

Application

The VBB and VBS Series valves with SmartX Actuators are 2-Way or 3-Way, 1/2" or 3/4", characterized ball valves. The M3 and M2 SmartX Actuators are direct coupled to the VBB/VBS Series valves and accept two-position, floating or proportional control signals from a DDC system, controller, or thermostat for control of hot or chilled water, or solutions of up to 60% glycol. Typical applications include VAV reheat, fan coil units, hot and chilled water coils in air handling units, heat pumps and unit ventilators.

Features

- Easy product selection — all actuators fit all valve bodies.
- Fast, easy actuator installation — no linkage or tools required.
- Flow characterizing insert provides equal percentage flow characteristic for stable, accurate floating and proportional control.
- ANSI IV seat leakage (0.01%) for both 2-Way and 3-Way valves (A and B port).
- Brass and stainless steel trim models.
- Cvs from 0.3...10.
- Normally open, normally closed, and non-spring return assemblies available.
- Two-position, Floating or Proportional (0...5 Vdc, 0...10 Vdc, 5...10 Vdc, or 4...20 mA dc).
- Proportional actuator is direct or reverse acting.
- RoHS Compliant (VBS Assemblies).
- Reach Compliant.

Applicable Literature

- VBB and VBS Series Two-position Spring-Return Ball Valves Installation Instructions, F-27392.
- VBB and VBS Series Floating Spring Return and Non-spring Return Ball Valves Installation Instructions, F-27393.
- VBB and VBS Series Proportional Spring Return and Non-spring Return Ball Valves Installation Instructions, F-27394.
- VBB and VBS Series Brochure, F-27681.
- EN-205 Water System Guidelines, F-26080.
- EN-206 Guidelines for Powering Multiple Actuators, F-26363.

Application Note for 2-Way and 3-Way Valves

The VBB/VBS Series Ball Valves are Characterized Control Ball Valves. They are designed so that flow thru the A-port exhibits equal percentage flow. Thus, the A-port is the control port.

In a three-way valve, the B-port is the bypass port. Flow thru the B-port is designed to be less than that of the A-port. In most applications, this reduced flow compensates for the pressure drop that is seen by the coil supplied by the A-port.



8. VBB/VBS and VB-2000 Series
Ball Valve Assemblies

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Mx1...Mx3 A0x Series Actuator/ Valve Specifications

Specifications

Actuator

Voltage	24 Vac for floating and proportional 100...277 Vac for two position multi-voltage types	
Power Requirements	See Table-1, Table-2, and Table-3.	
Control Signal	2-Position, Floating, or Proportional; half wave rectified power supply	
Timing, Full Open to Full Close	See Table-1, Table-2 and Table-3.	
Manual Operating Lever / Position Indicator	Standard on all models.	
Auxiliary End Switch (optional)	SPST 24 Vac/Vdc, 101 mA...5 A max.	
Materials	Thermoplastic base and cover. Approved for use in air plenums.	
Shipping & Storage Temperature Limit	-40...169 °F (-40...76°C).	
Operating Temperature Limit at max fluid temp.	Floating	32...140 °F (0...60 °C)
	Proportional	32...140 °F (0...60 °C)
	Two-Position	32...169 °F (0...76 °C)
	Humidity	5...95% relative humidity, non-condensing.
Locations	NEMA 2, IEC IP31. Indoor Use Only.	

Valve

Service ^a	Hot and chilled water, up...60% glycol.
System Static Pressure Limit	600 psi (4137 kPa).
Fluid Temperature Limit	20...250°F (-7...121°C).
Cv (Kv)	See Tables 4 through 7.
Close-off Pressure ^b	130 psi 2-Way; 70 psi 3-Way
Differential Pressure	30 psi normal operation 20 psi quiet operation.
Seat Material	PTFE
Characterized Insert	Glass-filled PEEK
Seat Leakage	ANSI class IV (0.01%) at both A and B ports with pressure at inlet.
End Connections	NPT threaded (VBxxNxx)
Rangeability	Greater than 300:1.
Body Material	Forged brass.
Stem Material	Stainless steel anti-blow out stem with dual Viton™ o-rings.
Ball Material	Chrome plated brass (VBB series) or stainless steel (VBS series).

a. Not rated for steam service.

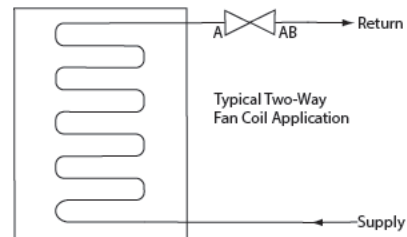
b. Close-off is defined as the maximum allowable pressure drop to which a valve may be subjected while fully closed.

Agency Listings

M2 SmartX actuators	North America: c-UL-us LISTED per UL 873 and C22.2 No.24. European Union: LVD 2006/95/EC and EMC 2004/108/EC directives compliant.
M3 SmartX actuators:	North America: c-UL-us LISTED per UL 60730-1 & -2-14 and CSA E60730-1 & -2-14. FCC part15 classB & ICES-003 classB emissions compliant. European Union: LVD 2014/35/EU and EMC 2014/30/EU directives, per EN 60730-1 & -2-14. EN 61000-6-2 immunity & EN 61000-6-3 emissions compliant.
Australia	This product meets requirements to bear the RCM Mark.
Plenum Rating	Actuators with terminal block or plenum cable leads are plenum rated.
CRN Number	CRN OC0970.9012345678NTY.
RoHS Compliant	VBS valves and M3/M2 actuators comply with European Directive RoHS 2 Directive 2011/65/EU. Please consult factory for part number specific compliance.
REACH Compliant	Compliant as defined in Article 33 of the REACH Regulation (EC)1907/2006.

Application Schematics Typical applications

For simplicity, balancing valves and control devices are not shown.



Mixing applications

