

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

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

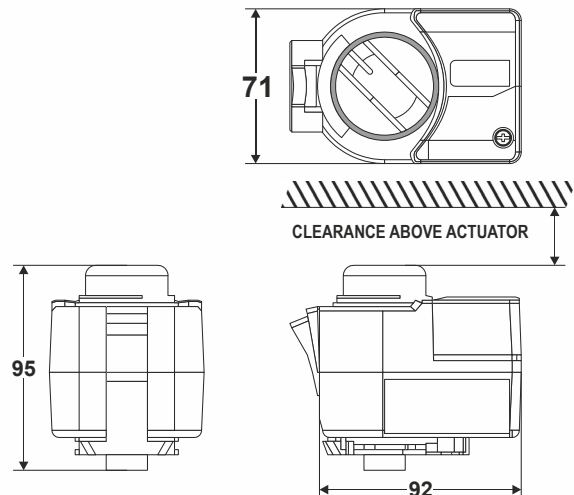


Fig. 1. MVN dimensions, in mm

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EN0B-0711GE51 R0617

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	W	VA	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

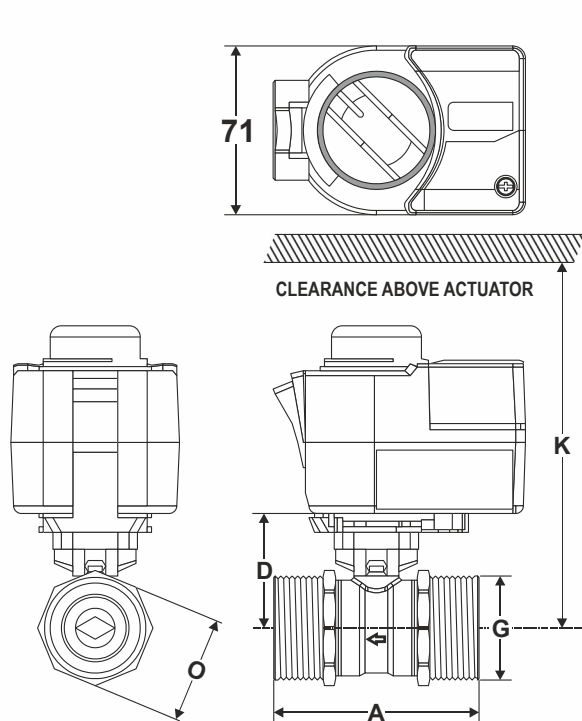


Fig. 2. MVN with 2-way ball valve (see also Table 3)

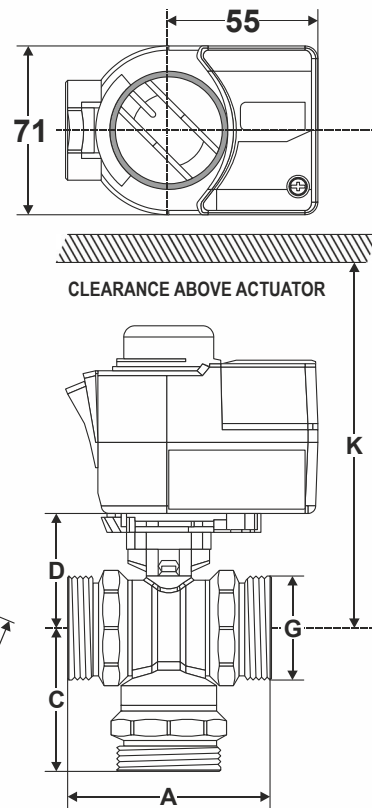


Fig. 3. MVN with 3-way ball valve (see also Table 4)

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.

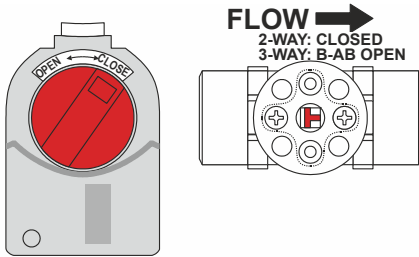


Fig. 4. Two-way closed / 3-way open

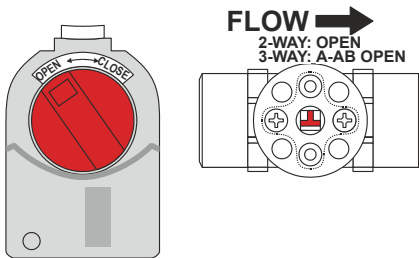


Fig. 5. Two-way open / 3-way open

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.

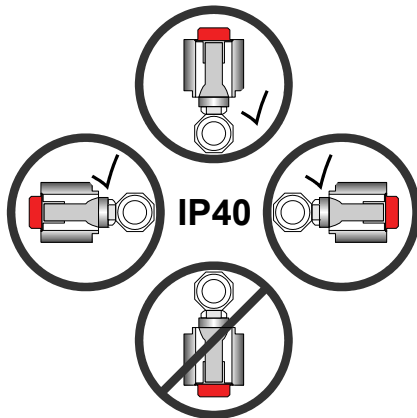


Fig. 6. Permitted orientations

TYPICAL OPERATION

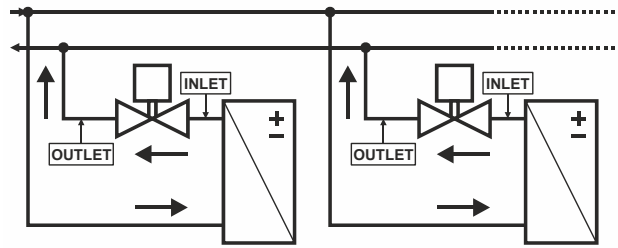


Fig. 7. Two-way valve operation

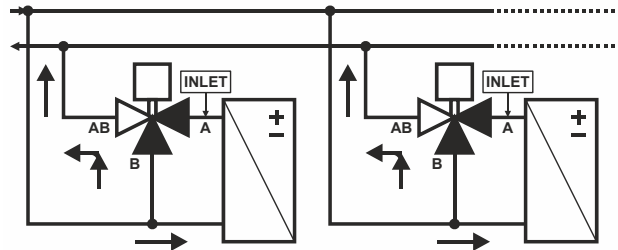


Fig. 8. Three-way mixing valve operation

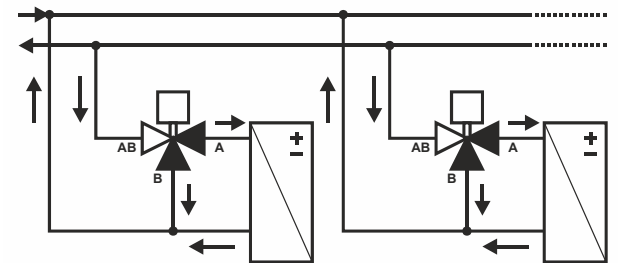


Fig. 9. Three-way diverting valve operation

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

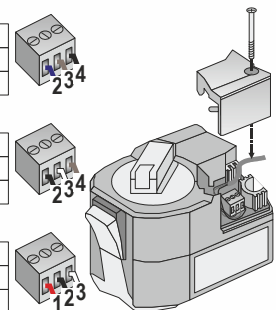


Fig. 10. Accessing wiring and (MVN713A) DIP switch

Electrical Installation

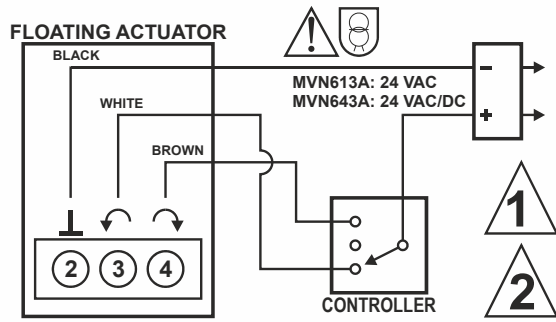


Fig. 11. MVN613A / MVN643A floating actuator with controller

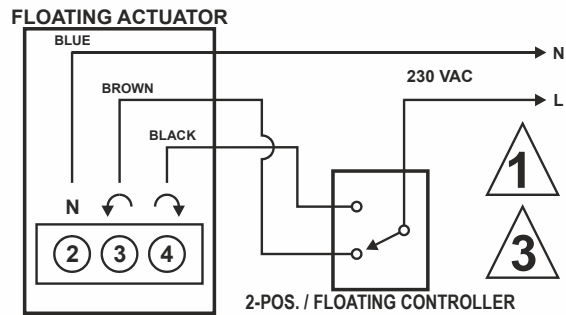


Fig. 14. Wiring of MVN663A floating actuator with 2-position / floating controller

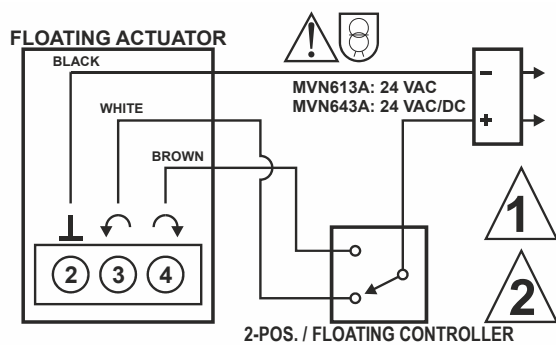


Fig. 12. MVN613A / MVN643A floating actuator with 2-position / floating controller

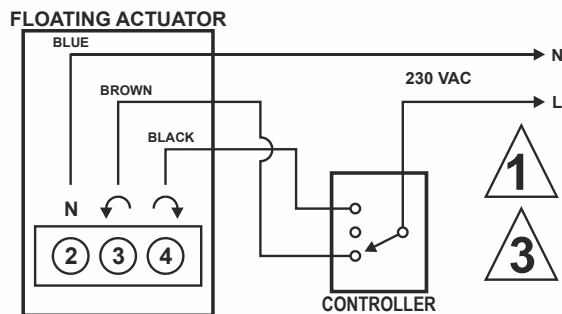


Fig. 13. Wiring of MVN663A floating actuator with controller

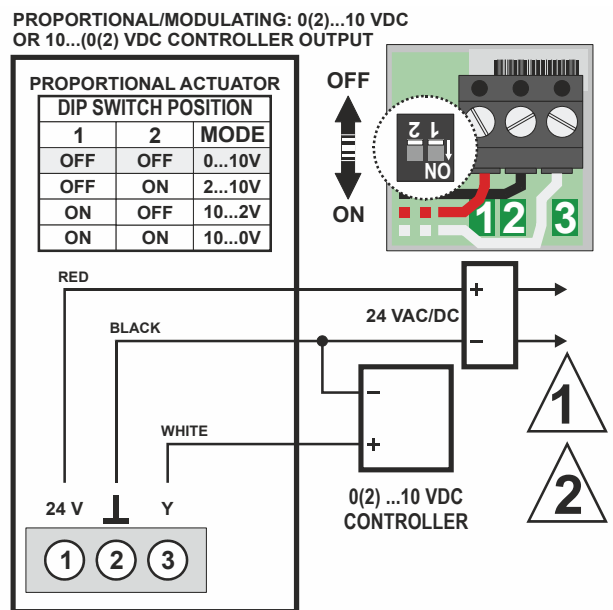



Fig. 15. MVN713A proportional/modulating actuator with 0(2)...10 VDC controller


- 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

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

DISPOSAL

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