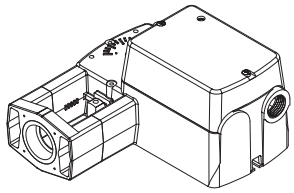
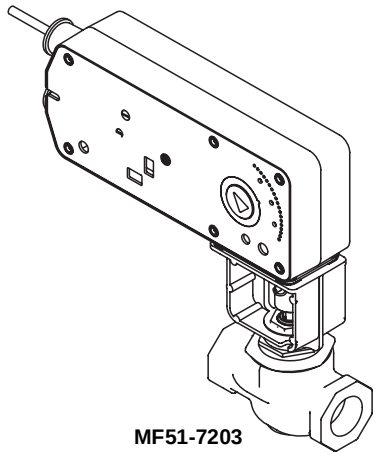
Spring Return DuraDrive® Floating Actuator

DuraDrive Linear Actuators are designed to mount directly onto two-way or three-way globe valves without the use of linkages. They provide linear travel to operate globe valves from 1/2 to 2 in. VB-7xxx valves and discontinued 1/2 to 1-1/4 in. VB-9xxx valves, 2-12/ to 4-inch VB-9xxx valves, and 2-1/2 to 5-in VB-8xxx valves in chilled water, hot water and steam applications up to 366°F (186°C). Linear spring return actuators provide floating control of valves in HVAC systems.



MF51-7103



MF51-7203

Features:

- Floating models controlled by SPDT floating controllers.
- 105 lbf (467 N) with 1/2 in.(13 mm) nominal linear stroke. 220 lbf (979 N) with 5/8-in. (16 mm) or 1-1/16-in. (27m mm) linear stroke.
- 24 Vac, 120 Vac, and 230 Vac models.
- Rugged die-cast or polymer housings rated for up to NEMA 2/IP54 rated for plenum use.
- Polymer housing rated for plenum use.
- Overload protection throughout stroke.
- Automatically sets input span to match valve travel.
- Compact size to allow installation in limited space.
- Manual override to allow positioning of valve and preload.
- Spring return stem up operation.
- Direct mount to valves without separate linkage.

Model Chart

Part No.	Control Action	Actuator Power Input							Linear Stroke Inches	Approximate Stroke Timing in Seconds @ 70°F (21°C)[a]		Output Force Rating lb. (Newton)		Valve Size
		Voltage	Running					Holding						
			50 Hz		60 Hz		DC Amps	50/60 Hz						
			VA	W	VA	W		W		Powered	Spring Return	Min.	Max. Stall	
MF51-7103-000[b]	Floating	24 Vac ±20% 20-30 Vdc	6.9	4.7	6.9	4.7	0.16	2.1	1/2 in. nominal	60	16	105	215	1/2 to 2 in.
MF51-7103-100[c]														
MF51-7203		24 Vac ±20% 22-30 Vdc	9.8	7.7	9.7	7.7	.30	3.3	5/8	<100	<35	220 (979)	495 (2202)	1-1/4 to 2 in.[d]
MF61-7203		24 Vac ±20% 22-30 Vdc							1-1/16	<190	<40			2-1/2 to 4 in. or 5 in.[e]

[a] Timing was measured with the actuator mounted on a VB-7xxx Series valve.

[b] Appliance wire leads.

[c] Plenum wire leads.

[d] Current VB-7xxx Series valves and discontinued VB-9xxx Series valves (1-1/4 in. only).

[e] Current VB-9xxx Series valves (2-1/2 to 4 in.), current VB-8xxx (2-1/2 to 5 in.) Series valves, and discontinued VB-9xxx (1-1/2 to 2 in.) Series valves.

Specifications

Inputs		
	Control signal	See Model Chart for actuator models and control type.
	Power	See Model Chart. All 24 Vac circuits are Class 2. All circuits 30 Vac and above are Class 1. Half wave device.
	Connections	Models with -0xx have 3 ft. (91 cm) appliance wire connections. Models with -1xx have 3 ft. (91 cm) plenum wire connections. Enclosure accepts 1/2 in. (13 mm) conduit connectors. For M20 Metric connector, use AM-756 adaptor.
Outputs		
	Electrical	**MF51-7103 only:** Position Feedback Voltage: The actuators have a 2 to10 Vdc position feedback signal.
	Mechanical	Linear Stroke: **MF51-7xxx:** 1/2 in. (13 mm) nominal. **MF61-7xxx:** 1-1/6 in. (27 mm).
		Approximate Stroke Timing: See Model Chart.
		Manual Override: Allows positioning of valve and preload using manual crank.
Environment		
	Ambient temperature limits	Shipping and Storage: **MF51-7103:** -40 to 160°F (-40 to 71°C). **MF51-720x and MF61-720x:** -40 to 180°F° (-40 to 82°C) Operating: **MF51-7103:** -22 to 140°F (-30 to 60°C). **MF51-720x and MF61-720x:** 0 to 140°F (-18 to 60°C). Temperature Restrictions: For maximum ambient 140°F (60°C) the maximum allowable fluid temperature should not exceed valve rating. See F-27252 Selection Guide for specific ratings.
	Humidity	**MF51-7xxx:** 5 to 95% RH, non-condensing. **MF51-720x and MF61-720x:** 15 to 95% RH, non-condensing.
	Locations	NEMA 1. NEMA 2 (enclosure is air plenum rated), UL Type 2 (IEC IP54) with customer supplied water tight conduit connections.
Dimensions		**MF51-71xx:** 6-5/16 H x 6-49/64 W x 3-1/2 D in. (160 x 170 x 90 mm). **MF51-72xx:** 7 H x 10-5/8 W x 2-9/16 D in. (178 x 270 x 65 mm). **MF61-72xx:** 9-9/16 H x 10-5/8 W x 2-9/16 D in. (243 x 270 x 65 mm).
Agency Listings		
	UL 873	Underwriters Laboratories (File #E9429 Category Temperature-Indicating and Regulating Equipment).
	CUL	UL Listed for use in Canada by Underwriters Laboratories. Canadian Standards C22-2 No. 24-93
	European Community	EMC Directive (89/336/EEC). Low Voltage Directive (72/23/EEC).
	Australia	This product meets requirements to bear the C-Tick Mark according to the terms specified by the Communications Authority under the Radio Communications Act 1992.
General Instructions		Refer to F-27169 and F-27120.

Accessories

Model No.	Description
MF51-71xx	
AM-756	Metric conduit adapter M20 x 1.5 to 1/2 in. NPT.
AM-764	LInkage kit for damper applications.
AM-770	Replacement valve linkage parts kit.
MF51-72xx and MF61-72xx	
AM-731	Mounting kit - Mx51-720x (included with actuator).
AM-732	Mounting kit - Mx61-720x (included with actuator).
AM-733	Retro fit kit - discontinued VB-9xxx 1-1/2 to 2 in. valves after 9404 date code.
AM-734	Retro fit kit - discontinued VB-9xxx -1/2 to 2 in. valves prior to 9404 date code.
AM-756	Metric conduit adapter M20 x 1.5 to 1/2 in. NPT.
AM-763	1/8 in. Hex crank for manual override.

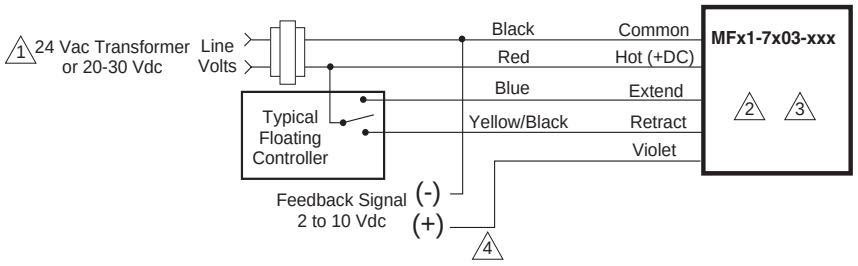
Valve Size Chart.

Valve Body Part Number	P Code	Size inches	Close-Off Pressure PSI[a]			Required Retrofit Kit
			MF51-710x	MF51-720x	MF61-720x	
VB-721X-000-4-P VB-7253-000-4-P VB-7273-000-4-P	1, 2,3 or 4	1/2	250			
	5 or 6	3/4	200			
	7 or 8	1	150			
	9	1-1/4	90	150		
	10	1-1/2	60	100		
	11	2	32	65		
VB-722X-000-4-P VB-7263-000-4-P VB-7283-000-4-P	1,2,3 or 4	1/2	250			
	5 or 6	3/4	200			
	7 or 8	1	90			
	9	1-1/4	60	150		
	10	1-1/2	35	100		
	11	2	20	65		
VB-731X-000-4-P	2 or 4	1/2	250			
	6	3/4	200			
	7 or 8	1	90			
	9	1-1/4	60	150		
	10	1-1/2	35	100		
	11	2	20	65		
VB-732X-000-4-P	4	1/2	250			
	6	3/4	250			
	7 or 8	1	250			
	9	1-1/4	250	250		
	10	1-1/2	250	250		
	11	2	250	250		
VB-8213-000-5-P VB-8223-000-5-P	12	2-1/2			125	
	13	3			125	
	14	4			125	
	15	5			125	
VB-8303-000-5-P	12	2-1/2			35	
	13	3			35	
	14	4			35	
	15	5			35	
VB-921X-000-4-P VB-9253-000-4-P VB-9273-000-4-P	1,2,3 or 4	1/2	250			
	5 or 6	3/4	200			
	7 or 8	1	150			
	9	1-1/4	90	150		
	10	1-1/2			100	AM-733 or AM-734[b]
	11	2			65	AM-733 or AM-734[b]
VB-922X-000-4-P VB-9263-000-4-P VB-9283-000-4-P	1, 2, 3, or 4	1/2	250			
	5 or 6	3/4	200			
	7 or 8	1	90			
	9	1-1/4	60	150		
	10	1-1/2			100	AM-733 or AM-734[b]
	11	2			65	AM-733 or AM-734[b]
VB-931X-000-4-P	2 or 4	1/2	250			
	6	3/4	200			
	7 or 8	1	90			
	9	1-1/4	60	150		
	10	1-1/2			65	AM-733 or AM-734[b]
	11	2			65	AM-733 or AM-734[b]
VB-9323-000-4-P	2 or 4	1/2	250			
	6	3/4	250			
	7 or 8	1	250			
	9	1-1/4	250	250		
	10	1-1/2			250	AM-733 or AM-734[b]
	11	2			250	AM-733 or AM-734[b]
VB-92X3-000-X-P VB-9313-000-X-P	12	2-1/2			33	
	13	3			22	
	14	4			12	

[a] Note: Maximum valve differential operating pressures MUST be observed. Please consult our Valve Products Catalog F-27384 to assure the operating differential for your application is followed.

[b] Use AM-733 with valves with date codes after 9404. Use AM-734 with valves with date codes before 9404.

Typical Applications



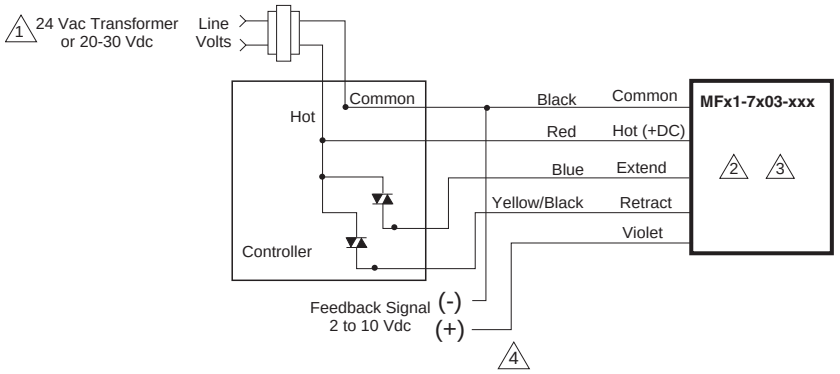
1 Provide overload protection and disconnect as required. If controller uses a full wave power supply and does not provide isolated outputs, a separate transformer must be used.

2 Actuators may be wired in parallel. All actuator black wires are connected to the transformer common and all red wires are connected to the hot lead. Power consumption must be observed.

3 Cable on some models contains more wires than are used in applications. Only those wires actually used are shown.

4 Feedback only available on MF51-7103 models.

Figure 1 Floating Point Control.



1 Provide overload protection and disconnect as required. If controller uses a full wave power supply and does not provide isolated outputs, a separate transformer must be used.

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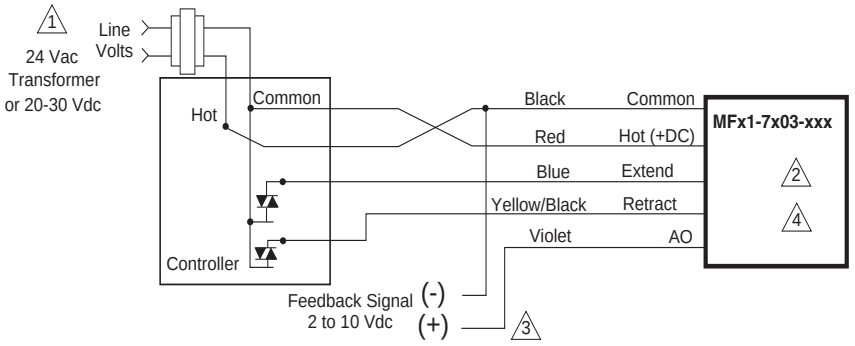
Figure 2 Triac Source.



1 Provide overload protection and disconnect as required. If controller uses a full wave power supply and does not provide isolated outputs, a separate transformer must be used.

2 The Common connection from the actuator must be connected to the Hot connection of the controller. The actuator Hot must be connected to the controller Common.

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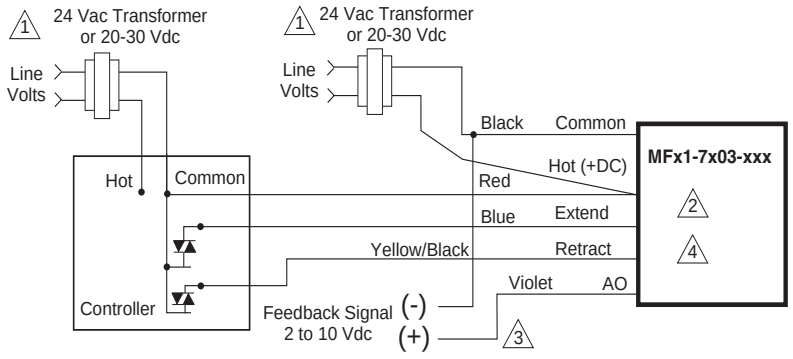
Figure 3 Triac Sink.



1 Provide overload protection and disconnect as required. If controller uses a full wave power supply and does not provide isolated outputs, a separate transformer must be used.

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Figure 4 Triac Sink With Separate Transformers.