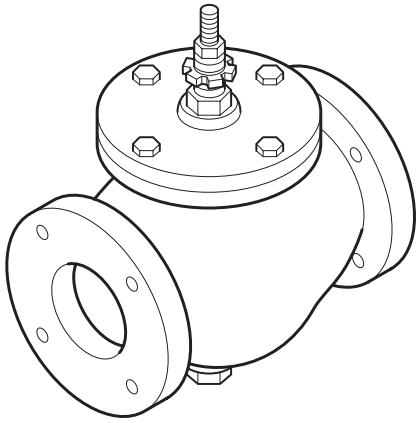
VB-8223 Series

2½"…6" 125 psi Flanged Stem Up Closed Two-Way Valves



Typical VB-8223-0-5-P 2½"…6"

Specifications

Valve Body Series		VB-8223-0-5-P
Service		Chilled or Hot Water (up to 50% Glycol) and Steam
Flow Characteristics		Equal Percentage
Sizes		2½"…6"
Type of End Fitting		125 psi Flanged
Valve Materials	Body	Cast Iron
	Seat	Brass
	Stem	Stainless Steel
	Plug	Forged Brass
	Packing	Spring-loaded TFE/EPDM
	Seat Ring	EPDM
ANSI Pressure Class (Figure 2)		125 psi Flanged (up to 200 psig below 150°F)
Maximum Inlet Pressure, Steam		35 psig (241 kPa)
Allowable Control Media Temperature		20 to 281°F (-7 to 138°C)
Close-off Pressure[a]		125 psi (856 kPa)
Allowable Differential Pressure for Steam[b]		20 psi (138 kPa)

Valve Size	Cv Rating[c]	kvs Rating[c]	Complete Valve Body Part Number
2½"	56	48	VB-8223-0-5-12
3"	85	74	VB-8223-0-5-13
4"	145	125	VB-8223-0-5-14
5"	240	208	VB-8223-0-5-15
6"	370	320	VB-8223-0-5-16

a - Exceeding close-off pressure voids product warranty. Do not exceed maximum operating pressure differential. See Vx-8xxx Selection Guide, F-27199 for maximum operating pressure differentials.
b - Maximum recommended differential pressure in closed position. Do not exceed recommended differential pressure or integrity of parts may be affected.
c - $C_v = \frac{gpm}{\sqrt{\Delta P}}$ (where ΔP is measured in psi)

Maximum Operating Pressure Differential

The maximum operating pressure differential is dependent on the size of the valve and the actuator. See the Vx-8xxx Selection Guide, F-27199 , for maximum operating pressure differential.

Normal Position of Valve Assembly

For a valve assembly (valve, linkage, and actuator) to have a normal position, the actuator must be of the spring return type. See Table 1 for compatible spring return and non-spring return actuators and their normal (stem up) positions.

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Table 1 Typical Compatible Actuators and Linkages

SmartX Actuators	Control Signal Type	Spring Return	Required Valve Linkage		Normal Position
			2½" to 5" Valves	6" Valves	
MA61-7200	Two Position 120 Vac	Yes	None[a]	—	Closed
MA61-7201	Two Position 230 Vac				
MA61-7203	Two Position 24 Vac				
MA41-7150	Two Position 120 Vac		AV-607-1	AV-609-1	Closed[b]
MA41-7151	Two Position 230 Vac				
MA41-7153	Two Position 24 Vac				
MA40-7170	Two Position 120 Vac				
MA40-7171	Two Position 230 Vac				
MA40-7173	Two Position 24 Vac				
MF41-6343	Floating 24 Vac	No	—		None
MF41-7153		Yes	AV-607-1		Closed[b]
MF40-7173					
MF61-7203			None[a]	—	Closed
MK-6811[c]	Pneumatic 5…10 psig[c]		AV-497	—	
MK-6911 with AK-42309-500[d]	Pneumatic 5…10 psig[d]		—	AV-497	
MS41-7153	Proportional 2…10 Vdc[e]		AV-607-1	AV-609-1	
MS40-7170	Proportional 2…10 Vdc[e]				Closed[b]
MS40-7171					
MS40-7173					
MS41-6340	Proportional 2…10 Vdc[e]	No	—		None
MS41-6341					
MS41-6343					
MS61-7203		Yes	None[a]	—	Closed[b]

a- Linkage integral to actuator.
b- As shipped from factory. May be field configured for normally open (spring return stem down).
c- AK-42309-500 positive positioner may be ordered separately and field adjusted for other ranges. Order a VK4 valve assembly for factory-installed positive positioner.
d- AK-42309-500 positive positioner must be used with MK-6911 on 6" VB-8223. Order separately. May be field adjusted for other ranges. Order a VK4 valve assembly for factory-installed positive positioner.
e- May be field configured for 4-20 mAdc.

Installation

Inspection

Inspect the package for damage. If damaged, notify the appropriate carrier immediately. If undamaged, open the package and inspect the device for obvious damage. Return damaged products.

Requirements

- Tools (not provided): Wrenches.
- Training: Installer must be a qualified, experienced technician
- Appropriate accessories

Caution:

- Install the valve with the flow in the direction of the flow arrow ("A" port is the inlet and "AB" port is the outlet). A label on the side of the valve provides port identification and a flow arrow.
- Do not exceed the ratings of the device.
- Avoid locations where excessive moisture, corrosive fumes, or vibration are present.

Mounting

1. The valve should be mounted in a weather-protected area in a location that is within the ambient limits of the actuator. When selecting a location, allow sufficient room for valve linkage, actuator, and other accessories and for service of the product.
2. The preferred mounting position for the valve is with the valve stem vertical above the valve body. Avoid mounting the valve so that the valve stem is below horizontal.
3. On steam applications, the valve stem should be 45° from vertical.
4. The valve must be piped with the "A" port as the inlet and the "AB" port as the outlet.

Flanged Valve Bodies

The VB-8223-0-5-P series flanged valve bodies conform to American Standard 125 psi Cast Iron Pipe Flanges. The companion flanges (not provided) should be the same specification as the valve. The 125 psi flanges have plain flat faces and should not be bolted to a raised faced flange.

- All parts should be clean to assure tight seals.
- The pipe with the companion flanges installed should be properly supported and aligned. Be sure the companion flange is flush with the face of the valve body flange and lined up squarely.
- Use a gasket material (not provided) that is recommended for the medium being handled.

Caution: Do not apply pipe dope to the valve flange, gasket, or companion flange.

- Figure 1 shows the proper way a flanged valve should be mounted. See Figure 4 for flange and flange bolt details.

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Maintenance & Field Repair

Regular maintenance of the total system is recommended to assure sustained performance. See Figure 2 and Table 2 for maintenance kits and their part numbers.

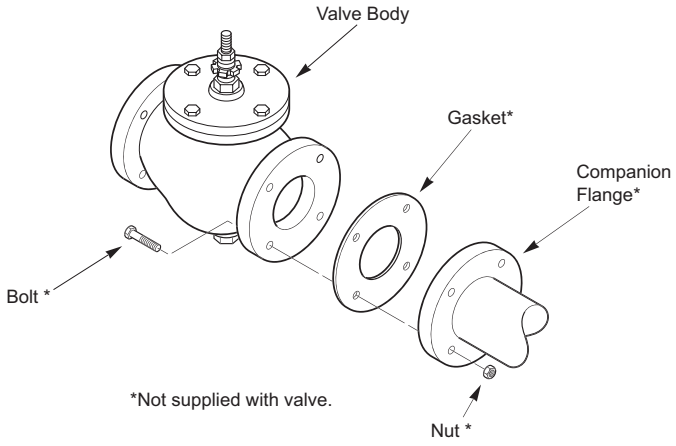

Figure 1 Installation of Flanged End Valves

Checkout

1. Make sure the valve stem operates smoothly before installing the valve linkage and the actuator. Initial breakaway force can be expected.
2. If the stem does not operate smoothly, it may indicate that the valve stem was bent by rough handling. These conditions may require valve replacement.
3. After the piping is under pressure, check the valve body and the connections for leaks.
4. After the valve linkage and the actuator are installed, check their operation.

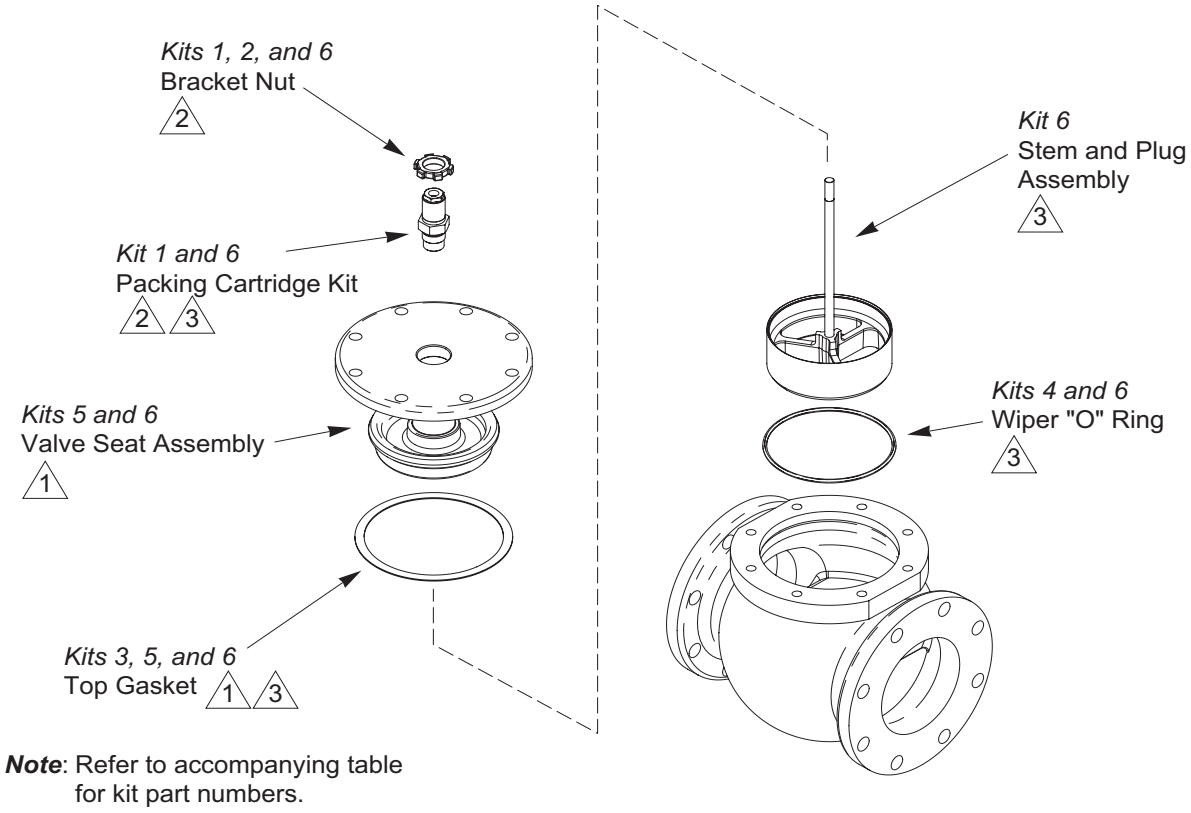

Figure 2 VB-8223 2½"…6" Repair Parts

1 Valve Seat Assembly Kit includes seat, "O" ring, cover plate, and top gasket.

2 Packing Cartridge Kit includes bracket nut and packing cartridge.

3 Valve Repair Kit includes packing cartridge, stem and plug assembly, wiper "O" ring, and top gasket,.

Table 2 Maintenance Kits for VB-8223 Valves

Valve Body Part Number	Size	Kit 1	Kit 2	Kit 3	Kit 4	Kit 5	Kit 6
		Packing Cartridge	Bracket Nut	Top Gasket	Wiper "O" Ring	Valve Seat Assembly	Valve Repair Kit
VB-8223-0-5-12	2½"	YBA-652-2	OYBB-225	-	NYBA-8303-104-0-12	YBA-822-101-0-12	-
VB-8223-0-5-13	3"				NYBA-8303-104-0-13	-	
VB-8223-0-5-14	4"				NYBA-8303-104-0-14		
VB-8223-0-5-15	5"				NYBA-8303-104-0-15		
VB-8223-0-5-16	6"				NYBA-8303-104-0-16		

Note:

- Before loosening or removing packing cartridge, depressurize valve to zero psi gauge (0 psig). If the packing cartridge is loosened or removed while there is pressure in the valve, valve packing may blow out with the potential of bodily injury and/or water/steam damage.
- EPDM components are not compatible with petroleum-based compounds. Use of such compounds will damage packings and seat rings and necessitate replacement of packing cartridge and/or stem and plug assembly.

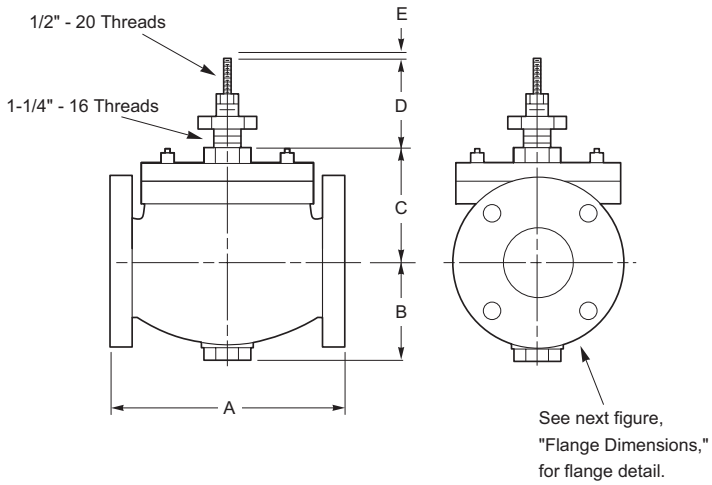

Figure 3 Typical of VB-8223-0-5-P 2½"…6" Valve Bodies

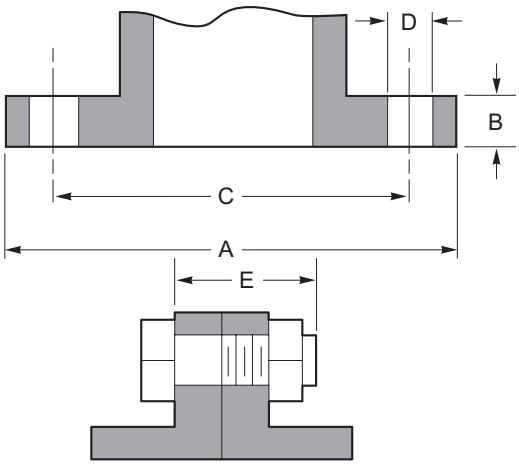

Figure 4 Flange Dimensions

Table 3 Dimensions for VB-8223 Series Valves (Figure 3)

Part Number	Valve Size	Dimensions in Inches (mm)				
		A	B	C	D (Stem Down)	E[a] (Nominal Stroke)
VB-8223-0-5-12	2½"	8-9/16 (217)	4 (102)	4-1/4 (108)	3-1/4 (83)	1 (25)
VB-8223-0-5-13	3"	9½ (241)	4-1/4 (108)	4-7/8 (124)		
VB-8223-0-5-14	4"	11½ (292)	4-15/16 (125)	5-3/4 (146)		
VB-8223-0-5-15	5"	13 (330)	5-7/16 (138)	6-3/4 (172)		
VB-8223-0-5-16	6"	14 (356)	6-1/4 (159)	7½ (191)		1-3/4 (45)

a - Nominal stroke for rated flow.

Table 4 Flange Detail for American Standard 125 psi Cast Iron Pipe Flanges (Figure 4)

Nominal Pipe Size	Flanges		Drilling		Bolting		Length of Machine Bolts E
	Flange Diameter A	Flange Thickness B	Diameter of Bolt Circle C	Diameter of Bolt Holes D	Number of Bolts	Diameter of Bolts	
2½"	7"	11/16"	5½"	3/4"	4	5/8"	2½"
3"	7½"	3/4"	6				
4"	9"	15/16"	7½"		8		3"
5"	10"		8½"	7/8"		3/4"	
6"	11"	1"	9½"				3-1/4"

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