEC IP10). NEMA 4 (IEC IP56) with customer supplied water tight conduit connectors.

## Agency Listings

UL	UL 873, Underwriters Laboratories (File #9429 Category Temperature-Indicating and Regulating Equipment).
European Community	EMC Directive (2004/108/EC). Low Voltage Directive (72/23/EEC).
cUL	Canadian Standards C22.2 No. 24-93.
Australia	This product meets requirements to bear the RSM Mark according to the terms specified by the Communications Authority under the Radiocommunications Act 1992.



Dimensions shown are in inches (mm).

Figure-8 MX41-634X Series Mounting Dimensions

## Damper Actuator Cross Reference

Schneider Electric assumes no responsibility for guaranteeing the acceptability of any suggested replacement in this section. The emphasis has been placed on providing a replacement actuator of the same specifications wherever possible. The user must determine the acceptability of the substitution by reviewing the actuator specifications.

The cross reference tables list Direct-Coupled Actuators which may replace obsolete SEC and Belimo devices, as well as older TAC devices. The tables list two-position, floating, and proportional actuators. The devices to be replaced are listed alphanumerically in the left-hand column, with the suggested replacement in the center column. The replacement actuators in this list represent what we believe are equivalent units.

### SEC to Current Actuators

SEC P/N	Current P/N	Description
—	MA40-7041	230 Vac 35 lb-in. (4 N-m) (2-position)
—	MA40-7041-501	230 Vac 35 lb-in. (4 N-m) w/aux switch (2-position)
—	MA41-7071	230 Vac 60 lb-in. (7 N-m) (2-position) w/manual override
—	MA41-7071-502	230 Vac 60 lb-in. (7 N-m) w/aux switch (2-position) w/manual override
—	MA40-7170	120 Vac 150 lb-in. (17 N-m) (17 N-m) (2-position)
—	MA40-7171	240 Vac 150 lb-in. (17 N-m) (2-position)
—	MA40-7173	24 Vac or 22...30 Vdc 150 lb-in. (17 N-m) (2-position)
—	MF41-7073	24 Vac or 22...30 Vdc 60 lb-in. (7 N-m) (floating) w/manual override
—	MF41-7073-502	24 Vac or 22...30 Vdc 60 lb-in. (7 N-m) w/aux switch (floating) w/manual override
—	MF41-7153	24 Vac or 22...30 Vdc 133 lb-in. (15 N-m) (floating) w/manual override
—	MF41-7153-502	24 Vac or 22...30 Vdc 133 lb-in. (15 N-m) w/aux switch (floating) w/manual override
—	MF40-7173	24 Vac or 22...30 Vdc 150 lb-in. (17 N-m) (floating)
—	MS41-7073-502	24 Vac or 22...30 Vdc 60 lb-in. (7 N-m) w/aux switch (proportional) w/manual override
—	MS41-7153-502	24 Vac or 22...30 Vdc 133 lb-in. (15 N-m) w/aux switch (proportional) w/manual override
—	MS40-7170	120 Vac 150 lb-in. (17 N-m) (proportional)
—	MS40-7171	240 Vac 150 lb-in. (17 N-m) (proportional)
—	MS40-7173	24 Vac or 22...30 Vdc 150 lb-in. (17 N-m) (proportional)
—	MS41-6340	120 Vac 300 lb-in. (34 N-m) NSR (proportional)
—	MS41-6341	240 Vac 300 lb-in. (34 N-m) NSR (proportional)
MA-7101	MA40-7040	120 Vac 35 lb-in. (4 N-m) (2-position)
MA-7101-500	MA40-7040-501	120 Vac 35 lb-in. (4 N-m) w/aux switch (2-position)
MA-7103	MA40-7043	24 Vac or 22...30 Vdc 35 lb-in. (4 N-m) (2-position)
MA-7103-500	MA40-7043-501	24 Vac or 22...30 Vdc 35 lb-in. (4 N-m) w/aux switch (2-position)
MA-7201	MA41-7070	120 Vac 60 lb-in. (7 N-m) (2-position) w/manual override
MA-7201-500	MA41-7070-502	120 Vac 60 lb-in. (7 N-m) w/aux switch (2-position) w/manual override
MA-7203	MA41-7073	24 Vac or 22...30 Vdc 60 lb-in. (7 N-m) (2-position) w/manual override
MA-7203-500	MA41-7073-502	24 Vac or 22...30 Vdc 60 lb-in. (7 N-m) w/aux switch (2-position) w/manual override
MA-7501	MA41-7150	120 Vac 133 lb-in. (15 N-m) (2-position) w/manual override
MA-7501-502	MA41-7150-502	120 Vac 133 lb-in. (15 N-m) w/aux switch (2-position) w/manual override
MA-7503	MA41-7153	24 Vac or 22...30 Vdc 133 lb-in. (15 N-m) (2-position) w/manual override
MA-7503-502	MA41-7153-502	24 Vac or 22...30 Vdc 133 lb-in. (15 N-m) w/aux switch (2-position) w/manual override
MA-7505	MA41-7151	230 Vac 133 lb-in. (15 N-m) (2-position) w/manual override
MA-7505-502	MA41-7151-502	230 Vac 133 lb-in. (15 N-m) w/aux switch (2-position) w/manual override
MF-6103	MF41-6043	24 Vac 35 lb-in. (4 N-m) NSR (floating)
	MF41-6043-502	24 Vac 35 lb-in. (4 N-m) NSR (floating), w/two aux switches
	MF41-6043-510	24 Vac 35 lb-in. (4 N-m) NSR (floating), feedback potentiometer
MF-6203	MF41-6083	24 Vac 70 lb-in. (8 N-m) spdt NSR (floating)
	MF41-6083-502	24 Vac 70 lb-in. (8 N-m) NSR (floating), w/two aux switches
	MF41-6083-510	24 Vac 70 lb-in. (8 N-m) NSR (floating), feedback potentiometer
MF-6633	MF41-6153	24 Vac 133 lb-in. (15 N-m) spdt NSR (floating)
MF-6733	MF41-6343	24 Vac or 33-30 Vdc 300 lb-in. (34 N-m) spdt NSR (floating)
MF-7103	MF40-7043	24 Vac or 22...30 Vdc 35 lb-in. (4 N-m) (floating)
MF-7103-500	MF40-7043-501	24 Vac or 22...30 Vdc 35 lb-in. (4 N-m) w/aux switch (floating)

SEC P/N	Current P/N	Description
MS-6103	MS41-6043	24 Vac 35 lb-in. (4 N-m) NSR (proportional)
	MS41-6043-502	24 Vac 35 lb-in. (4 N-m) NSR (proportional), w/two aux switches
	MS41-6043-520	24 Vac 35 lb-in. (4 N-m) NSR (proportional), adjustable start point (offset) and span
	MS41-6043-522	24 Vac 35 lb-in. (4 N-m) NSR (proportional), w/two aux switches, adjustable start point (offset) and span
MS-6233	MS41-6083	24 Vac 70 lb-in. (8 N-m) 2-10 Vdc/4-20 mA dc NSR (proportional),
	MS41-6083-502	24 Vac 70 lb-in. (8 N-m) NSR (proportional), w/two aux switches
	MS41-6083-520	24 Vac 70 lb-in. (8 N-m) NSR (proportional), adjustable start point (offset) and span
	MS41-6083-522	24 Vac 70 lb-in. (8 N-m) NSR (proportional), w/two aux switches, adjustable start point (offset) and span
MS-6633	MS41-6153	24 Vac 133 lb-in. (15 N-m) 2-10 Vdc/4-20 mA dc NSR (proportional)
	MS41-6153-502	24 Vac 133 lb-in. (15 N-m) NSR (proportional), w/two aux switches
MS-6733	MS41-6343	24 Vac or 22...30 Vdc 300 lb-in. (34 N-m) 2-10 Vdc/4-20 mA dc NSR (proportional)
MS-7103	MS40-7043	24 Vac or 22...30 Vdc 35 lb-in. (4 N-m) (proportional)
MS-7103-500	MS40-7043-501	24 Vac or 22...30 Vdc 35 lb-in. (4 N-m) w/aux switch (proportional)
MS-7203	MS41-7073	24 Vac or 22...30 Vdc 60 lb-in. (7 N-m) (proportional) w/manual override
MS-7433	MS41-7153	24 Vac or 22...30 Vdc 133 lb-in. (15 N-m) (proportional) w/manual override

### TAC Old to Current Actuators

TAC Old	Current	Description
MF40-6043	MF41-6043	24 Vac 35 lb-in. (4 N-m) NSR (floating)
MF40-6043-510	MF41-6043-510	24 Vac 35 lb-in. (4 N-m) NSR (floating), feedback potentiometer
MF40-6043-520	MF41-6043-520	24 Vac 35 lb-in. (4 N-m) NSR (floating), adjustable start point (offset) and span
MF40-6043-522	MF41-6043-522	24 Vac 35 lb-in. (4 N-m) NSR (floating), w/ two aux. switches, adjustable start point (offset) & span
MF40-6083	MF41-6083	24 Vac 70 lb-in. (8 N-m) NSR (floating)
MF40-6153	MF41-6153	24 Vac 133 lb-in. (15 N-m) NSR (floating)
MF40-6343	MF41-6343	24 Vac or 22...30 Vdc 300 lb-in. (34 N-m) NSR (floating)
MS40-6043	MS41-6043	24 Vac 35 lb-in. (4 N-m) NSR (proportional)
MS40-6043-510	MS41-6043-510	24 Vac 35 lb-in. (4 N-m) NSR (proportional), feedback potentiometer
MS40-6043-520	MS41-6043-520	24 Vac 35 lb-in. (4 N-m) NSR (proportional), adjustable start point (offset) and span
MS40-6043-522	MS41-6043-522	24 Vac 35 lb-in. (4 N-m) NSR (proportional), w/ two aux. switches, adjustable start point (offset) & span
MS40-6083	MS41-6083	24 Vac 70 lb-in. (8 N-m) NSR (proportional)
MS40-6153	MS41-6153	24 Vac 133 lb-in. (15 N-m) NSR (proportional)
MS40-6343	MS41-6343	24 Vac or 22...30 Vdc 300 lb-in. (34 N-m) NSR (proportional)

### Belimo to Current Actuators

Belimo P/N	Current P/N	Description
—	MA40-7170	120 Vac 150 lb-in. (17 N-m) (2-position)
—	MA40-7171	240 Vac 150 lb-in. (17 N-m) (2-position)
—	MA40-7173	24 Vac or 22...30 Vdc 150 lb-in. (17 N-m) (2-position)
—	MF40-7073	24 Vac or 22...30 Vdc 60 lb-in. (7 N-m) (floating)
—	MF41-7073	24 Vac or 22...30 Vdc 60 lb-in. (7 N-m) (floating) w/manual override
—	MF40-7073-502	24 Vac or 22...30 Vdc 60 lb-in. (7 N-m) w/aux switch (floating)
—	MF41-7073-502	24 Vac or 22...30 Vdc 60 lb-in. (7 N-m) w/aux switch (floating) w/manual override
—	MF40-7173	24 Vac or 22...30 Vdc 150 lb-in. (17 N-m) (floating)
—	MS41-7073-502	24 Vac or 22...30 Vdc 60 lb-in. (7 N-m) w/aux switch (proportional) w/manual override
—	MS40-7170	120 Vac 150 lb-in. (17 N-m) (proportional)
—	MS40-7171	240 Vac 150 lb-in. (17 N-m) (proportional)
—	MS40-7173	24 Vac or 22...30 Vdc 150 lb-in. (17 N-m) (proportional)
—	MS41-6340	120 Vac 300 lb-in. (34 N-m) NSR (proportional)
—	MS41-6341	240 Vac 300 lb-in. (34 N-m) NSR (proportional)
AF120	MA41-7150	120 Vac 133 lb-in. (15 N-m) (2-position) w/manual override
AF120-S	MA41-7150-502	120 Vac 133 lb-in. (15 N-m) w/aux switch (2-position) w/manual override
AF230	MA41-7151	230 Vac 133 lb-in. (15 N-m) (2-position) w/manual override
AF230-S	MA41-7151-502	230 Vac 133 lb-in. (15 N-m) w/aux switch (2-position) w/manual override
AF24	MA41-7153	24 Vac or 22...30 Vdc 133 lb-in. (15 N-m) (2-position) w/manual override
AF24-3	MF41-7153	24 Vac or 22...30 Vdc 133 lb-in. (15 N-m) (floating) w/manual override
AF24-S	MA41-7153-502	24 Vac or 22...30 Vdc 133 lb-in. (15 N-m) w/aux switch (2-position) w/manual override

Belimo P/N	Current P/N	Description
AF24-3-S	MF41-7153-502	24 Vac or 22...30 Vdc 133 lb-in. (15 N-m) w/aux switch (floating) w/manual override
AF24-SR	MS41-7153	24 Vac or 22...30 Vdc 133 lb-in. (15 N-m) (proportional) w/manual override
AF24-SR-S	MS41-7153-502	24 Vac or 22...30 Vdc, 133 lb-in. (15 N-m) w/aux switch (proportional) w/manual override
AFR24-SR	—	24 Vdc or 22...30 Vdc, 133 lb-in. (15 N-m) (proportional)
AFR24-3	—	24 Vdc or 22...30 Vdc, 133 lb-in. (15 N-m) (floating)
AFR24-3-S	—	24 Vdc or 22...30 Vdc, 133 lb-in. (15 N-m) (floating)
AFR120	—	120 Vac, 133 lb-in. (15 N-m) (2-position)
AFR120-S	—	120 Vac, 133 lb-in. (15 N-m) (2-position), w/aux switch
AFR24	—	24 Vac or 22...30 Vdc, 133 lb-in. (15 N-m) (2-position)
AFR24-S	—	24 Vac or 22...30 Vdc, 133 lb-in. (15 N-m) (2-position), w/aux switch
GM24	MF41-6343	24 Vac or 22...30 Vdc 300 lb-in. (34 N-m) spdt NSR (floating)
GM24-SR	MS41-6343	24 Vac or 22...30 Vdc 300 lb-in. (34 N-m) 2...10 Vdc/4...20 mA dc NSR (proportional)
LF120	MA40-7040	120 Vac 35 lb-in. (4 N-m) (2-position)
LF120-S	MA40-7040-501	120 Vac 35 lb-in. (4 N-m) w/aux switch (2-position)
LF230	MA40-7041	230 Vac 35 lb-in. (4 N-m) (2-position)
LF230-S	MA40-7041-501	230 Vac 35 lb-in. (4 N-m) w/aux switch (2-position)
LF24	MA40-7043	24 Vac or 22...30 Vdc 35 lb-in. (4 N-m) (2-position)
LF24-3	MF40-7043	24 Vac or 22...30 Vdc 35 lb-in. (4 N-m) (floating)
LF24-S	MA40-7043-501	24 Vac or 22...30 Vdc 35 lb-in. (4 N-m) w/aux switch (2-position)
LF24-3-S	MF40-7043-501	24 Vac or 22...30 Vdc 35 lb-in. (4 N-m) w/aux switch (floating)
LF24-SR	MS40-7043	24 Vac or 22...30 Vdc 35 lb-in. (4 N-m) (proportional)
LF24-SR-S	MS40-7043-501	24 Vac or 22...30 Vdc 35 lb-in. (4 N-m) w/aux switch (proportional)
LM24	MF41-6043	24 Vac 35 lb-in. (4 N-m) NSR (floating)
LM24-10P	MF41-6043-510	24 Vac 35 lb-in. (4 N-m) NSR (floating), feedback potentiometer
LM24-S	MF41-6043-502	24 Vac 35 lb-in. (4 N-m) NSR (floating), w/two aux switches
LM24-SR	MS41-6043	24 Vac 35 lb-in. (4 N-m) NSR (proportional)
—	MS41-6043-520	24 Vac 35 lb-in. (4 N-m) NSR (proportional), adjustable start point (offset) and span
—	MS41-6043-522	24 Vac 35 lb-in. (4 N-m) NSR (proportional), w/two aux switches, adjustable start point (offset) and span
—	MS41-6043-502	24 Vac 35 lb-in. (4 N-m) NSR (proportional), w/two aux switches
NF120	—	120 Vac 60 lb-in. (7 N-m) (2-position)
NF120-S	—	120 Vac 60 lb-in. (7 N-m) w/aux switch (2-position)
NF230	—	230 Vac 60 lb-in. (7 N-m) (2-position)
NF230-S	—	230 Vac 60 lb-in. (7 N-m) w/aux switch (2-position)
NF24	—	24 Vac or 22...30 Vdc 60 lb-in. (7 N-m) (2-position)
NF24-S	—	24 Vac or 22...30 Vdc 60 lb-in. (7 N-m) w/aux switch (2-position)
NF24-SR	—	24 Vac or 22...30 Vdc 60 lb-in. (7 N-m) (proportional)
NM24	MF41-6083	24 Vac 70 lb-in. (8 N-m) spdt NSR (floating)
	MF41-6083-502	24 Vac 70 lb-in. (8 N-m) NSR (floating), w/two aux switches
	MF41-6083-510	24 Vac 70 lb-in. (8 N-m) NSR (floating), feedback potentiometer
NM24-SR	MS41-6083	24 Vac 70 lb-in. (8 N-m) 2...10 Vdc/4...20 mA dc NSR (proportional)
	MS41-6083-502	24 Vac 70 lb-in. (8 N-m) NSR (proportional), w/two aux switches
	MS41-6083-520	24 Vac 70 lb-in. (8 N-m) NSR (proportional), adjustable start point (offset) and span
	MS41-6083-522	24 Vac 70 lb-in. (8 N-m) NSR (proportional), w/two aux switches, adjustable start point (offset) and span
SM24	MF41-6153	24 Vac 133 lb-in. (15 N-m) spdt NSR (floating)
SM24-SR	MS41-6153	24 Vac 133 lb-in. (15 N-m) 2...10 Vdc/4...20 mA dc NSR (proportional)
	MS41-6153-502	24 Vac 133 lb-in. (15 N-m) NSR (proportional), w/two aux switches