VB6 SERIES

6-way Control Ball Valves and Actuators

The VB6 series 6-Way valve is an electronically actuated characterized control ball valve. The VB6 series 6-Way control ball valve is combined with a non fail-safe modulating (proportional) actuator. This combination allows for control of heating, cooling and complete shut-off of both sequences.



APPLICATION

Ideal for chilled beam units, fan coil units, small air handling coils, bypass piping, and other applications featuring a single heat exchanger in four-pipe systems to control chilled or hot water in closed loop systems with up to 60% glycol.

EFFICIENT DESIGN

Reduces wiring and eliminates need of a change over valve, while enabling the use of a single coil for heating and cooling.

ALL-IN-ONE

VB6 ball valves are designed to serve as both change-over valves and control valves in one, using only one modulating actuator to achieve both functions, connecting a single 2-pipe heat exchanger to 4-pipe systems.

The simultaneous rotation of two balls, mechanically connected to one stem, opens supply and return ports on one control sequence (e.g. cooling), while keeping the second sequence closed (heating). This control scheme avoids mixing between flows and cannot be overridden.

RELIABLE CONTROL

VB6 valves are designed to be actuated by MN7510 rotary actuators. Modulating mode enables flow control in both sequences and setting the valve in mid position to close both sequences. Position feedback on modulating actuator is available and may be used for remote system monitoring and system check. Actuator facilitated with function selection switch for four different modulating modes, floating, or 2-position control.

FLOW ON DEMAND

The valve's equal percentage flow characteristic provides linear thermal output based on the valve's opening angle, as controlled by the actuator's input signal.

ONLINE DOCUMENTATION

Scan below QR code or visit the link for complete documentation for the VB6 valves.

https://hwll.co/6xbts

FEATURES AND BENEFITS

- Very wide range of CV options from 0.3 to 14 for both control sequences for perfect valve sizing and flow control. Female NPT threaded valve connections available in 1/2 inch and 3/4 inch pipe connection sizes.
- Actuator comes with removable access cover to provide direct access to terminal blocks for wiring. Actuator's declutch function for manual adjustment to provide easy installation.
- Zero internal leakage – Energy savings due to prevention of energy waste caused by leakage. Control ball valves feature self-cleaning technology which helps to eliminate blockage and leakage caused by damaged surfaces.
- Valve body comes with Nickel plated brass body to reduce stress concentration on the valve body.
- Stainless steel trim - VB6 valves come with stainless steel balls and stems for maximum performance and life.

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TECHNICAL SPECIFICATIONS

CALIFORNIA PROPOSITION 65 WARNING

This product can expose you to chemicals including lead, which is known to the State of California to cause cancer, birth defects, or other reproductive harm. For more information, go to www.P65Warnings.ca.gov.

VALVE SPECIFICATIONS

PARAMETER	SPECIFICATIONS
Sizes	1/2" and 3/4"
Valve connection	Female NPT
CV range	0.3 to 14
Type	6-way control ball valve
Media type	Water*, Glycol 60%
Media temperature	0°F to 212°F (-18°C to 100°C)
Ambient temperature	32°F to 131°F (0°C to +55°C)
Static pressure rating	600 psi
Close-Off pressure	200 psi
Maximum Differential (ΔP) pressure	50 psid
Leakage at A-AB port	0%
Leakage at B-AB port	0%
Leakage rating	According to EN 12266-1:2003
Flow characteristic - Curve	Equal %
Rangeability	100 : 1
Total operation angle	90°

*Hot or chilled water according to VDI 2035 with up to 60 % Glycol (oxygen concentration less than 0.2 g/m^3, pH 8...9.5; Fe<0.5 mg/kg; Cu<0.1 mg/kg).

CONSTRUCTION

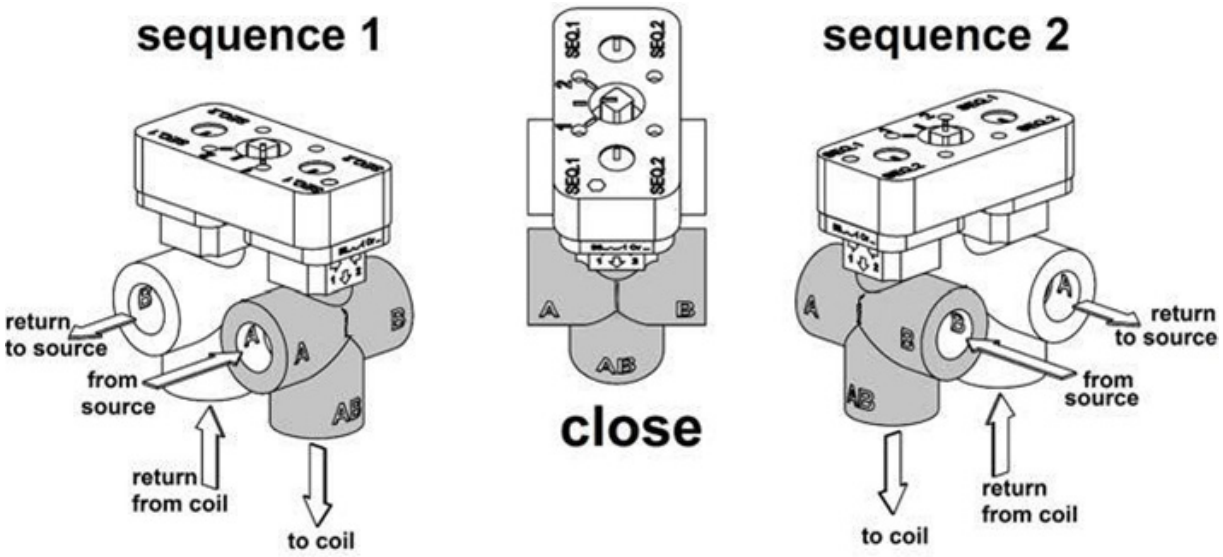
COMPONENT	MATERIALS
Body	Nickle-Plated Forged Brass
Ball and Stem	Stainless Steel
Seats	PTFE
Characterizing Disc	Precision machined brass
Stem O-Rings	EPDM Perox

OPERATION MODES (6-WAY FLOW PATTERN)

The VB6 series 6-way Control Ball Valve is designed to provide leak-free operation. It is equipped with two equal percentage characterized brass discs to provide accurate and long-lasting performance for each sequence of flow. As the valve moves from the first sequence to the second it completely closes the first sequence before the second sequence is (6-Way) opened to eliminate mixing.

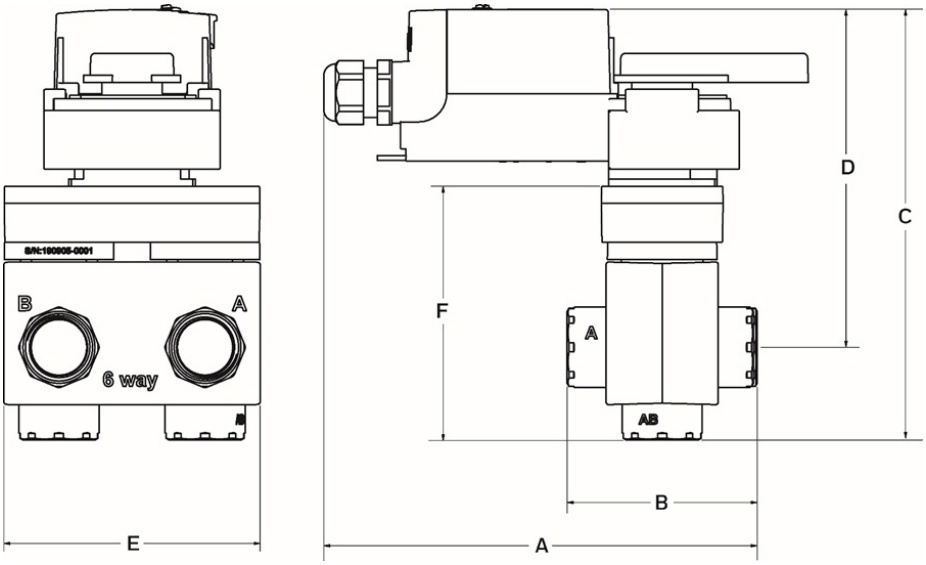
FLEXIBLE SETTINGS

The VB6 valve controls the flow from two separate systems, in Sequence 1 and Sequence 2. Both sequences are completely isolated from one another; no mixing of flows is possible with the valve. Sequence 1 is fully open at 0 degree actuator rotation, Sequence 2 is fully open at 90 degree actuator rotation, and both Sequence 1 and Sequence 2 are closed at 45 degree actuator rotation.



MEASUREMENTS AND DIMENSIONS

VB6 SERIES 6-WAY CONTROL BALL VALVE



VALVE NOMINAL SIZE		A	B	C	D	E	F
VALVE BODY	INCH	IN (MM)	IN (MM)	IN (MM)	IN (MM)	IN (MM)	IN (MM)
VB6A	1/2"	6.85 (174)	2.76 (70)	6.63 (168)	5.33 (135)	4.14 (105)	3.77(95)
VB6B	3/4"	7.01 (178)	3.07 (78)	6.92 (176)	5.46 (139)	4.15 (105)	4.09 (104)

MODEL SELECTION (PART NOMENCLATURE)

VB6 SERIES 6-WAY CONTROL BALL VALVES

VALVE SERIES	SIZE	SEQUENCE 1 CV VALUE			SEQUENCE 2 CV VALUE			ACTUATOR
VB6	A (1/2 inch)	003	CV 0.30		003	CV 0.30		Modulating (0)2-10VDC Analog, 24VAC/DC
		004	CV 0.46		004	CV 0.46		
		008	CV 0.80		008	CV 0.80		MN7510A2001
		012	CV 1.20		012	CV 1.20		
		019	CV 1.90		019	CV 1.90		
		030	CV 3.00		030	CV 3.00		
		047	CV 4.70		047	CV 4.70		
		074	CV 7.40		074	CV 7.40		
	B (3/4 inch)	047	CV 4.70		047	CV 4.70		
		074	CV 7.40		074	CV 7.40		
		100	CV 10.00		100	CV 10.00		
		140	CV 14.00		140	CV 14.00		
VB6	**A**	**003**		**+**	**012**		**+**	**AL**

Example: VB6A003+012+AL*

*The order of flow is sequential - these sequential flows are called Sequences: Sequence 1 and Sequence 2.

Both sequences must be of the same valve size.

MN7510 SERIES ACTUATOR

- This non-spring return direct-coupled actuator provides modulating, floating, or 2-position control with torque of 88 lb.-in. (10 Nm).
- Actuator facilitated with function selection switch for four different modulating modes, floating, or 2-position control.
- Declutch for manual adjustment.
- Removable access cover for direct wiring.
- Function selection switch for selecting modulating, floating, or 2-position control



The VB6 valves are designed to be actuated by MN7510 rotary actuators.

ACTUATOR SPECIFICATIONS

PARAMETER	SPECIFICATIONS
Supply voltage1	24 VAC/DC -15%/+20%, 50/60 Hz
Nominal voltage[1]	24 VAC/DC, 50/60 Hz
Power consumption	5 VA / 2 W
Control signal - Modulating	(0)2 to 10 VDC
Control signal - Floating/2-Position	24 VAC/DC
Ambient temperature	-5 to +140° F (-20 to +60° C)
Storage temperature	-22 to +176° F (-30 to +80° C)
Relative humidity	5 to 95% RH, non-condensing
Protection standard	IP54
Protection class	Class II as per EN 60730-1
Overvoltage category	Class II
Lifetime - Full strokes	60000
Lifetime - Repositions	1.5 million
Torque rating	88 lb.-in. (10 Nm)
Runtime for 90° - mod. (DC / 50/60 Hz ac)	90 sec
Runtime for 90° - floating (DC / 60 Hz ac)	90 sec
Runtime for 90° - floating (50 Hz AC)	110 sec
Rotation stroke	95° ± 3°.
Weight (without cables)	1 lbs (0.45 kg)
Noise rating	35 dB(A) max. at 39 in. (1 m)
Materials	Plenum rated plastic housing
Conduit connection	1/2 inch integral to wiring terminal cover
Electrical Connections	Enclosed screw terminal strip (22 to 14 AWG)

1 - All values stated hereinafter apply to operation under nominal voltage conditions.

RUN MODES

The function selection switch (see Installation Instructions – 31-00380M for more details) can be used to place the actuator into any one of three different modes:

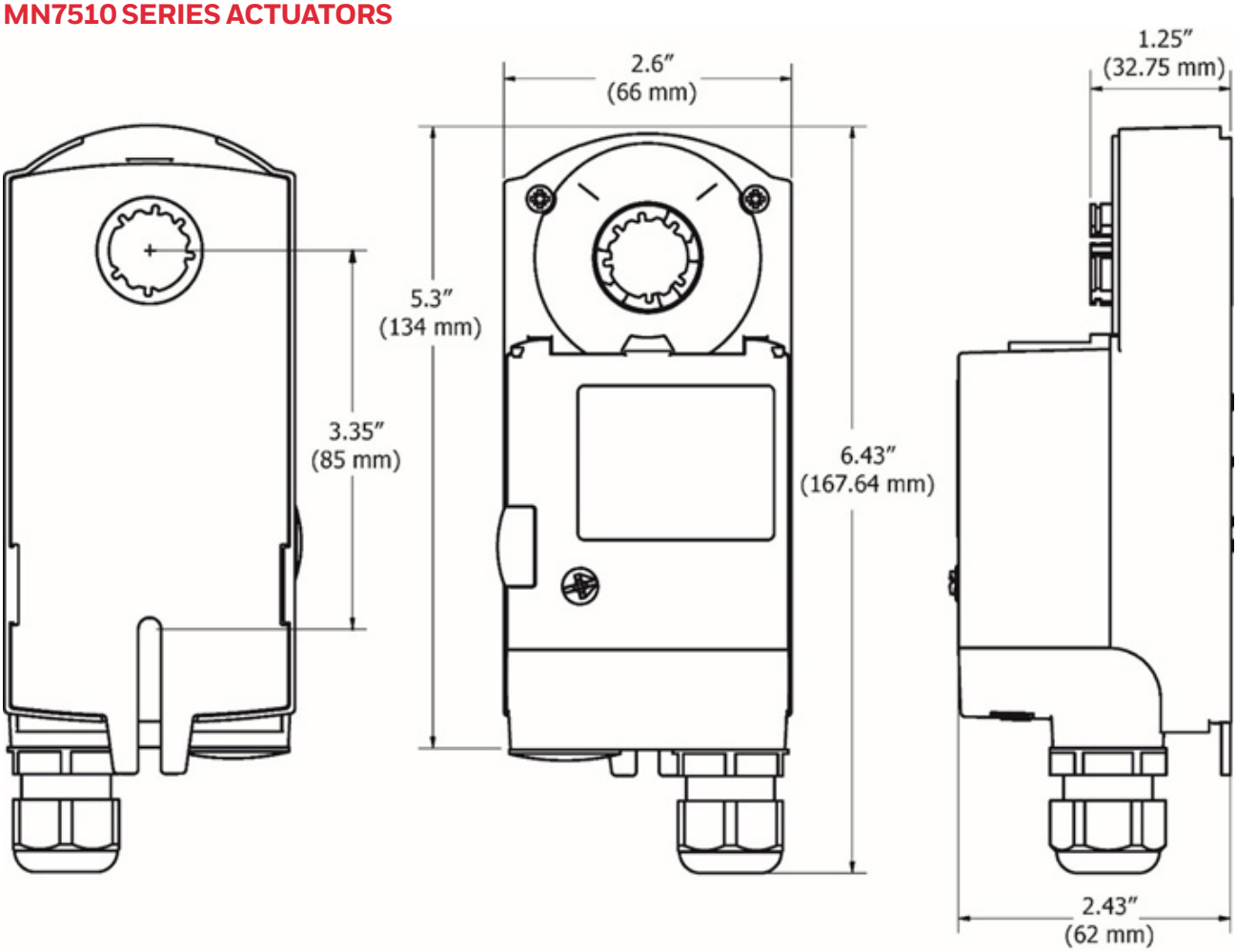
- Service / Off;
- Modulating mode, with 0-10VDC, 2-10VDC, 10-0VDC, or 10-2VDC. (Recommended run modes)
- Floating / 2-Position mode (“Dir” for counterclockwise rotation or “Rev” for Clockwise rotation).

APPROVALS

APPROVALS	SPECIFICATIONS
UL	UL873, Plenum rated
CE	89/336/ECC, 73/23/EEC
Canadian Underwriters Laboratories Inc.	cUL C22.2 No. 24-93
C-Tick	N314

MEASUREMENTS AND DIMENSIONS

MN7510 SERIES ACTUATORS



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