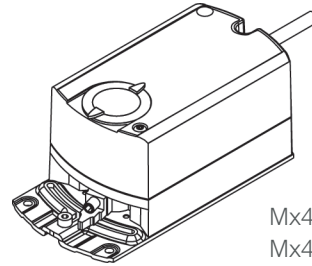


SmartX Mx4x-6xxx, Mx4x-7xxx Series Actuators and Accessories

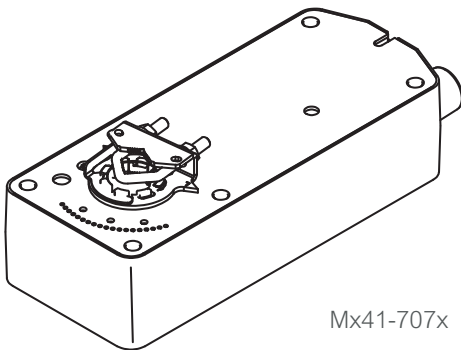
Applications

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.

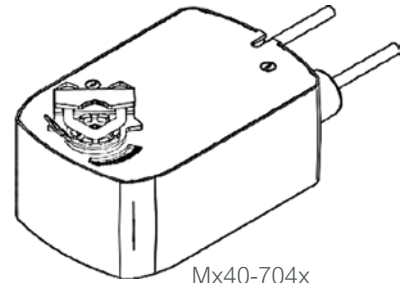
Use the following guide to select actuators for damper applications. Refer to the Applicable Literature table for valve literature.



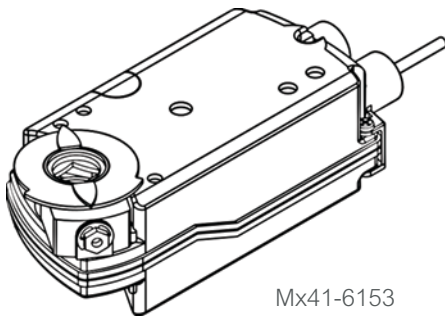
Mx41-6043
Mx41-6083



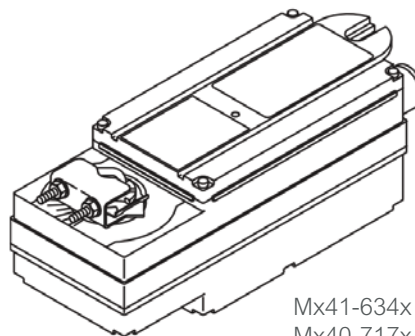
Mx41-707x
Mx41-715x



Mx40-704x



Mx41-6153



Mx41-634x
Mx40-717x

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-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.

Actuator Part Numbering System

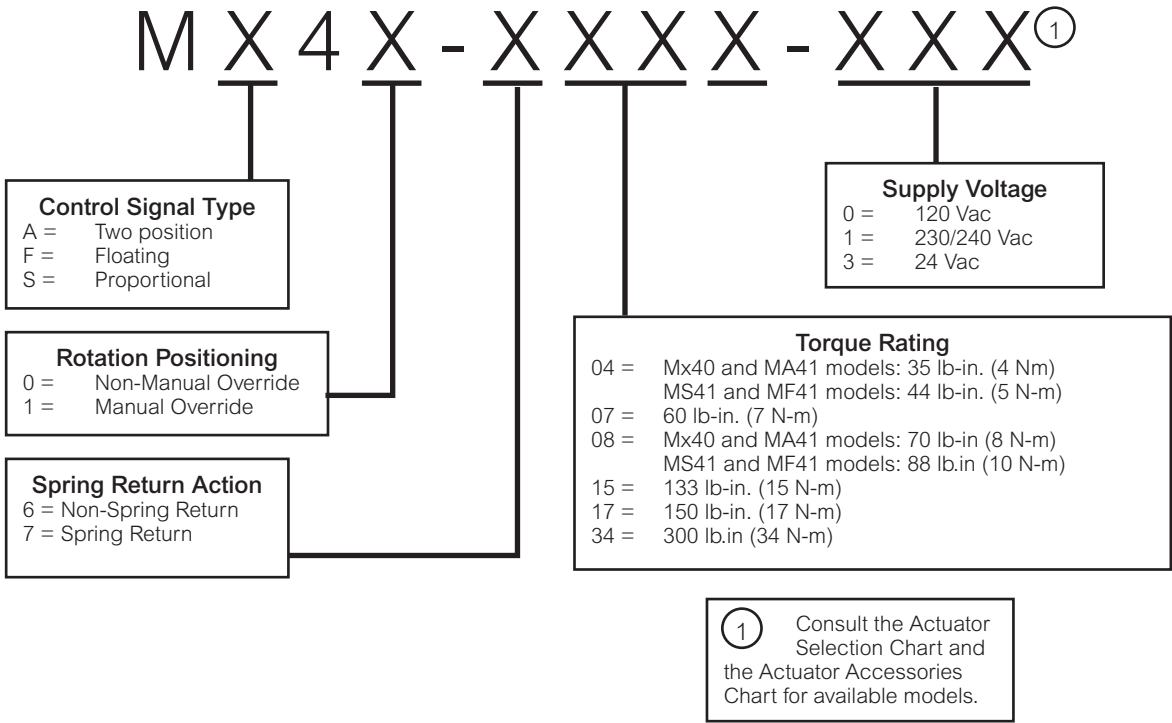


Table 1. Mx40-704x, Mx4x-707x, and Mx4x-715x

Actuator Type	Part Numbers	Power Input								SPDT Auxiliary Switches	Approx. Timing (sec.) @ 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	24 Vac ± 20% 22...30 Vdc	4.4	2.9	4.4	2.9	0.11	0.8	0.8	-	<50	<26	35 (4)	150 (17)
	MA40-7043-501									1				
	MA40-7040	120 Vac ± 10%	6.4	3.8	4.3	3.4	—	1.6	1.2	-	<50	<26		
	MA40-7040-501									1 ^b				
	MA40-7041	230 Vac ± 10%	5.8	4.1	4.6	3.9	—	1.5	1.2	-	<50	<26		
	MA40-7041-501									1 ^b				
Floating	MF40-7043	24 Vac ± 20% 22...30 Vdc	5.9	4.4	5.9	4.4	0.17	2.9	2.9	-	<130	<25	60 (7)	250 (28)
	MF40-7043-501 ^c									1 ^b				
Proportional	MS40-7043 ^c	24 Vac ± 20% 22...30 Vdc	5.6	4.2	5.6	4.2	0.15	2.4	2.4	-				
	MS40-7043-501 ^c									1 ^b				
	MS40-7043-MP	24 Vac 22...30 Vdc	6.6	5.0	6.6	5.0	0.17	3.2	3.2	-				
	MS40-7043-MP5									1 ^b				
Two- Position	MA41-7073	24 Vac ± 20% 22...30 Vdc	4.8	3.2	4.8	3.2	0.13	0.8	0.8	-	<80	<40	60 (7)	250 (28)
	MA41-7073-502 ^d									2				
	MA41-7070 ^d	120 Vac ± 10%	10.7	4.2	5.6	3.6	—	2.0	1.2	-				
	MA41-7070-502 ^d									2 ^e				
	MA41-7071 ^d	230 Vac ± 10%	17.0	5.1	8.0	4.0	—	2.7	1.4	-				
	MA41-7071-502 ^d									2 ^e				
Floating	MF41-7073 ^d	24 Vac ± 20% 22...30 Vdc	6.2	4.8	6.2	4.8	0.18	2.8	2.8	-	<195	<30		
	MF41-7073-502 ^d									2 ^e				
Proportional	MS41-7073 ^d	24 Vac ± 20% 22...30 Vdc	5.8	4.6	5.8	4.6	0.17	2.3	2.3	-	<195	<30		
	MS41-7073-502 ^d									2 ^e				

Actuator Type	Part Numbers	Power Input								SPDT Auxiliary Switches	Approx. Timing (sec.) @ 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 ^d	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 ^d									Two ^e				
	MA40-7150 MA41-7150 ^d	120 Vac ± 10%	11.7	8.8	10.0	8.4	—	3.6	5.0	No				
	MA40-7150-502 MA41-7150-502 ^d									Two ^e				
	MA40-7151 MA41-7151 ^d	230 Vac ± 10%	15.5	9.5	10.6	8.5	—	4.6	3.3	No				
	MA40-7151-502 MA41-7151-502 ^d									Two ^e				
Floating	MF40-7153 MF41-7153 ^d	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 ^d									Two ^e				
Proportional	MS40-7153 MS41-7153 ^d	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 ^d									Two ^e				

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

b - One adjustable from 15...95° rotation (MIN...1 scale).

c - With plenum-rated cable.

d - Equipped with manual override.

e - One adjustable from 25°...85° rotation and one set to operate @ 5° fixed.

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	Approx. Timing in Sec. @ 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	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					
MA40-7170	120 Vac ± 10%	6.2	8.4	6.6					
MA40-7171	240 Vac ± 10%	6.5	9.8	8.5					
MF40-7173	24 Vac ± 20%	5.8	8.1	5.3					
	22...30 Vdc	5.7	5.7	3.6					
MS40-7173	24 Vac ± 20%	5.5	7.8	4.7					
	22...30 Vdc	5.0	5.6	2.5					
MS40-7170	120 Vac ± 10%	6.4	8.5	5.2					
MS40-7171	240 Vac ± 10%	7.2	10.8	9.0	147	65			

Table 3. Non-Spring Return Actuators

Part Numbers	Power Input @ 50/60 Hz				SPDT Auxiliary Switches ^a	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	24 Vac +20/-15%	2.0	2.3	—	No	90 @ 60 Hz 108 @ 50 Hz	44 (5)
MF41-6043-502 ^b		2.0	2.3	—	2		
MF41-6043-510 ^b		2.0	2.3	—	No		
MS41-6043 ^b		3.0	3.3	1.2	No		
MS41-6043-502 ^{bc}		3.0	3.3	1.2	2		
MS41-6043-520 ^b		3.0	3.3	1.2	No		
MS41-6043-522 ^b		3.0	3.3	1.2	2		
MF41-6083 ^b	24 Vac +20/-15%	2.0	2.3	—	No	125 @ 60 Hz 150 @ 50 Hz	88 (10) ^g
MF41-6083-502 ^{bc}		2.0	2.3	—	2		
MF41-6083-510 ^b		2.0	2.3	—	No		
MS41-6083 ^b		3.0	3.3	1.2	No		
MS41-6083-502 ^{bc}		3.0	3.3	1.2	No		
MS41-6083-520 ^{be}		3.0	3.3	1.2	No		
MS41-6083-522 ^{bf}		3.0	3.3	1.2	2		
MF41-6153	24 Vac +20/-15%	3.0	3.0	—	No		133 (15) ^h
MS41-6153		4.0	5.0	1.2	No		
MF41-6343	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			

b - Equipped with plenum-rated cable.

c - Equipped with two built-in auxiliary switches.

d - Equipped with 1k W feedback potentiometer.

e - Equipped with adjustable start/span.

f - Equipped with adjustable start/span and two auxiliary switches.

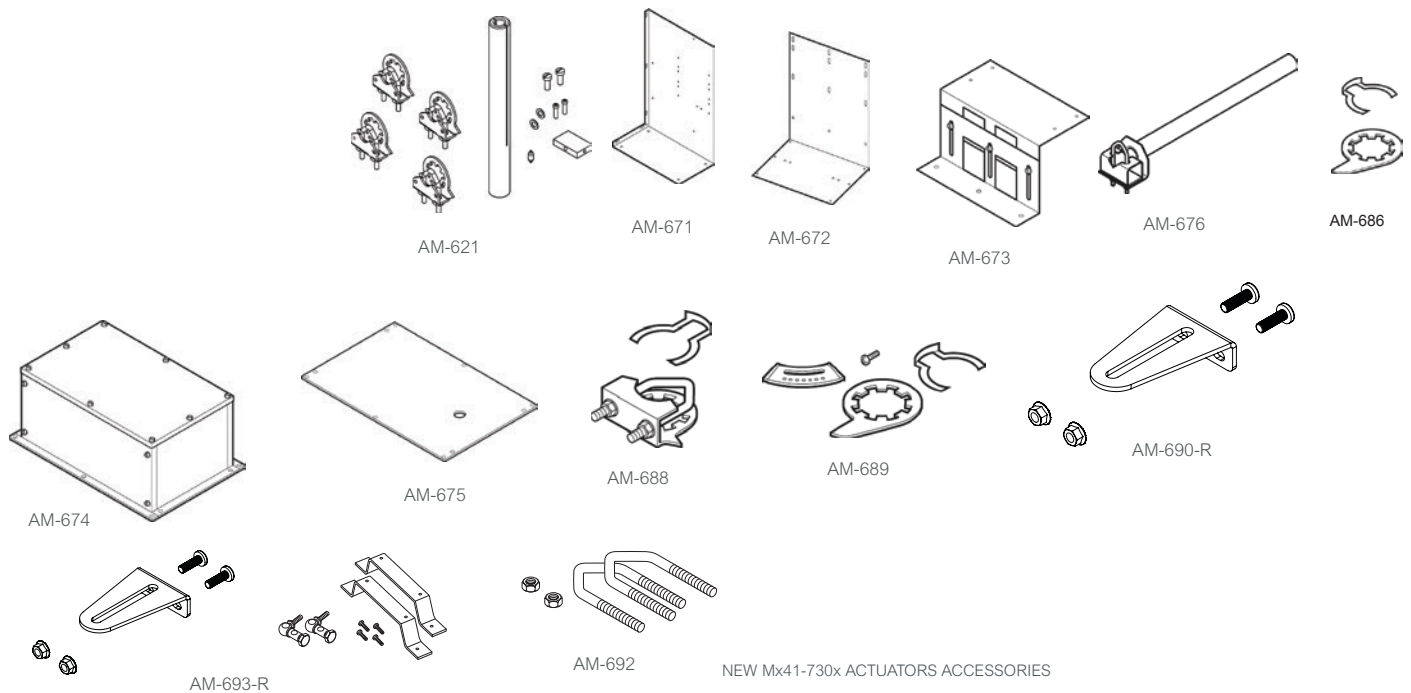
g - Minimum voltage at high temperatures: 24 Vac, +20%, -10% at 90...130 °F ambient.

h - Minimum voltage at high temperatures: 24 Vac, +20%, -5% (MF models) and 24 Vac, +20%, -10% (MS models) at 85...130 °F ambient.

a - Auxiliary switch ratings are as follows:

	Auxiliary Switch Ratings	
	Mx41-6043, Mx41-6083	Mx41-6153
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)								Installation Instruction			
		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
AM-621	Round Shaft Extension						X		X		X	X					X	X	X	X	-
AM-671 ^{abcd}	Mounting Bracket	X	X	X		X	X	X	X												F-25096
AM-672 ^{abcd}		X	X	X	X	X	X	X	X												
AM-673 ^c		X	X	X	X	X	X	X	X												
AM-674	Weather Shield & Base	X	X	X	X	X	X	X	X	X	X								X	X	F-25097
AM-675		X	X	X	X	X	X	X													
AM-676	Shaft Extension	X	X	X	X	X	X	X	X	X	X								X	X	F-25098
AM-686	Position Indicator				X	X	X	X	X												
AM-687 ^e	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 ⁱ	Crank Arm Kit				X	X	X	X													
AM-691						X	X	X	X												
AM-692 ^f	V-bolt				X	X	X	X													
AM-693-R ^{gh}	Crank Arm Kit				X	X	X	X													

a - AM-693 crank arm kit required.

b - Cannot be used with Mx41-634x or Mx40-717x series actuators.

c - Drill appropriate mounting holes where needed.

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

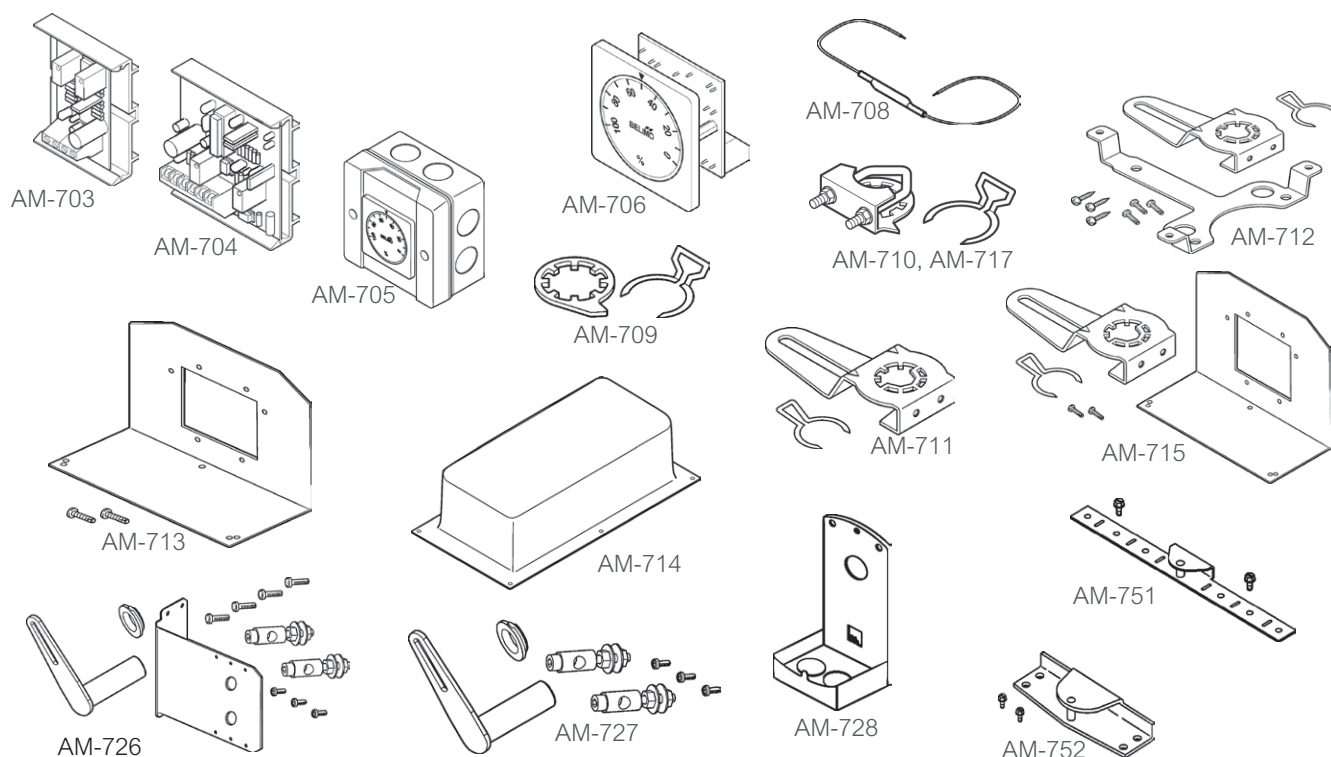
e - For shafts to 1.05" diameter or 5/8" square.

f - For shafts to 3/4" and 1.05" diameter (with AM-690 and AM-691, respectively).

g - Use the self-tapping screws and flat washers provided in kit to mount actuator.

h - 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.

i - Used in conjunction with the AM-687 or AM-688 universal clamps for crankarm functionality in non-direct mounting applications.

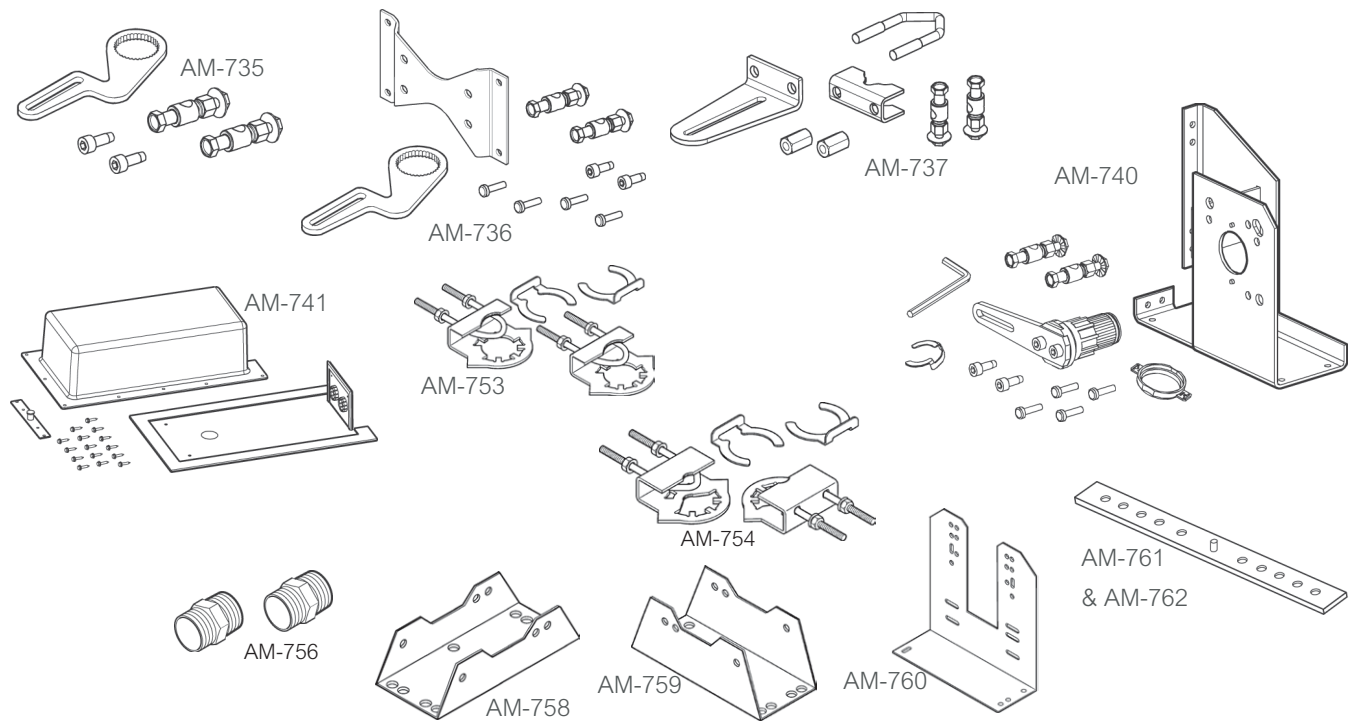


Actuator Accessories Table

Part Numbers	Description	Spring Return Actuators (Series [x] or individuals)										Non-Spring Return Actuators (Series [x] or individuals)							Installation Instruction 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-703	Span Adjustment			X			X			X		X				X		X		X	F-26895	
AM-704	Modulation Interface			X			X			X		X				X		X		X		
AM-705	Positioner			X			X			X		X		X		X		X		X		
AM-706					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																	F-26896	
AM-710 ^a	V-clamp	X		X																		
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	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					F-26802	
AM-727														X	X	X	X					
AM-728 ^b	Conduit Adaptor												X	X	X	X						
AM-751	Anti-rotation Bracket									X	X								X	X	F-26898	
AM-752										X	X								X	X		

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

b - Cannot be used when creating a linked valve/actuator assembly.



Actuator Accessories Table

Part Numbers	Description	Spring Return Actuators										Non-Spring Return Actuators							Installation Instruction Document		
		(Series [x] or individuals)										(Series [x] or individuals)									
		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-735	Crank Arm Kit																X	X			F-27246
AM-736	Crank Arm Kit with Bracket																X	X			F-27247
AM-737	Universal Crank Arm ^a																X	X			F-27248
AM-740	Replacement Kit																X	X			F-27249
AM-741	Weather Shield												X	X	X	X	X	X			F-27250
AM-753 ^b	Mounting Clamp									X	X								X	X	F-26898
AM-754 ^c										X	X								X	X	
AM-756	Metric Conduit Adaptor	X	X	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								X	X	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	—

a - For Honeywell Floor Mount Mod Motor.

b - For shafts 3/4" round and 5/8" square.

c - For shafts 3/8"...1/2" round and square.

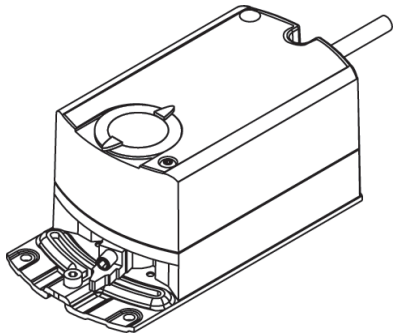
d - Only used on Mx41-707x-xxx, Mx41-715x-xxx.

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...10 Vdc
- 5-year warranty



Actuator Specifications

Inputs	
Control Signal	
MF41-6043	Floating three-position control, 24 Vac.
MS41-6043	Proportional, 0...10 Vdc; input resistance 100 kW.
Power Requirements (see table)	All 24 Vac circuits are Class 2.
Connections	3 ft. (0.9 m) long, 18 AWG leads, plenum-rated.
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
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 or 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
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
Enclosure Rating	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

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

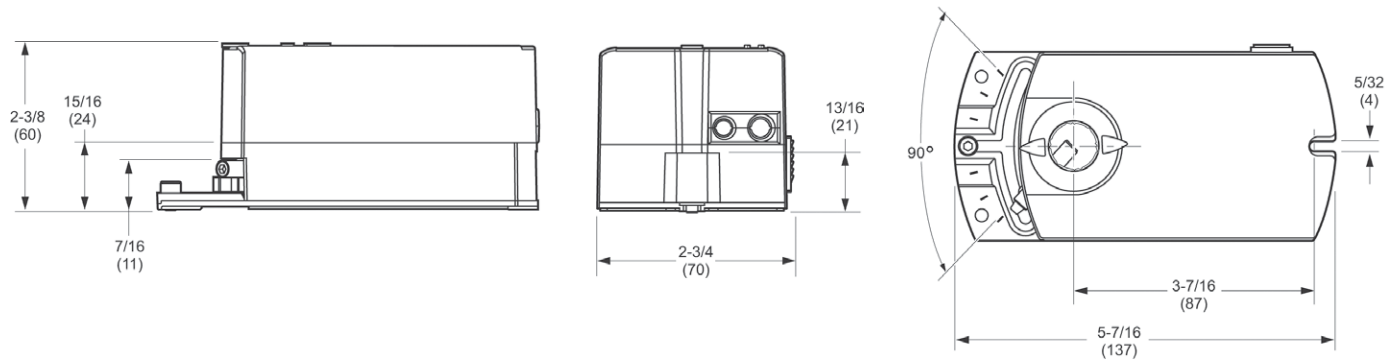


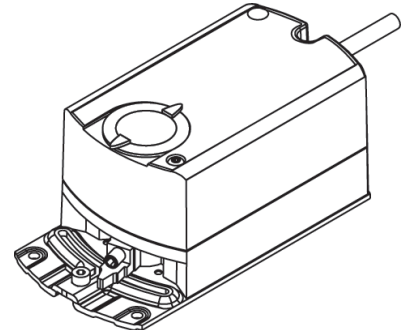
Figure-1 MF41-6043 and MS41-6043 Mounting Dimensions (mm)

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...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...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 (see table)	All 24 Vac circuits are Class 2
Connections	3 ft. (0.9 m) long, 18 AWG leads, plenum-rated.
Motor Type	
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)
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
Enclosure Rating	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

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

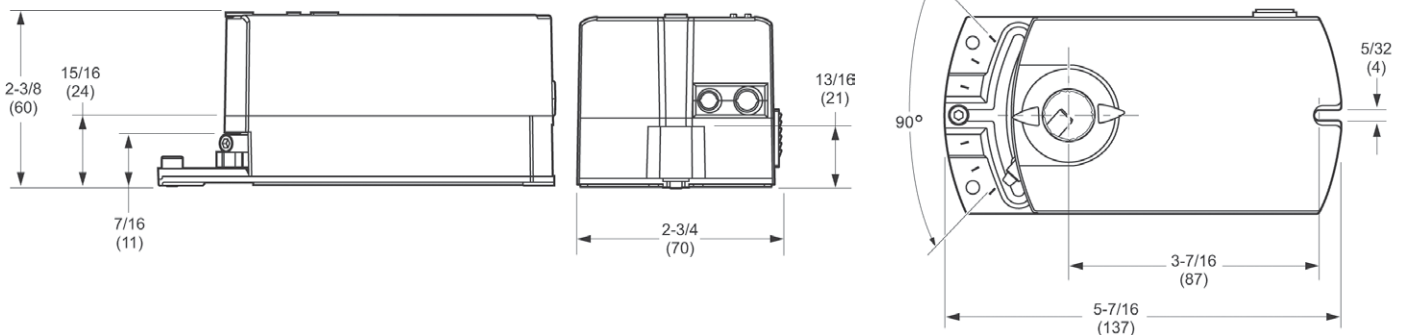


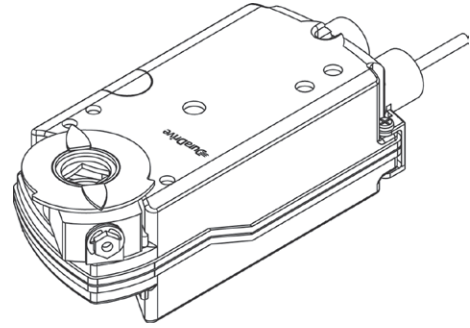
Figure 2. MF41-6083 and MS41-6083 Mounting Dimensions (mm)

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	Three position
MF41-6153	Proportional, 0...10 Vdc, input resistance 100 kW
MS41-6153	
Power Requirements (see table)	All 24 Vac circuits are Class 2
Connections	3 ft. (91 cm) long plenum-rated cables, 18 AWG color coded leads
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)
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...20.5 mm) diameter round 1/4"...1/2" (6.4...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)
Environmental	
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

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

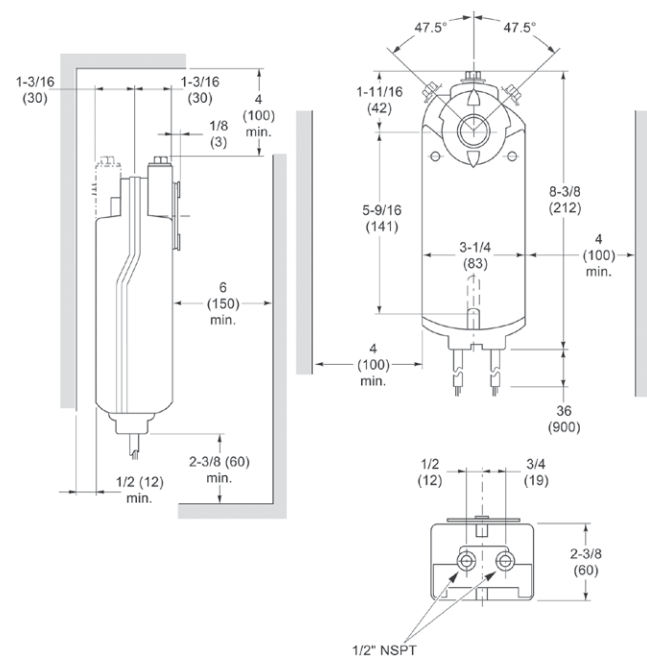


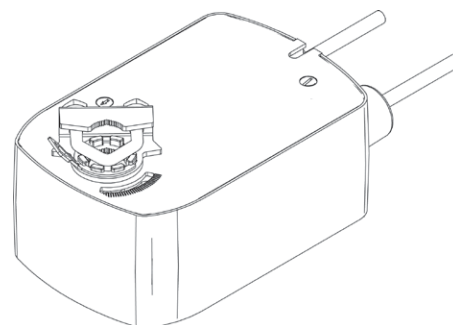
Figure3. MF41-6153 and MS41-6153 Mounting Dimensions (mm)

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 (see table)	All 24 Vac circuits are Class 2
	All circuits 30 Vac and above are Class 1
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.
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.	
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
Enclosure Rating	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

Part Numbers	Voltage 50/60 Hz	Running (Hz)					Holding (Hz)	
		50		60		DC Amps	50	60
		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

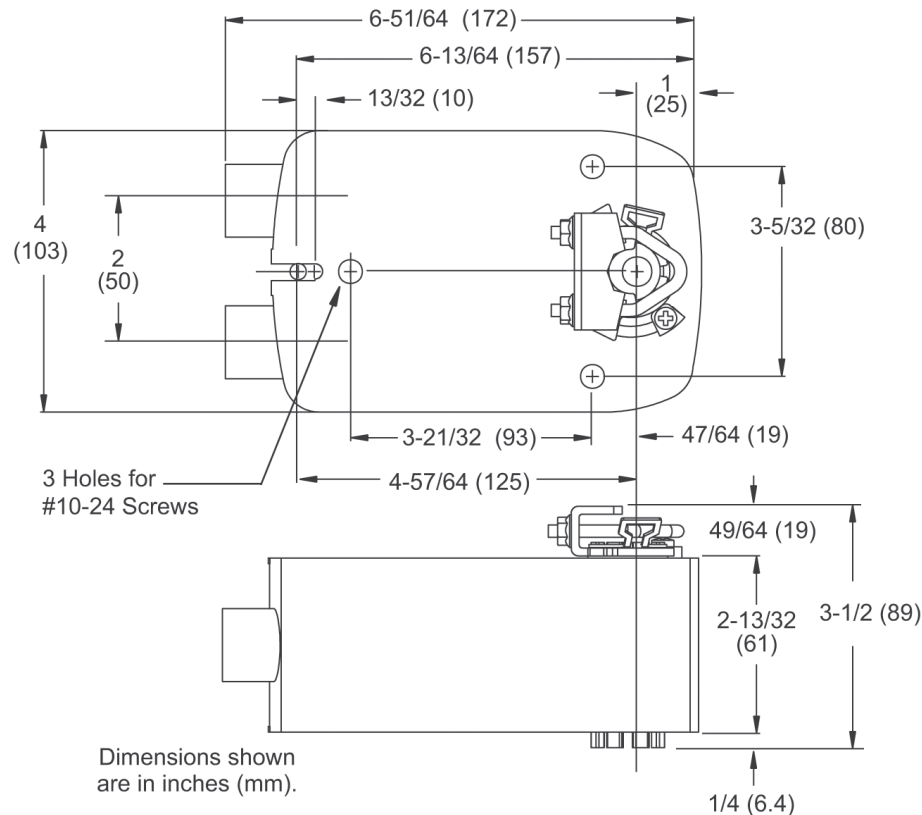


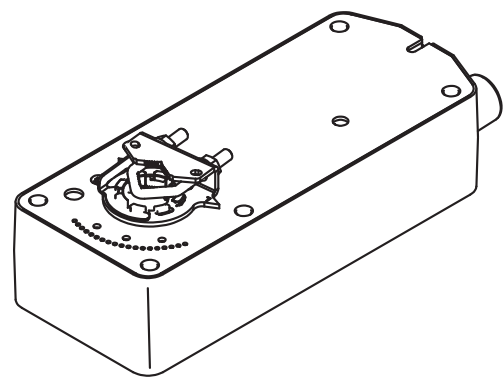
Figure 4. Mx40-704x Series Mounting Dimensions (mm)

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 W resistor
Power Requirements (see table).	All 24 Vac circuits are Class 2. All circuits 30 Vac and above are Class 1
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.	
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
Environmental	
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

Enclosure Rating	NEMA 1 NEMA 2 (IEC IP54) with conduit connector in the down position
Agency Listings	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

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

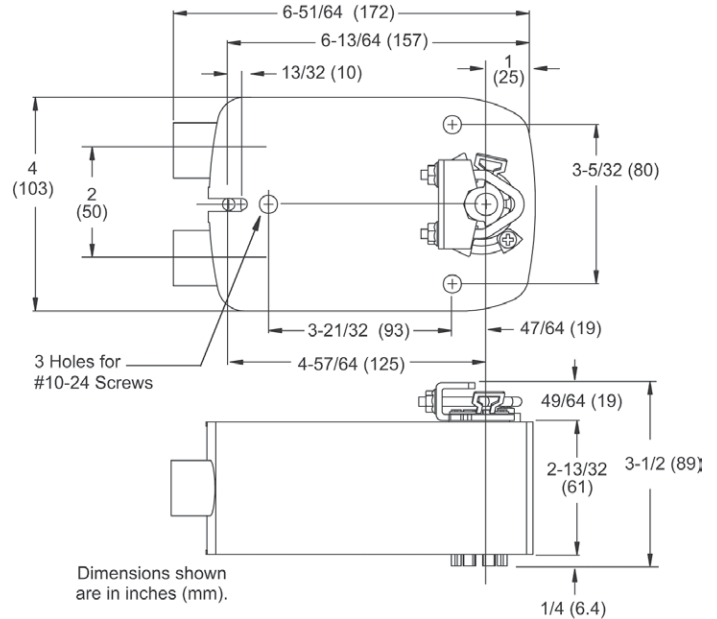


Figure 5. Mx41-707x Series Mounting Dimensions (mm)

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
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Connections	3 ft. (91 cm) long, appliance cable, 1/2 in. conduit connectors For M20 Metric conduit, use AM-756 adaptor
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Motor Type	Brushless DC
Outputs	MA41-715x, MF41-7153, MS41-7153

Electrical

Control Mode

Switch provided for selection of direct acting or reverse acting control mode on proportional models

Timing	Approximate timing is 190 seconds
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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.

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
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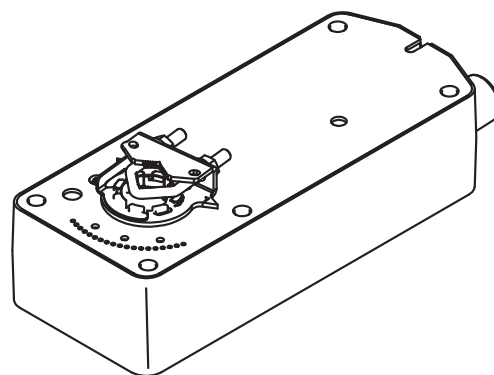
Mechanical

Output Torque Rating	133 lb-in(15 N-m) minimum, 350 lb-in. (40 N-m) maximum
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Stroke	Rotation is limited to 95° ± 5° maximum, adjustable from 30...95° with AM-689 rotation limiter
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Position Indicator	Pointer and (-5...90°) scale are provided for position indication (-5° is the normal, or spring-return, position)
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Direction of Rotation	CW or CCW rotation is available through reversible mounting
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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

Environmental	
Temperature Limits	-40...160 °F (-40...71 °C) ambient
Shipping and storage	-22...140 °F (-30...60 °C)
Operating	5...95% RH, non-condensing
Humidity	
Enclosure Rating	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.

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

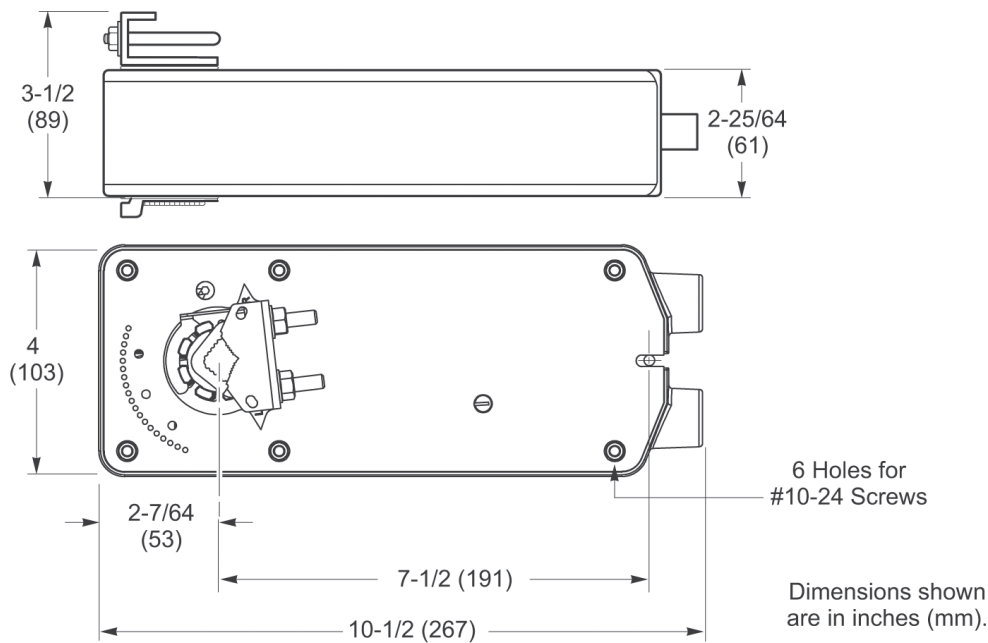


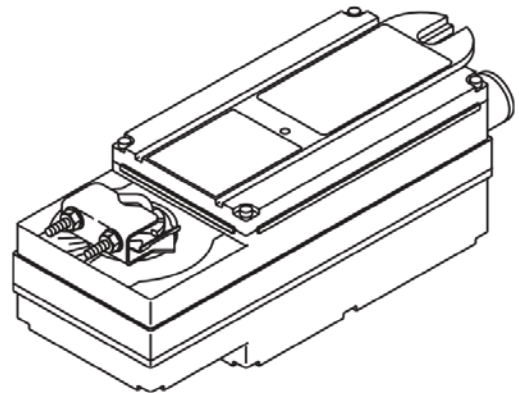
Figure 6. Mx41-715x Series Mounting Dimensions (mm)

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	Two wire, SPST or Triacs SPDT floating control output, Triacs (500 mA rated), or 2 SPST contacts proportional, 2...10 Vdc or 4...20 mA dc with the addition of a 500 ohm resistor (not included).
MA40-717x	
MF40-7173	
MS40-717x	
Power Requirements (see table)	All 24 Vac and 22...30 Vdc circuits are Class 2. All circuits 30 Vac and above are Class 1
Impedance	2...10 Vdc, 121KW. 4...20 mA dc, 500W (user supplied) (MS40-717x models only)
Connections	
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.	
Motor Type	Brushless DC
Outputs	Electronically limited to 92° ±1° (MS) MF-MA Mechanically limited To 101° ±1° Approximate timing is 147 sec. (MS); 162 sec. for MF and MA models
Electrical	
Stroke	
Timing	
Mechanical	150 lb-in. (17 N-m) minimum, 545 lb-in. (61.8 N-m) maximum
Output Torque Rating	
Position Indicator	
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
Environmental	
Temperature Limits	-40...160 °F (-40...71 °C) ambient -25...140 °F (-32...60 °C)
Shipping and storage	
Operating	
Humidity	5...95% RH, non-condensing
Locations	NEMA 1 (IEC IP10)
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

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

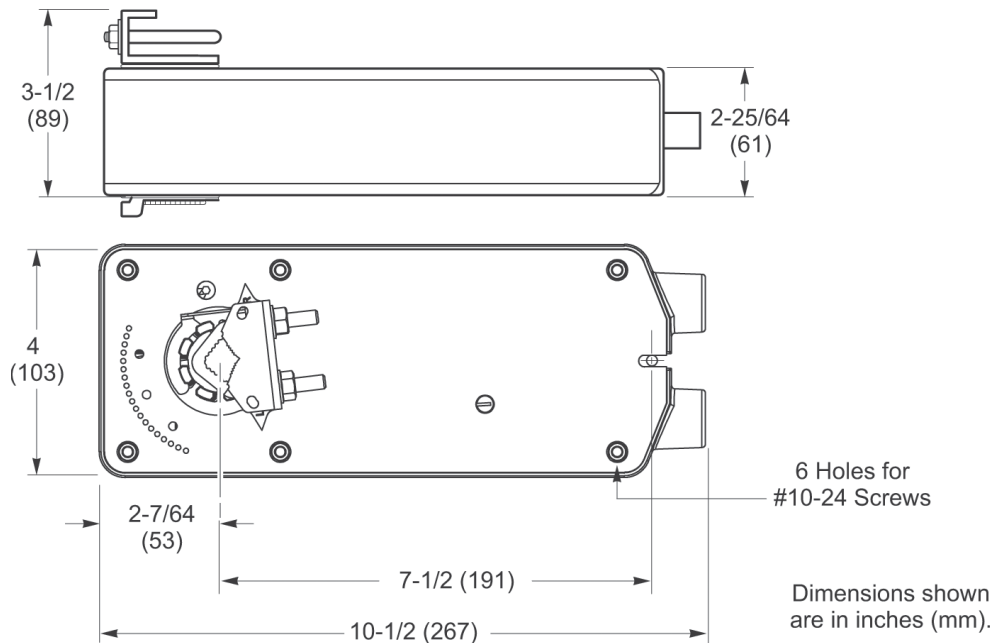


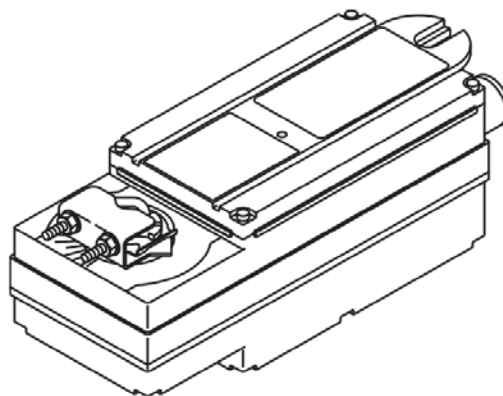
Figure 7. Mx40-717x Series Mounting Dimensions (mm)

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 (see table)

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

All circuits 30 Vac and above are Class 1.

Connections

Class 1

Class 2 Power and Control 24 inch (61 cm) long appliance cables, 1/2 in. conduit connector.

For M20 Metric conduit, use AM-756 adaptor

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

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

Environmental

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

Enclosure Ratings

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.

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

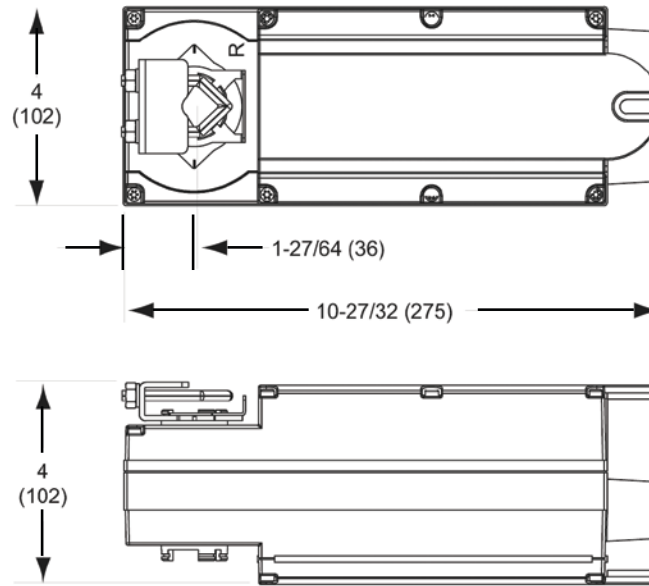


Figure 8. MX41-634X Series Mounting Dimensions

Damper Actuator Cross Reference

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	2	F	P
—	MA40-7041	230 Vac 35 lb-in. (4 N-m) (2-position)	X		
	MA40-7041-501	230 Vac 35 lb-in. (4 N-m) w/aux switch (2-position)	X		
	MA41-7071	230 Vac 60 lb-in. (7 N-m) (2-position) w/manual override	X		
	MA41-7071-502	230 Vac 60 lb-in. (7 N-m) w/aux switch (2-position) w/manual override	X		
	MA40-7170	120 Vac 150 lb-in. (17 N-m) (2-position)	X		
	MA40-7171	240 Vac 150 lb-in. (17 N-m) (2-position)	X		
	MA40-7173	24 Vac or 22...30 Vdc 150 lb-in. (17 N-m) (2-position)	X		
	MF41-7073	24 Vac or 22...30 Vdc 60 lb-in. (7 N-m) (floating) w/manual override		X	
	MF41-7073-502	24 Vac or 22...30 Vdc 60 lb-in. (7 N-m) w/aux switch (floating) w/manual override		X	
	MF41-7153	24 Vac or 22...30 Vdc 133 lb-in. (15 N-m) (floating) w/manual override		X	
	MF41-7153-502	24 Vac or 22...30 Vdc 133 lb-in. (15 N-m) w/aux switch (floating) w/manual override		X	
	MF40-7173	24 Vac or 22...30 Vdc 150 lb-in. (17 N-m) (floating)		X	
	MS41-7073-502	24 Vac or 22...30 Vdc 60 lb-in. (7 N-m) w/aux switch (proportional) w/manual override			X
	MS41-7153-502	24 Vac or 22...30 Vdc 133 lb-in. (15 N-m) w/aux switch (proportional) w/manual override			X
	MS40-7170	120 Vac 150 lb-in. (17 N-m) (proportional)			X
	MS40-7171	240 Vac 150 lb-in. (17 N-m) (proportional)			X
	MS40-7173	24 Vac or 22...30 Vdc 150 lb-in. (17 N-m) (proportional)			X
	MS41-6340	120 Vac 300 lb-in. (34 N-m) NSR (proportional)			X
	MS41-6341	240 Vac 300 lb-in. (34 N-m) NSR (proportional)			X
MA-7101	MA40-7040	120 Vac 35 lb-in. (4 N-m) (2-position)	X		
MA-7101-500	MA40-7040-501	120 Vac 35 lb-in. (4 N-m) w/aux switch (2-position)	X		
MA-7103	MA40-7043	24 Vac or 22...30 Vdc 35 lb-in. (4 N-m) (2-position)	X		
MA-7103-500	MA40-7043-501	24 Vac or 22...30 Vdc 35 lb-in. (4 N-m) w/aux switch (2-position)	X		
MA-7201	MA41-7070	120 Vac 60 lb-in. (7 N-m) (2-position) w/manual override	X		
MA-7201-500	MA41-7070-502	120 Vac 60 lb-in. (7 N-m) w/aux switch (2-position) w/manual override	X		
MA-7203	MA41-7073	24 Vac or 22...30 Vdc 60 lb-in. (7 N-m) (2-position) w/manual override	X		
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	X		

SEC P/N	Current P/N	Description	2	F	P
MA-7501	MA41-7150	120 Vac 133 lb-in. (15 N-m) (2-position) w/manual override	X		
MA-7501-502	MA41-7150-502	120 Vac 133 lb-in. (15 N-m) w/aux switch (2-position) w/manual override	X		
MA-7503	MA41-7153	24 Vac or 22...30 Vdc 133 lb-in. (15 N-m) (2-position) w/manual override	X		
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	X		
MA-7505	MA41-7151	230 Vac 133 lb-in. (15 N-m) (2-position) w/manual override	X		
MA-7505-502	MA41-7151-502	230 Vac 133 lb-in. (15 N-m) w/aux switch (2-position) w/manual override	X		
MF-6103	MF41-6043	24 Vac 35 lb-in. (4 N-m) NSR (floating)		X	
	MF41-6043-502	24 Vac 35 lb-in. (4 N-m) NSR (floating), w/two aux switches		X	
	MF41-6043-510	24 Vac 35 lb-in. (4 N-m) NSR (floating), feedback potentiometer		X	
MF-6203	MF41-6083	24 Vac 70 lb-in. (8 N-m) spdt NSR (floating)		X	
	MF41-6083-502	24 Vac 70 lb-in. (8 N-m) NSR (floating), w/two aux switches		X	
	MF41-6083-510	24 Vac 70 lb-in. (8 N-m) NSR (floating), feedback potentiometer		X	
MF-6633	MF41-6153	24 Vac 133 lb-in. (15 N-m) spdt NSR (floating)		X	
MF-6733	MF41-6343	24 Vac or 33-30 Vdc 300 lb-in. (34 N-m) spdt NSR (floating)		X	
MF-7103	MF40-7043	24 Vac or 22...30 Vdc 35 lb-in. (4 N-m) (floating)		X	
MF-7103-500	MF40-7043-501	24 Vac or 22...30 Vdc 35 lb-in. (4 N-m) w/aux switch (floating)		X	
MS-6103	MS41-6043	24 Vac 35 lb-in. (4 N-m) NSR (proportional)			X
	MS41-6043-502	24 Vac 35 lb-in. (4 N-m) NSR (proportional), w/two aux switches			X
	MS41-6043-520	24 Vac 35 lb-in. (4 N-m) NSR (proportional), adjustable start point (offset) and span			X
	MS41-6043-522	24 Vac 35 lb-in. (4 N-m) NSR (proportional), w/two aux switches, adjustable start point (offset) and span			X
MS-6233	MS41-6083	24 Vac 70 lb-in. (8 N-m) 2-10 Vdc/4-20 mA dc NSR (proportional)			X
	MS41-6083-502	24 Vac 70 lb-in. (8 N-m) NSR (proportional), w/two aux switches			X
	MS41-6083-520	24 Vac 70 lb-in. (8 N-m) NSR (proportional), adjustable start point (offset) and span			X
	MS41-6083-522	24 Vac 70 lb-in. (8 N-m) NSR (proportional), w/two aux switches, adjustable start point (offset) and span			X
MS-6633	MS41-6153	24 Vac 133 lb-in. (15 N-m) 2-10 Vdc/4-20 mA dc NSR (proportional)			X
	MS41-6153-502	24 Vac 133 lb-in. (15 N-m) NSR (proportional), w/two aux switches			X
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)			X
MS-7103	MS40-7043	24 Vac or 22...30 Vdc 35 lb-in. (4 N-m) (proportional)			X
MS-7103-500	MS40-7043-501	24 Vac or 22...30 Vdc 35 lb-in. (4 N-m) w/aux switch (proportional)			X
MS-7203	MS41-7073	24 Vac or 22...30 Vdc 60 lb-in. (7 N-m) (proportional) w/manual override			X
MS-7433	MS41-7153	24 Vac or 22...30 Vdc 133 lb-in. (15 N-m) (proportional) w/manual override			X

TAC Old to Current Actuators

TAC Old	Current	Description	2	F	P
MF40-6043	MF41-6043	24 Vac 35 lb-in. (4 N-m) NSR (floating)		X	
MF40-6043-510	MF41-6043-510	24 Vac 35 lb-in. (4 N-m) NSR (floating), feedback potentiometer		X	
MF40-6043-520	MF41-6043-520	24 Vac 35 lb-in. (4 N-m) NSR (floating), adjustable start point (offset) and span		X	
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		X	
MF40-6083	MF41-6083	24 Vac 70 lb-in. (8 N-m) NSR (floating)		X	
MF40-6153	MF41-6153	24 Vac 133 lb-in. (15 N-m) NSR (floating)		X	
MF40-6343	MF41-6343	24 Vac or 22...30 Vdc 300 lb-in. (34 N-m) NSR (floating)		X	
MS40-6043	MS41-6043	24 Vac 35 lb-in. (4 N-m) NSR (proportional)			X
MS40-6043-510	MS41-6043-510	24 Vac 35 lb-in. (4 N-m) NSR (proportional), feedback potentiometer			X
MS40-6043-520	MS41-6043-520	24 Vac 35 lb-in. (4 N-m) NSR (proportional), adjustable start point (offset) and span			X
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			X
MS40-6083	MS41-6083	24 Vac 70 lb-in. (8 N-m) NSR (proportional)			X
MS40-6153	MS41-6153	24 Vac 133 lb-in. (15 N-m) NSR (proportional)			X
MS40-6343	MS41-6343	24 Vac or 22...30 Vdc 300 lb-in. (34 N-m) NSR (proportional)			X

Belimo to Current Actuators

Belimo P/N	Current P/N	Description	2	F	P
—	MA40-7170	120 Vac 150 lb-in. (17 N-m) (2-position)	X		
—	MA40-7171	240 Vac 150 lb-in. (17 N-m) (2-position)	X		
—	MA40-7173	24 Vac or 22...30 Vdc 150 lb-in. (17 N-m) (2-position)	X		
—	MF40-7073	24 Vac or 22...30 Vdc 60 lb-in. (7 N-m) (floating)		X	
—	MF41-7073	24 Vac or 22...30 Vdc 60 lb-in. (7 N-m) (floating) w/manual override		X	
—	MF40-7073-502	24 Vac or 22...30 Vdc 60 lb-in. (7 N-m) w/aux switch (floating)		X	
—	MF41-7073-502	24 Vac or 22...30 Vdc 60 lb-in. (7 N-m) w/aux switch (floating) w/manual override		X	
—	MF40-7173	24 Vac or 22...30 Vdc 150 lb-in. (17 N-m) (floating)		X	

Belimo P/N	Current P/N	Description	2	F	P
—	MS41-7073-502	24 Vac or 22...30 Vdc 60 lb-in. (7 N-m) w/aux switch (proportional) w/manual override			X
—	MS40-7170	120 Vac 150 lb-in. (17 N-m) (proportional)			X
—	MS40-7171	240 Vac 150 lb-in. (17 N-m) (proportional)			X
—	MS40-7173	24 Vac or 22...30 Vdc 150 lb-in. (17 N-m) (proportional)			X
—	MS41-6340	120 Vac 300 lb-in. (34 N-m) NSR (proportional)			X
—	MS41-6341	240 Vac 300 lb-in. (34 N-m) NSR (proportional)			X
AF120	MA41-7150	120 Vac 133 lb-in. (15 N-m) (2-position) w/manual override	X		
AF120-S	MA41-7150-502	120 Vac 133 lb-in. (15 N-m) w/aux switch (2-position) w/manual override	X		
AF230	MA41-7151	230 Vac 133 lb-in. (15 N-m) (2-position) w/manual override	X		
AF230-S	MA41-7151-502	230 Vac 133 lb-in. (15 N-m) w/aux switch (2-position) w/manual override	X		
AF24	MA41-7153	24 Vac or 22...30 Vdc 133 lb-in. (15 N-m) (2-position) w/manual override	X		
AF24-3	MF41-7153	24 Vac or 22...30 Vdc 133 lb-in. (15 N-m) (floating) w/manual override		X	
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	X		
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		X	
AF24-SR	MS41-7153	24 Vac or 22...30 Vdc 133 lb-in. (15 N-m) (proportional) w/manual override			X
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			X
AFR24-SR	—	24 Vdc or 22...30 Vdc, 133 lb-in. (15 N-m) (proportional)			X
AFR24-3		24 Vdc or 22...30 Vdc, 133 lb-in. (15 N-m) (floating)		X	
AFR24-3-S		24 Vdc or 22...30 Vdc, 133 lb-in. (15 N-m) (floating)		X	
AFR120		120 Vac, 133 lb-in. (15 N-m) (2-position)	X		
AFR120-S		120 Vac, 133 lb-in. (15 N-m) (2-position), w/aux switch	X		
AFR24		24 Vac or 22...30 Vdc, 133 lb-in. (15 N-m) (2-position)	X		
AFR24-S		24 Vac or 22...30 Vdc, 133 lb-in. (15 N-m) (2-position), w/aux switch	X		
GM24	MF41-6343	24 Vac or 22...30 Vdc 300 lb-in. (34 N-m) spdt NSR (floating)		X	
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)			X
LF120	MA40-7040	120 Vac 35 lb-in. (4 N-m) (2-position)	X		
LF120-S	MA40-7040-501	120 Vac 35 lb-in. (4 N-m) w/aux switch (2-position)	X		
LF230	MA40-7041	230 Vac 35 lb-in. (4 N-m) (2-position)	X		
LF230-S	MA40-7041-501	230 Vac 35 lb-in. (4 N-m) w/aux switch (2-position)	X		
LF24	MA40-7043	24 Vac or 22...30 Vdc 35 lb-in. (4 N-m) (2-position)	X		
LF24-3	MF40-7043	24 Vac or 22...30 Vdc 35 lb-in. (4 N-m) (floating)		X	
LF24-S	MA40-7043-501	24 Vac or 22...30 Vdc 35 lb-in. (4 N-m) w/aux switch (2-position)	X		
LF24-3-S	MF40-7043-501	24 Vac or 22...30 Vdc 35 lb-in. (4 N-m) w/aux switch (floating)		X	
LF24-SR	MS40-7043	24 Vac or 22...30 Vdc 35 lb-in. (4 N-m) (proportional)			X
LF24-SR-S	MS40-7043-501	24 Vac or 22...30 Vdc 35 lb-in. (4 N-m) w/aux switch (proportional)			X
LM24	MF41-6043	24 Vac 35 lb-in. (4 N-m) NSR (floating)		X	
LM24-10P	MF41-6043-510	24 Vac 35 lb-in. (4 N-m) NSR (floating), feedback potentiometer		X	
LM24-S	MF41-6043-502	24 Vac 35 lb-in. (4 N-m) NSR (floating), w/two aux switches		X	
LM24-SR	MS41-6043	24 Vac 35 lb-in. (4 N-m) NSR (proportional)			X
—	MS41-6043-520	24 Vac 35 lb-in. (4 N-m) NSR (proportional), adjustable start point (offset) and span			X
	MS41-6043-522	24 Vac 35 lb-in. (4 N-m) NSR (proportional), w/two aux switches, adjustable start point (offset) and span			X
	MS41-6043-502	24 Vac 35 lb-in. (4 N-m) NSR (proportional), w/two aux switches			X
NF120	—	120 Vac 60 lb-in. (7 N-m) (2-position)	X		
NF120-S		120 Vac 60 lb-in. (7 N-m) w/aux switch (2-position)	X		
NF230		230 Vac 60 lb-in. (7 N-m) (2-position)	X		
NF230-S		230 Vac 60 lb-in. (7 N-m) w/aux switch (2-position)	X		
NF24		24 Vac or 22...30 Vdc 60 lb-in. (7 N-m) (2-position)	X		
NF24-S		24 Vac or 22...30 Vdc 60 lb-in. (7 N-m) w/aux switch (2-position)	X		
NF24-SR		24 Vac or 22...30 Vdc 60 lb-in. (7 N-m) (proportional)			X
NM24	MF41-6083	24 Vac 70 lb-in. (8 N-m) spdt NSR (floating)		X	
	MF41-6083-502	24 Vac 70 lb-in. (8 N-m) NSR (floating), w/two aux switches		X	
	MF41-6083-510	24 Vac 70 lb-in. (8 N-m) NSR (floating), feedback potentiometer		X	
NM24-SR	MS41-6083	24 Vac 70 lb-in. (8 N-m) 2...10 Vdc/4...20 mA dc NSR (proportional)			X
	MS41-6083-502	24 Vac 70 lb-in. (8 N-m) NSR (proportional), w/two aux switches			X
	MS41-6083-520	24 Vac 70 lb-in. (8 N-m) NSR (proportional), adjustable start point (offset) and span			X
	MS41-6083-522	24 Vac 70 lb-in. (8 N-m) NSR (proportional), w/two aux switches, adjustable start point (offset) and span			X
SM24	MF41-6153	24 Vac 133 lb-in. (15 N-m) spdt NSR (floating)		X	
SM24-SR	MS41-6153	24 Vac 133 lb-in. (15 N-m) 2...10 Vdc/4...20 mA dc NSR (proportional)			X
	MS41-6153-502	24 Vac 133 lb-in. (15 N-m) NSR (proportional), w/two aux switches			X