

VBN Threaded Control Ball Valves and Actuators

PRODUCT DATA

APPLICATION

The VBN2 2-Way Control Ball Valves and VBN3 3-Way Control Ball Valves 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. These control ball valves can be ordered alone or with spring return or non-spring return actuators.

VBN2, VBN3



FEATURES

- Sizes from 1/2 to 3 in. with internal (female) NPT connections.
- Equal percentage flow characteristic.
- Reduced B port CV for constant loop flow.
- Choice of factory-installed actuation: floating, modulating (2-10 V), spring return or non-spring return 2-Position, Spring Return Modulating/Floating, Spring Return Sylk-enabled.
- Field configurable for normally open or normally closed fail-safe position.
- Removable manual operating handle to control valve during installation or in an event of power failure.
- Actuator can be mounted on the valve in any of four orientations.
- Field-serviceable stem assembly.
- Wide range of CV choices from 0.33 to 266.
- Nickel-chrome plated brass or 316 stainless steel ball and stem.
- Valve installs in a globe valve “T” pattern, no extra elbows or piping required.
- Mixing or Diverting control for 3-way valves.
- ANSI Class IV seat leakage specification (0.01% of CV) for 3-way A port and ANSI Class III seat leakage specification (0.1% of CV) for 3-way B port.

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SPECIFICATIONS

Valve Type: Control Ball Valve

Body Pattern: 2-way, 3-way

Connection Type: Female NPT

Controlled Fluid: Chilled or hot water with up to 50% Glycol. Not for use with steam or fuels.

Leakage Rating: ANSI Class IV (0.01% of CV maximum) for 3-way A port and ANSI Class III seat leakage specification (0.1% of CV) for 3-way B port

Maximum Safe Operating Rating: 360 psi (2482 kPa)

Fluid Temperature Range: -22°F to +250°F (-30°C to +121°F)

Materials:

Body: Brass

Ball and Stem:

Two-way: Nickel-chrome plated brass or 316 Stainless Steel.

Three-way: Nickel-chrome plated brass.

Seat: Teflon® seals with EPDM O-rings

Flow Control Insert: Noryl®

Body Style:

2-way ball valve, straight-through flow, full or reduced port using patented flow control insert.

3-way ball valve, A-B-AB flow, full or reduced port using patented flow control insert.
Internal NPT connections.

Body Pressure Rating (maximum):
360 psi (2482 kPa) at 250°F (121°C).

Medium Temperature Range:
-22 to +250°F (-30 to +121°C).

Flow Characteristics:

2-way: Equal Percentage with flow control insert.

3-way: Port A to AB: Equal Percentage.

Port B to AB: Linear.

Compatible Actuators:

Minimum Torque Required:

35 lb-in. (4 Nm) up to 3 in. (.DN80)

27 lb-in. (3 Nm) up to 1-1/4 in. (.DN32)

Fail Safe: MSXX05*

Non-Fail Safe: MVN* and MNXX05*

* These actuators are available as factory installed assemblies. See Table 1 for all available options.

Approvals/Standards:

Valves: ANSI Class IV close-off/leakage (maximum 0.01% of CV let by)

Actuators: See literature for the given actuator.

ORDERING INFORMATION

When purchasing replacement and modernization products from your TRADELINE® wholesaler or distributor, refer to the TRADELINE® Catalog or price sheets for complete ordering number. If you have additional questions, need further information, or would like to comment on our products or services, please write or phone:

1. Your local Honeywell Environmental and Combustion Controls Sales Office (check white pages of your phone directory).
2. Honeywell Customer Care
1985 Douglas Drive North
Golden Valley, Minnesota 55422-4386
3. <http://customer.honeywell.com> or <http://customer.honeywell.ca>

International Sales and Service Offices in all principal cities of the world. Manufacturing in Belgium, Canada, China, Czech Republic, Germany, Hungary, Italy, Mexico, Netherlands, United Kingdom, and United States.

Table 1. VBN Model Selection Table.

Model Selection: Ball Valve							Actuator	Fail Position	Accessories	
Valve	Fitting	Body/ Flow Type	Size	CV	Trim	Actuator Adapter				
VB - ball valve							MVN613A0000***	Leave blank = Fail in place	C1 = 1 m cable	
N - Female NPT threaded							MVN613L0000***			
2 - 2-way 3 - 3-way							MVN643A0000***	FSO = Fail Safe Open (VBN2 only) FSC = Fail Safe Closed (VBN2 only) FSA = Fail A-AB Open (VBN3 only) FSB = Fail B-AB Open (VBN3 only)	3R = NEMA Enclosure Leave Blank = 3 ft cable standard	
A---1/2 (DN15)							MVN643L0000***			
B---3/4 (DN20)							MVN713A0000***			
C---1 (DN25)							MVN713L0000***			
D---1-1/4 (DN32)							MN6105A1011			
E---1-1/2 (DN40)							MN6105A1201			
F---2 (DN50)							MN7505A2001			
G---2-1/2 (DN65)							MN7505A2209			
H---3 (DN80) (VRN2 Only)							MS7505A2030			
xxx.xx - CV Designator See Table 4 and 5.							MS7505A2130			
P - Plated Brass S - Stainless Steel (VBN2 only)							MS8105A1030			
A* - Standard Base							MS8105A1130			
L** - Low Profile							MS4105A1030			
X - MN/MS DCA Actuator Bracket							MS4105A1130			
							MS7103A2024***			
							MS7103A2224***			
							MS3103A1023***			
							MS3103A1223***			
VB	N	2	A	004.70	P	A	+	MVN613A0000	+	C1

Example part number: **VBN2A004.70PA+MVN613A0000+C1**

* Standard base provides clearance between valve and actuator for insulation.

** Low profile enables installation of valve and actuator in tight spaces.

*** Only compatible with valves 1-1/4" or smaller.

Table 2. Actuator Control Description.

Actuator	Control
MVN613A0000	Floating, Two-position (SPDT) (90 sec. timing), 24 V, Fail in Place
MVN613L0000	
MVN643A0000	Floating, Two-position (SPDT or SPST) Fast Acting (30 sec. timing), 24 V, Fail in Place
MVN643L0000	
MVN713A0000	Modulating, 24 V, Fail in Place
MVN713L0000	
MN6105A1011	Floating, Two-position (SPDT), 24 V, Fail in Place
MN6105A1201	Floating, Two-Position (SPDT), 24 V, Fail in Place with end switches
MN7505A2001	Modulating, 24 V, Fail in Place
MN7505A2209	Modulating, 24 V, Fail in Place with end switches
MS7505A2030	Modulating, Floating, Two-position (SPDT), 24 V, Fail Safe
MS7505A2130	Modulating, Floating, Two-Position (SPDT), 24 V, Fail Safe with end switches
MS8105A1030	Two-Position (SPST), 24 V, Fail Safe
MS8105A1130	Two-Position (SPST), 24 V, Fail Safe with end switches
MS4105A1030	Two-Position (SPST), 120 V, Fail Safe
MS4105A1130	Two-Position (SPST), 120 V, Fail Safe with end switches
MS7103A2024	Modulating, 24 V, Fail Safe
MS7103A2224	Modulating, 24 V, Fail Safe with end switches
MS3103A1023	Sylk-enabled, 24 V, Fail Safe
MS3103A1223	Sylk-enabled, 24 V, Fail Safe with end switches

Table 3. Control Ball Valve Short Order Codes 1/2" – 3".

Model Selection: Ball Valve							Actuator	Fail Position	Accessories
Valve	Body Flow Type	Valve Size	CV	Trim	Actuator Adapter				
VBN - Control Ball Valve							0 - No Actuator (valve only)	0 - No Actuator or Fail in Place (FIP)	00 - None
2 - 2-way 3 - 3-way							1 - 24 Vac, Floating/2-Pos., 90 sec. (MVN613, Fail in place)*** 2 - 24 Vac, Floating/2-Pos., 30 sec. (MVN643, Fail in place)*** 3 - 24 Vac, Modulating 0(2)-10 Vdc (MVN713, Fail in place)*** 4 - 24 Vac, Floating/2-Position (MN6105, Fail in place) 5 - 24 Vac, Mod. 0(2)-10 Vdc (MN7505, Fail in place) C - 24 Vac, Floating/2-Position w/ end switches (MN 6105, Fail in place) D - 24 Vac, Mod. 0(2)-10 Vdc w/ end switches (MN7505, Fail in place) 6 - 24 Vac, Mod. 0(2)-10 Vdc/Floating (MS7505, Fail safe) 7 - 24 Vac, 2-Position (MS8105, Fail safe) 8 - 100-250 Vac, 2-Position (MS4105, Fail safe) 9 - 100-250 Vac, 2-Pos. w/ end switches (MS4105, Fail safe) A - 24 Vac, 2-Position w/ end switches (MS8105, Fail safe) B - 24 Vac, Mod 0(2)-10 Vdc/Floating w/ end switches (MS7505, Fail safe) E - 24 Vac, Mod. 2-10 Vdc (MS7103, Fail safe)*** F - 24 Vac, Mod. 2-10 Vdc w/ end switches (MS7103, Fail safe)*** G - 24 Vac, Sylk Enabled (MS3103, Fail safe)*** H - 24 Vac, Sylk Enabled w/ end switches (MS3103, Fail safe)***		00 - None 01 - C1 - 1 m Cable 00 - None 02 - 3R - NEMA enclosure
A---1/2 (DN15) B---3/4 (DN20) C---1 (DN25) D---1-1/4 (DN32) E---1-1/2 (DN40) F---2 (DN50) G---2-1/2 (DN65) H---3 (DN80) (VBN2 Only)								1 - Fail Safe Open (FSO) VBN2 only 2 - Fail Safe Closed (FSC) VBN2 only 3 - Fail Safe A to AB Open (FSA) VBN3 only 4 - Fail Safe B to AB Open (FSB) VBN3 only	
CV Designator. Options range from B-2. See Table 4 and 5.									
P - Nickel Chrome Plated Brass S - 316 Stainless Steel (VBN2 only)									01 - 3 ft Cable
A* - Standard Base L** - Low Profile X - MN/MS DCA Actuator Bracket									
VBN	2	A	B	P	A	1	0	00	

Example part number: **VBN2ABPA1000**

* Standard base provides clearance between valve and actuator for insulation.

** Low profile enables installation of valve and actuator in tight spaces.

*** Only compatible with valves 1-1/4" or smaller.

Table 4. C_v Designator for Two-Way VBN Ball Valves.

Valve Body	Size	B	D	E	F	G	H	J	K	L	M	N	P	R	S	T	U	1	2
VBN2A	1/2"	0.38	0.68	1.3	2.0	2.6	4.7	8.0	11.7*										
VBN2B	3/4"	0.31	0.63	1.2		2.5	4.3	7.4	10.1	14.7*	29*								
VBN2C	1"						4.4	9.0		15.3	26	44*	54*						
VBN2D	1-1/4"						4.4	8.3	14.9	25	37	41*			102*				
VBN2E	1-1/2"									23	30	41		74				172*	
VBN2F	2"											42	57	71	100	108*		210	266*
VBN2G	2-1/2"											45	55	72	101		162	202*	
VBN2H	3"											49	63	82		124	145*		

* Valve does not have flow control insert.

Table 5. C_v Designator for Three-Way VBN Ball Valves.

Valve Body	Size	B	C	D	E	F	G	H	J	K	L	M	N	P	R	S
VBN3A	1/2"	0.33	0.59		1.0	2.4		4.3	8.0							
VBN3B	3/4"		0.40	0.66	1.3	2.4	3.8		7.0	11.0*						
VBN3C	1"		0.40	0.65	1.3	2.3	3.5	4.5	8.6	14.9	22	31				
VBN3D	1-1/4"							4.1	8.7	12.7	19.4*	27	34*			
VBN3E	1-1/2"							4.0	8.3	13.4	24	32*		61		
VBN3F	2"										24		38	57	83	109
VBN3G	2-1/2"												38		74	100*

* Valve does not have flow control insert.

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