

# MVN Rotary Valve Actuators

## FOR CONTROL BALL VALVES VBG (DN15 TO DN32)

### SPECIFICATION DATA



### APPLICATION

MVN 3 Nm Control Valve Rotary Valve Actuators are used with the VBG2 2-way and the VBG3 3-way Control Ball Valves to control hot and chilled water with glycol solutions up to 50% in heating, ventilating, and air conditioning (HVAC) systems to provide two-position or modulating functions.

### FEATURES

- Non-spring return
- Floating and modulating
- Space saving, click-on installation – no tool required
- Extendable position indicator for easy commissioning
- Available with 1.5-m cable
- Compatible with VBG control ball valves from DN15 to DN32.
- Actuator can be mounted on the valve in any of four positions.

### SPECIFICATIONS

<b>Actuator type</b>	Control ball valve rotary actuator
<b>Rotational stroke</b>	90° ± 3°.
<b>Fail-safe mode</b>	Non-spring return, Fail in place
<b>Torque</b>	3 Nm
<b>Supply voltage</b>	230 Vac, 50 Hz +10%/-15%; 24 Vac ±20%, 24 Vdc ±10%
<b>Environmental rating</b>	NEMA2
<b>Mounting</b>	Click-on installation – no tool required
<b>Noise rating at 1 m</b>	35 dB(A) max. at 1 m.
<b>Materials</b>	Plenum-rated plastic housing
<b>Operating humidity range</b>	5 ... 95% RH, non-condensing
<b>Ambient temp. range</b>	-20 ... +55 °C
<b>Storage temp. range</b>	-40 ... +80 °C
<b>Dimensions</b>	See Fig. 1 and Fig. 2
<b>Weight</b>	0.3 kg
<b>Electrical connections</b>	Field wiring 20 to 18 AWG to screw terminals, located under the removable access cover
<b>Cable specification</b>	0.8 to 1.0 mm <sup>2</sup> (20 to 18 AWG), Plenum-rated, 300 V, 10 A, 1.5 m (4.5 ft.) length from end of access cover
<b>Protection rating</b>	IP40
<b>Approvals</b>	CE

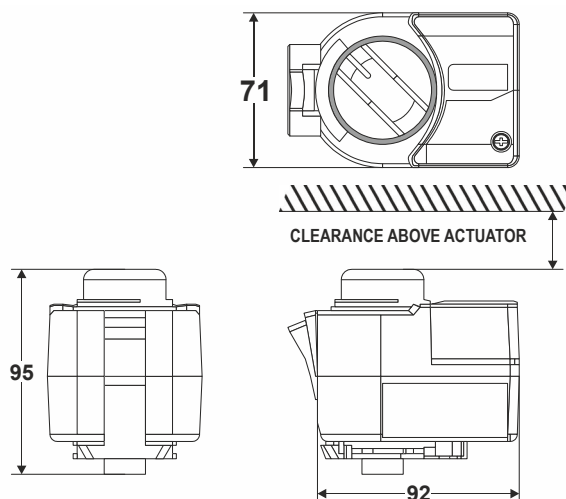


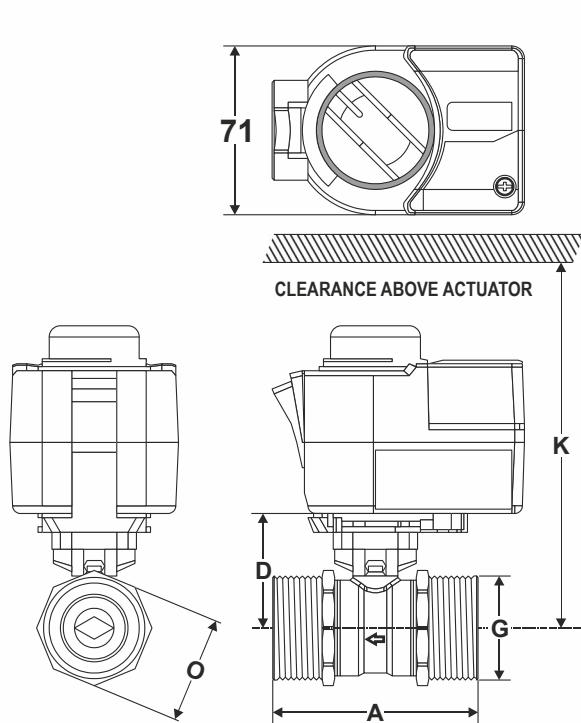
Fig. 1. MVN dimensions, in mm

**Table 1. Actuators**

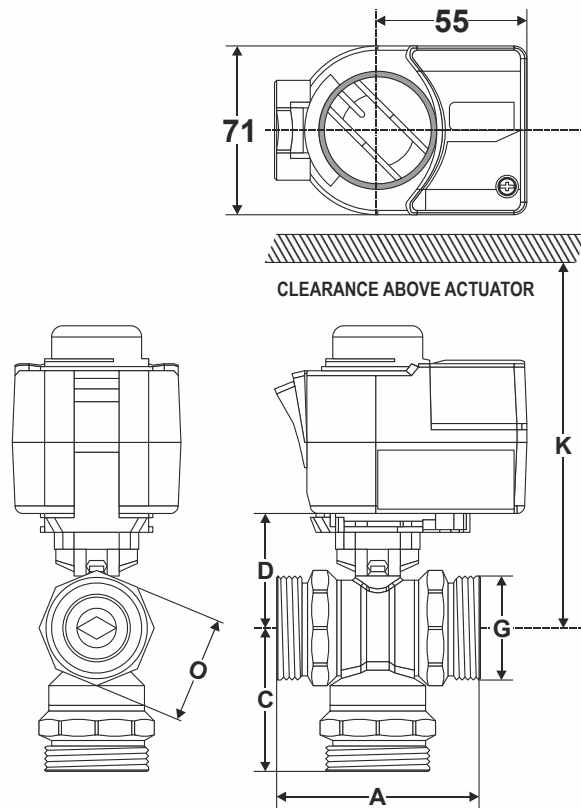
O.S. no.	Power supply		Control signal			Power consumption			Cable length (m)	Runtime (sec)
	AC	DC	2-Position (SPDT)	Floating (SPDT)	Modulating 0(2) ... 10 V / 10 ... 0(2) V, < 0.1 mA	Driving W	VA	Holding W		
MVN643A1500	24 Vac -15%, +20%; 50 Hz ±20% / 60 Hz	24 Vdc ±10%	X	X	--	2.5	6	0	1.5	30
MVN613A1500	24 Vac ±20%; 50 Hz	NA	X	X	--	1.5	1.5	0	1.5	108
MVN663A1500	230 Vac +10% / -15%; 50 Hz	NA	X	X	--	2	4.5	0	1.5	108
MVN713A1500	24 Vac ±20%; 50 Hz	24 Vdc ±10%	--	--	X	2	5	0.5	1.5	90

**Table 2. Actuator accessories and replacement parts**

O.S. no.	Description
MVNAT3	Replacement screw terminal block, pluggable



**Fig. 2. MVN with 2-way ball valve (see also Table 3)**



**Fig. 3. MVN with 3-way ball valve (see also Table 4)**

**Table 3. MVN dimensions (in mm) with VGB2 valves**

DN	A	D	G	K	O
15	74	49	G1"	150	36
20	86	53	G1¼"	150	46
25	85	58	G1½"	155	50
32	102	63	G2"	160	65

**Table 4. MVN dimensions (in mm) with VGB3 valves**

DN	A	C	D	G	K	O
15	74	55	53	G1"	150	41
20	86	60	53	G1¼"	150	46
25	85	65	58	G1½"	155	50
32	108	80	63	G2"	160	65

## MOUNTING

For more-detailed information on mounting, see the Mounting Instructions (Product Literature No.: MU1B-0492GE51) supplied with each actuator.

### Orientation of Ball in Valve

The valve and actuator are delivered in the CLOSED positions by default. See Fig. 4 and Fig. 5.

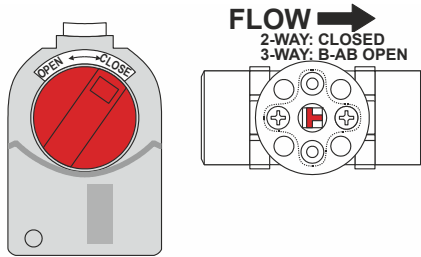


Fig. 4. Two-way closed / 3-way open

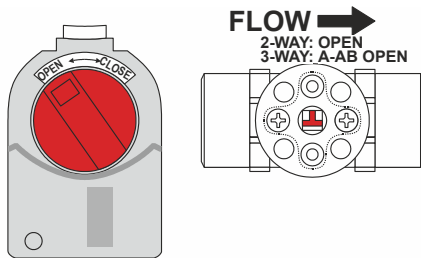


Fig. 5. Two-way open / 3-way open

### Mounting Position

To achieve the desired control performance, the actuator must be mounted on the valve in one of the permitted orientations shown in Fig. 6.

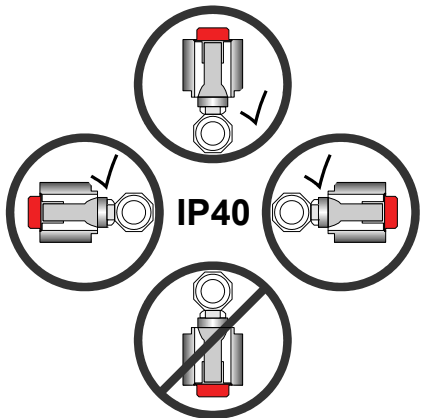


Fig. 6. Permitted orientations

## TYPICAL OPERATION

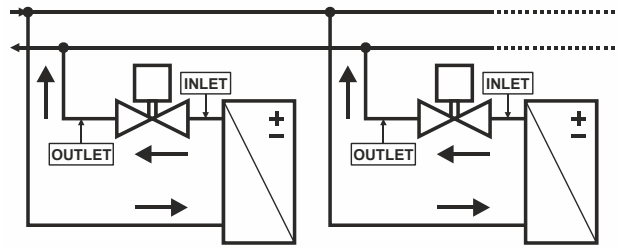


Fig. 7. Two-way valve operation

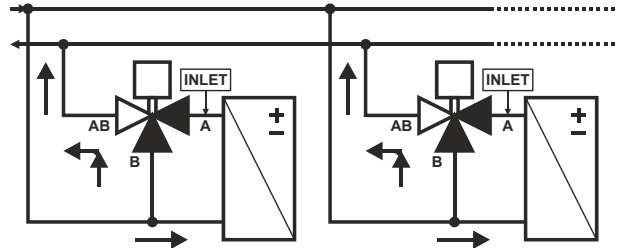


Fig. 8. Three-way mixing valve operation

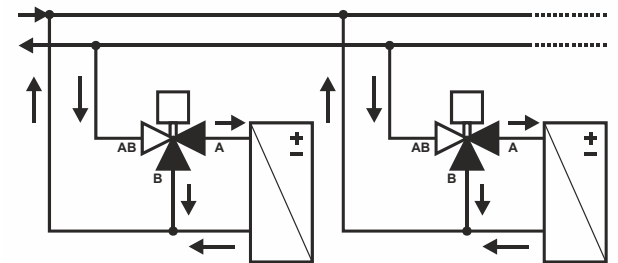


Fig. 9. Three-way diverting valve operation

## WIRING

The actuators are pre-wired with 1.5-m cable with colors corresponding to the given model. Replacement cabling with the same technical specifications as listed in section "Specifications" on pg. 1 may be used (preferably with the same cable colors).

### MVN663A

NEUTRAL	N	2	BLUE
230 VAC, CCW	L	3	BROWN
230 VAC, CW	L	4	BLACK

### MVN613A / MVN643A

COMMON	⊥	2	BLACK
24 VAC, CCW	~	3	WHITE
24 VAC, CW	~	4	BROWN

### MVN713A

24 V	~/+	1	RED
COMMON	⊥/-	2	BLACK
0(2) ... 10 V	Y~	3	WHITE

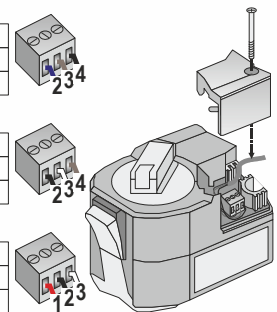


Fig. 10. Accessing wiring and (MVN713A) DIP switch

## Electrical Installation

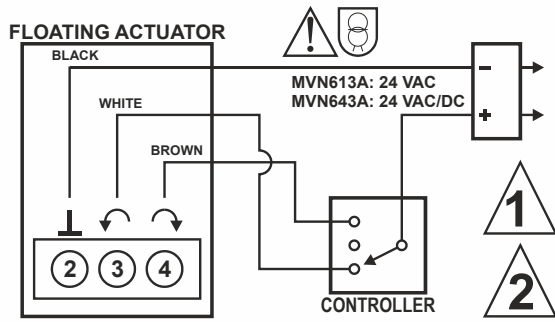


Fig. 11. MVN613A / MVN643A floating actuator with controller

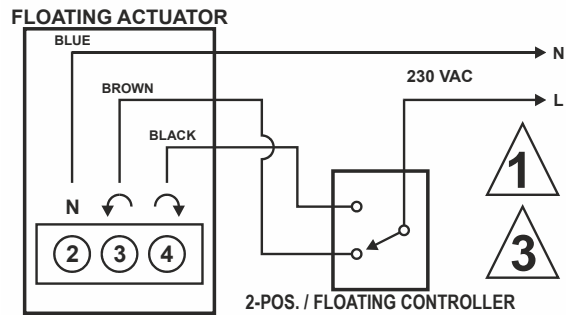


Fig. 14. Wiring of MVN663A floating actuator with 2-position / floating controller

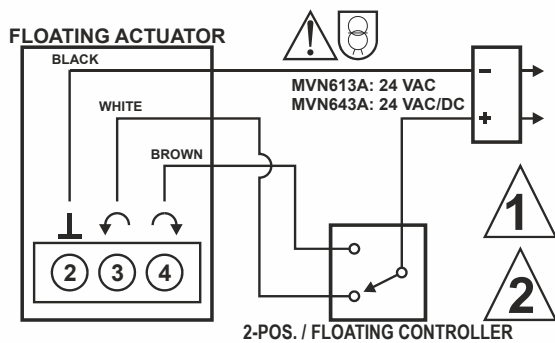


Fig. 12. MVN613A / MVN643A floating actuator with 2-position / floating controller

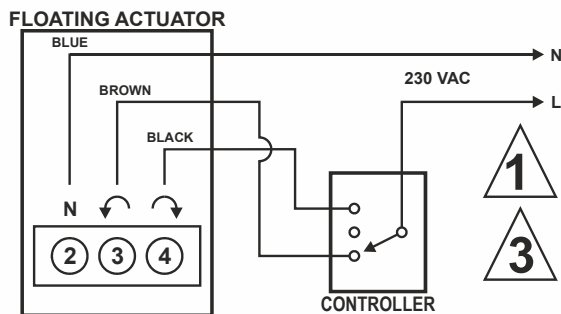


Fig. 13. Wiring of MVN663A floating actuator with controller

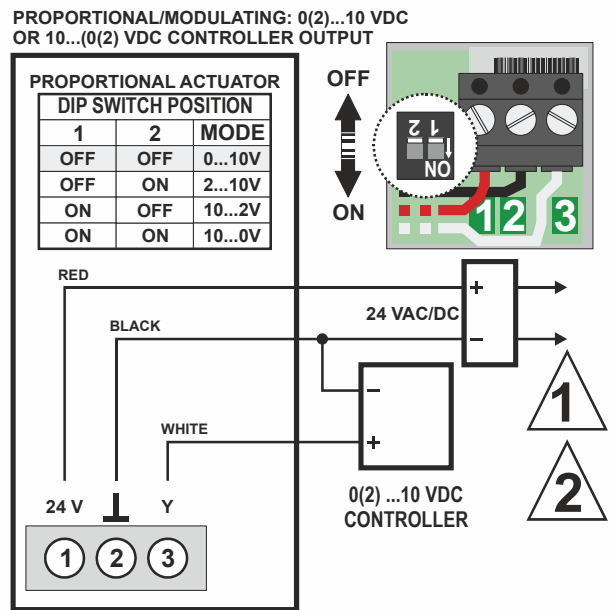


Fig. 15. MVN713A proportional/modulating actuator with 0(2)...10 VDC controller


- 1 Power supply. Provide means for disconnecting and for overload protection, as required.
- 2 Safety isolating transformer ( ) is required.
- 3 LINE VOLTAGE power supply. Provide means for disconnecting and for overload protection, as required.

## ENVIRONMENTAL DATA

Table 5. Information as per EN 60730

<b>Environmental conditions</b>	For use in home (residential, commercial, and light-industrial) environments
<b>Pollution degree</b>	2 (MVN663A) 3 (MVN613A + MVN713A)
<b>Protection class</b>	Class II (MVN663A) Class III (MVN613A + MVN713A)
<b>Rated impulse voltage</b>	2.5 kV
<b>Mode of operation</b>	Type 1

## DISPOSAL

<b>WEEE: Waste Electrical and Electronic Equipment Directive</b>	
	<ul style="list-style-type: none"> <li>▪ At the end of the product life, dispose of the packaging and product in an appropriate recycling center.</li> <li>▪ Do not dispose of the device with the usual domestic refuse.</li> <li>▪ Do not burn the device.</li> </ul>

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