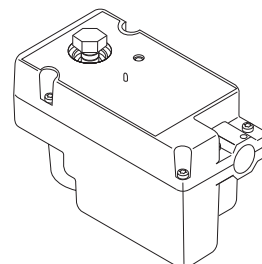


Floating Valve Actuator

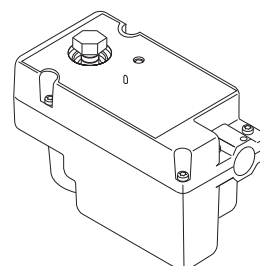
The MF-22XX3 and MF-23XX3 series floating valve actuators are non-spring return actuators used with floating DDC controllers and standard 1/2" to 2" two-way and three-way valve bodies for control of heating and cooling coils. Typical applications include VAV terminals with reheat coils, fans coil units, and unit ventilators. Certain models are thermally isolated for use with chilled fluids.

Features:

- Floating actuator controlled by DDC controller with contact or Triac output or SPDT center off controller (drive open-hold-drive closed).
- MF-22XX3 has 45 pounds (200 newtons) of output force with automatic load limit for self-adjusting travel and long motor life.
- MF-23XX3 has 80 pounds (355 newtons) of output force at low line voltage.
- Synchronous motor for consistent timing.
- Manual override with automatic release.
- Optional feedback potentiometer available for precision control or position indication.
- Integral linkage for all standard 1/2" to 2" Invensys two-way stem-up open and three-way valve bodies for a wide variety of applications.
- Compact size for application flexibility.
- Rugged construction with die cast housing.



MF-22203



MF-223X3



Model Chart

Model No.	Application	Output Force	Actuator Power Input			Feedback 15K 3/4 Pot.	Typical Timing in Sec. @ 75°F for 1/2" Stroke		Max. Stroke in in. (mm)	
			Voltage (+20%, -15%)	Hz	VA		60 Hz	50Hz		
MF-22203	Hot Water ^a Steam	45 lb (200 newtons)	24 (Class 2 Power Supply)	50	60	1.5	No	126. ±30 sec.	151 ±30 sec.	9/16 (14.3)
MF-22303	Chilled/Hot Water Steam						No			
MF-22323							Yes			
MF-23203 ^b	Hot Water ^a Steam	80 lb. (355 newtons)	24 (Class 2 Power Supply)	50	60	1.5	No	126. ±30 sec.	151 ±30 sec.	9/16 (14.3)
MF-23303 ^b	Chilled/Hot Water Steam						No			
MF-23323 ^b							Yes			

^a Do not use in chilled water applications.

^b Requires DDC control with timeout feature

MF-2XXX3 Series

Specifications

Inputs

Control signal	SPDT Center Off (Floating) Control Contacts or Two SPST Control Contacts, minimum rating of 250 mA at 24 Vac inductive load. Two Triacs: DDC output must be able to switch 250 mA (24 VA) inductive load (150 Vac minimum).
Power	Refer to Model Chart.
Connections	4 foot (1.2 M) color coded 18 AWG, plenum cable rated for UL.

Outputs

Position feedback signal	15k ohm nominal potentiometer. Refer to Model Chart. Connections: 4 foot (1.2 m) color coded 18 AWG, plenum cable rated for UL.
Mechanical	Force: See Model Chart. Stroke: Up to 9/16" (14.3 mm) maximum, self-adjusting. Timing: Refer to Model Chart.
Manual Operator	Allows actuator to be manually set at any position upon loss of power. Releases automatically when power is restored.

Environment

Ambient temperature limits	Shipping and storage: -40 to 160°F (-40 to 71°C). Operating: See "Restrictions on Ambient Temperature for Valve Actuators" for maximum temperatures. Minimum 40°F (4°C).
Fluid Temperature Limits	Refer to "Restrictions on Ambient Temperature for Valve Actuators".
Humidity	5 to 95% RH, non-condensing. Refer to "Restrictions on Ambient Temperature for Valve Actuators" for dew point temperature.
Locations	NEMA Type 1.
Enclosure Protection Class	Designed to meet IP31 Class, according to EN 60529, BS EN 60529.

Agency Listings

UL 873	Underwriters Laboratories (File # E9429 Category Temperature-Indicating and Regulating Equipment).
CUL	Certified for use in Canada by Underwriters Laboratories. Canadian Standard C22.2 No. 24-93.
European Community	EMC Directive (89/336/EEC). Low Voltage Directive (72/23/EEC).

Dimensions	3-5/16 H x 3 W x 5-9/16 D in. (84 x 76 x 141 mm).
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Restrictions on Ambient Temperature for Valve Actuators.

Model No.	Temperature of Media in the Valve Body (Check Rating of the Valve)		Maximum Actuator Ambient Temperature	Dew Point Temperature
	Minimum	Maximum		
MF-2X203	70°F (21°C)	281°F (138°C)	115°F (46°C)	Non-condensing ^a
		220°F (104°C)	140°F (60°C)	
MF-2X303	40°F (4°C)	281°F (138°C)	115°F (46°C)	88°F Dew Point maximum with 40°F fluid (31°C Dew Point maximum with 4°C fluid) ^b
MF-2X323		220°F (104°C)	140°F (60°C)	

^a Do not use MF-2X203 models in chilled water applications.

^b The dew point temperature cannot be more than 48°F (26.7°C) above the fluid temperature.

Accessories

Model No.	Description
AV-641	Valve linkage kit (replacement parts only, order separately, see F-26588).
AV-642	Four-way valve linkage kit for Controlli valve bodies (see F-26261).
AV-644	Valve linkage kit (included with MF-22XX3 actuator) (see F-26264).
FRAC-255	Metric male 20 mm conduit fitting (m20 x 1.5 - 8g) 11 mm nominal thread length.
FRAC-259	MF-20000/MS-20000 Male Conduit Fitting.

Typical Applications

CAUTION: Each actuator must have its own separate controller output or relay.

1 For actuator models manufactured prior to date code 990X (e.g. 9904, 9905, etc.), see Table for wire color and numbers.

2 Two-position 3 wire control is possible by use of a snap acting Form-C controller output.

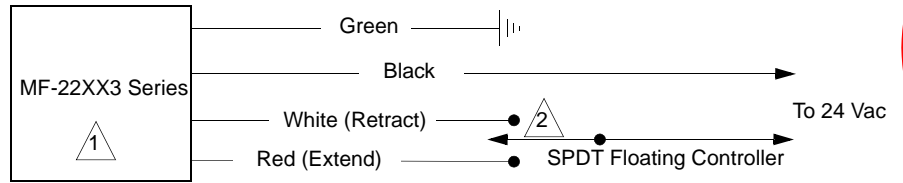


Figure 1 Basic Wiring Diagram with SPDT Floating Control.

CAUTION: Each actuator must have its own separate controller output or relay.

1 For actuator models manufactured prior to date code 990X (e.g. 9904, 9905, etc.), see Table for wire color and numbers.

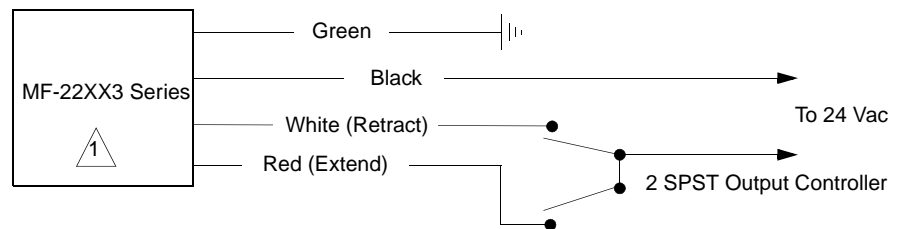


Figure 2 Basic Wiring Diagram with Two SPST Control Contacts.

Power and Control Wiring Color Codes.

	Actuator Lead	Description	Wire Codes	
			Color Only (Current Models)	Colors with Numbers (Older Models ^a)
Actuator	Earth	Earth Ground	Green	Green (—)
	24 ^b	24 Vac	Black	Black (1)
	Extend	Extend	Red	Red ^c (2)
	Retract	Retract	White	White/Green (3)
Potentiometer	Pot. Retract	15K Feedback - Retract	Orange	White/Orange (4)
	Pot. Wiper	15K Feedback - Wiper	Blue	White/Blue (5)
	Pot. Extend	15K Feedback - Extend	Brown	White/Brown (6)

^a Actuator models manufactured prior to date code 991X (e.g. 9910, 9911, etc.) have multi-color, numbered wires.

^b Black 24 Vac terminal can be connected to either side of the 24 Vac power.

^c Actuator Extend wire may be Violet on some models.