

M2000-500 and M9000-5xx Series Ball Valve Linkage Kits

Description

The M9000-5xx and M2000-500 Series Ball Valve Linkage Kits are designed specifically for mounting Johnson Controls® M9104, M9106, M9109, and M9100 Series Non-Spring Return and M2202, M9206, M9210, and M9220 Series Spring Return Actuators to Johnson Controls VG1000 Series Ball Valves in sizes 1/2 through 4 in. (DN15 through DN100). These sturdy linkage kits provide stable actuator mounting while preventing loading on the valve stem and stem seals, to ensure longer life seal life.

Depending on the linkage kit you are using, refer to either the *M9000-51x Series Valve Linkage Kits Product Bulletin (LIT-977354)*, *VG1000 Series Forged Brass Ball Valves Product Bulletin (LIT-977132)*, or *VG1000 Series Flanged Ball Valves Product Bulletin (LIT-12011228)* for important product application information.

Features

M2000-500 Linkage

- thermoplastic linkage – provides superior thermal isolation between valve and actuator, meets UL 94-5V Flame Class Rating
- compact size and multi-position setup – the user to position the actuator and linkage kit assembly in 90° increments, relative to the ball valve, facilitating installation in confined locations
- pointer – provides an indication of valve position

The M9000-51x Linkage

- sturdy aluminum construction — provides exceptional strength and stability
- multi-position setup — allows the actuator and linkage kit to be positioned in 45-degree increments, facilitating installation in confined areas
- weather shield kits available for field mount — protect actuator from extreme environments

M9000-520 Linkage

- glass-reinforced thermoplastic resin – provides superior thermal isolation between the valve and actuator, and meets UL 94-5V Flame Class Rating
- two-position anti-rotation slider – accommodates both spring return and non-spring return electric actuators
- multi-position setup – allows the actuator and linkage kit assembly to be positioned in 90° increments, relative to the ball valve, facilitating installation in confined locations
- manual handle for non-spring return applications – allows manual positioning of the actuator when power is disengaged

The M9000-550 Linkage

- thermoplastic linkage – provides superior thermal isolation between valve and actuator, and meets UL 94-5V Flame Class Rating



M9000-51x Series Linkage Kits Used to Field Mount M9000 Series Electric Actuators to VG1000 Series Ball Valves

- compact size and multi-position setup – allows the user to be position the actuator and linkage assembly in 90° increments, relative to the ball valve, facilitating installation in confined locations
- manual handle for non-spring return applications – allows manual positioning of the actuator when power is disengaged

Repair Information

If the M2000-500 or M90005xx Series Ball Valve Linkage Kit fails to operate within its specifications, replace the unit. For a replacement valve, contact the nearest Johnson Controls representative.

Selection Charts

Linkage Kits (Part 1 of 2)

Valve Size, in. (DN)	Valve Code Number	Actuator Base Number ¹	Linkage Kit Code Number	Optional Weathershield	
1/2 (DN15)	VG1241Ax, VG1245Ax VG1271Ax, VG1275Ax VG1291Ax, VG1295Ax VG1841Ax, VG1845Ax	VA9104 ² , VA2202	None Required	Not Available	
		M9104 ²	M9000-550		
		M2202	M2000-500		
		M9106 ² , M9206	M9000-520		
		M9108	M9000-516		M9000-330
		M9210	M9000-517		M9000-340
3/4 (DN20)	VG1241Bx, VG1245Bx VG1271Bx, VG1275Bx VG1291Bx, VG1295Bx VG1841Bx, VG1845Bx	VA9104 ² , VA2202	None Required	Not Available	
		M9104 ²	M9000-550		
		M2202	M2000-500		
		M9106 ² M9206	M9000-520		
		M9108	M9000-516		M9000-330
		M9210	M9000-517		M9000-340
1 (DN25)	VG1241Cx, VG1245Cx VG1271Cx, VG1275Cx VG1291Cx, VG1295Cx VG1841Cx, VG1845Cx	VA9104 ²	None Required	Not Available	
		M9104 ²	M9000-550		
		M2202	M2000-500		
		M9106 ² , M9206	M9000-520		
		M9108	M9000-516		M9000-330
		M9210	M9000-517		M9000-340

The performance specifications are nominal and conform to acceptable industry standards. For applications at conditions beyond these specifications, consult the local Johnson Controls office. Johnson Controls, Inc. shall not be liable for damages resulting from misapplication or misuse of its products. © 2008 Johnson Controls, Inc.



M2000-500 and M9000-5xx Series Ball Valve Linkage Kits (Continued)

Linkage Kits (Part 2 of 2)

Valve Size, in. (DN)	Valve Code Number	Actuator Base Number ¹	Linkage Kit Code Number	Optional Weathershield
1-1/4 (DN32)	VG1241Dx, VG1245Dx VG1841Dx, VG1845Dx	M9106 ² , M9206	M9000-520	Not Available
		M9108	M9000-516	M9000-330
		M9210	M9000-517	M9000-340
1-1/2 (DN40)	VG1241Ex, VG1245Ex VG1841Ex, VG1845Ex	M9106 ² , M9206	M9000-520	Not Available
		M9108	M9000-516	M9000-330
		M9210	M9000-517	M9000-340
2 (DN50)	VG1241Fx, VG1245Fx VG1841Fx, VG1845Fx	M9109 ²	M9000-520	Not Available
		M9116	M9000-516	M9000-330
		M9210	M9000-517	M9000-340
2-1/2 (DN65)	VG12A5Gx, VG18A5Gx	M9124	M9000-518	M9000-330
		M9220	M9000-519	M9000-340
3 (DN80)	VG12A5Hx, VG18A5Hx	M9124	M9000-518	M9000-330
		M9220	M9000-519	M9000-340
4 (DN100)	VG12A5Jx, VG18A5Jx	M9124	M9000-518	M9000-330
		M9220	M9000-519	M9000-340

- M9104, M9106, M9109 and M9100 Series are Non-Spring Return Actuators; VA2202, M2202, M9206, M9210 and M9220 Series are Spring Return Actuators.
- To avoid excessive wear or drive time on the motor for VA9104, M9104, M9106 and M9109 AGx models, use a controller and/or software that provides a timeout function to remove the signal at the end of rotation (stall). The IGx and GGx models have an auto shutoff to avoid excessive wear or drive time on the motor.

Linkages for Discontinued Series Ball Valves

Valve Size, in. (DN)	Valve Code Number	Actuator Base Number ¹	Linkage Kit Code Number
1/2 (DN15)	VG1243Ax, VG1644AB	M9106	M9000-514
		M9206	M9000-515
		M9108	M9000-516
3/4 (DN20)	VG1243Bx	M9106	M9000-514
		M9206	M9000-515
		M9108	M9000-516
	VG1644BB	M9108	M9000-516
		M9210	M9000-517
1 (DN25)	VG1243Cx, VG1243Dx	M9116	M9000-516
		M9220	M9000-517
1-1/4 (DN32)	VG1644CB, VG1644DB	M9116	M9000-518
		M9220	M9000-519
1-1/2 (DN40)	VG1243EC	M9124	M9000-518

- M9106, M9108, M9116, and M9124 Series are Non-Spring Return Actuators; M9206, M9210, and M9220 Series are Spring Return Actuators.

Repair Parts

Linkage	Replacement Description	Replacement Part Code Number
M9000-51x	Unit Replacement	---
M9000-520	Anti-rotation slider, includes carriage screw, washers, and wing nut	M9000-600
	M5 Mounting Screws and Nuts	M9000-601
	Drive Shaft	M9000-602
	Manual Handle and Mounting Screw	M9000-603
M2000-500, M9000-550	Unit Replacement	---

M2000-500 and M9000-5xx Series Ball Valve Linkage Kits (Continued)

Technical Specifications

M2000-500 and M9000-5xx Series Ball Valve Linkage Kits		
Service¹		Hot Water, Chilled Water, 50/50 Glycol Solutions and in some cases low pressure steam
Maximum Actuator Fluid Temperature Limits	212°F (100°C)	M2000-500 Linkage: M2202 Series Spring Return Actuators
		M9000-550 Linkage: M9104 Series Non-Spring Return Actuators
	284°F (140°C)	M9000-516 Linkage: M9100 Series Non-Spring Return Actuators
		M9000-517 Linkage: M9210 Series Spring Return Actuators
		M9000-518 Linkage: M9124 Series Non-Spring Return Actuators
		M9000-519 Linkage: M9220 Series Spring Return Actuators
M9000-520 Linkage: M9106 and M9109 Series Non-Spring Return Actuators M9206 Series Spring Return Actuators		
Maximum Steam Service²	Not Rated for Steam Service	M2000-500 Linkage: M2202 Series Spring Return Actuators M9000-550 Linkage: M9104 Series Non-Spring Return Actuators
	15 psig saturated steam 250°F, (121°C)	M9000-516 Linkage: M9100 Series Non-Spring Return Actuators
		M9000-517 Linkage: M9210 Series Spring Return Actuators
		M9000-520 Linkage: M9106 and M9109 Series Non-Spring Return Actuators M9206 Series Spring Return Actuators
	25 psig saturated steam 267°F, (130°C)	M9000-518 Linkage: M9124 Series Non-Spring Return Actuators
		M9000-519 Linkage: M9220 Series Spring Return Actuators
Minimum Ambient Operating Temperature	-40°F (-40°C)	M9000-517 Linkage: M9210 Series Spring Return Actuators M9000-519 Linkage: M9220 Series Spring Return Actuators
	-25°F (-32°C)	M9000-520 Linkage: M9206 Series Spring Return Actuators
	-22°F (-30°C)	M2000-500 Linkage: M2202 Series Spring Return Actuators
	-4°F (-20°C)	M9000-550 Linkage: M9104 Series Non-Spring Return Actuators
		M9000-516 Linkage: M9100 Series Non-Spring Return Actuators M9000-518 Linkage: M9124 Series Non-Spring Return Actuators
Maximum Ambient Operating Temperature	122°F (50°C)	M2000-500 Linkage: M2202 Series Spring Return Actuators M9000-516 Linkage: M9100 Series Non-Spring Return Actuators M9000-518 Linkage: M9124 Series Non-Spring Return Actuators
	125°F (52°C)	M9000-520 Linkage: M9106 and M9109 Series Non-Spring Return Actuator
	131°F (55°C)	M9000-517 Linkage: M9210 Series Spring Return Actuators
		M9000-519 Linkage: M9220 Series Spring Return Actuators
	140°F (60°C)	M9000-550 Linkage: M9104 Series Non-Spring Return Actuators
		M9000-520 Linkage: M9206 Series Spring Return Actuators
Material	M9000-550, M9000-520 M9000-51x	Glass-Reinforced Thermoplastic Resin; UL 94-5V Flame Class Rating
		Bracket: Aluminum
		Anti-Rotation Slider: 1018 Steel
		Drive Shaft: 12L14 Steel
		Standoff: Thermoplastic Resin
		Thermo-Isolator: PTFE (Polytetrafluoroethylene)
Shipping Weight		1.5 lb (0.68 kg)

1. Refer to VDI 2035 Standard for proper water treatment.

2. In steam applications, install the valve with the stem horizontal to the piping, and wrap the valve and piping with insulation.