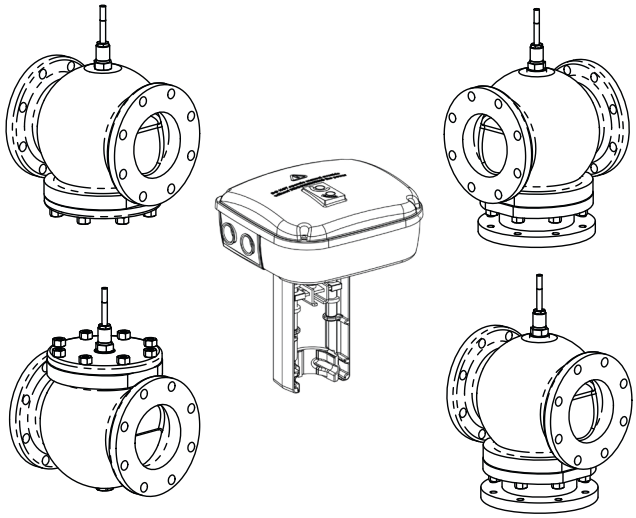
VB-8000, VB-9313 Series

2½ to 4” Globe Valves and **SpaceLogic** M900A Actuators



Applications

Schneider Electric **SpaceLogic** M900A Spring Return series spring return actuators mount directly onto a 2½ to 4” VB-8xxx series or VB-9313 series flanged globe valve bodies. Applications include chilled or hot water and steam. Field selectable input signals include reverse and direct acting, floating or proportional 0…10 Vdc, 2…10 Vdc or 4…20 mA, and proportional sequencing input signal ranges.

Applicable Literature

SpaceLogic M900A Specification Sheet F-27682
SpaceLogic M900A Installation Instructions, F-27683
AV-822 Installation Instructions, F-27702
Schneider Electric Valves and Actuators Catalog, F-27855
CA-28 Control Valve Sizing, F-13755

Valve and Actuator Selection Procedure

1. Determine the required flow coefficient (Cv/kvs).
Using the required flow and pressure drop for the application, determine the required flow coefficient (consult CA28, F-13755 if necessary).

2. Determine valve body part number.
Select a flanged VB-8xxx valve body from Table 1 or a flanged VB-9313 valve body from Table 2 having the required flow coefficient, size, body pattern, end connection, and temperature/pressure ratings appropriate for the application.

3. Select the Forta Actuator
Using the required close-off pressure for the application, consult Table 5 and select a M900A actuator having sufficient close-off pressure on the valve body selected in step 2. For valve/actuator combinations using VB-8xxx valve bodies, also consult Table 5 for maximum operating pressure differential limitations. Additional M900A actuator specifications may be found in Table 3 or in the Installation Instructions sheets shown in Applicable Literature.

If necessary, use the dimensional information in Figure-1, Figure-2, Table 8, and Table 9 to confirm that the valve-actuator assembly will fit in the available space.

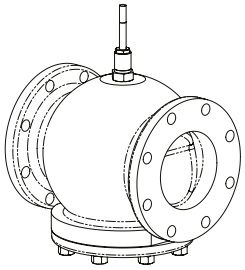
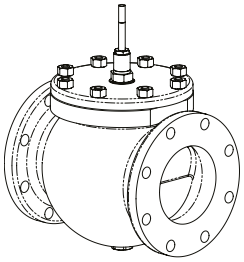
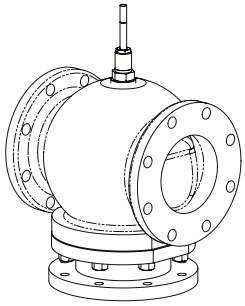
4. Determine Assembly Part Number
If a complete factory valve and actuator assembly is required, consult Table 3 for the actuator code of the Forta actuator selected in Step 3. For the complete assembly part number: Change the valve body part number prefix from VB to VU. Insert the actuator code in the third field of the part number. Confirm the factory assembly is available in Table 6

Example:
Valve body: VB-8213-0-4-14
Actuator: M900AR (actuator code from Table 3)
Complete assembly: VU-8213-650-4-14

M900A actuators are field configured for the desired control signal type and range plus the desired action. Consult the appropriate M900A Installation Instructions for further information (see Applicable Literature).

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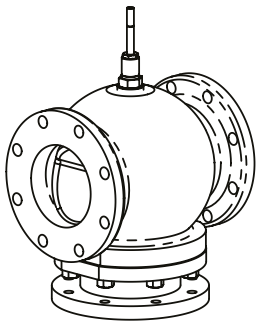
Table 1: VB-8213, VB-8223, and VB-8303 Valve Bodies

Two-Way and Three-Way Valves • **Two-way Stem Up Open or Stem Up Closed** • **Three-way Mixing/Diverting** • **ANSI 125 Flanged** • **Cast Iron Body**		Applications			
		Chilled or Hot Water, Steam		Chilled or Hot Water	
		Two-Way Flanged		Three-Way Flanged	
					
Size		2½"…4"	2½"…4"	2½"…4"	
Valve Body Part Number		VB-8213-0-5-P	VB-8223-0-5-P	VB-8303-0-5-P	
Valve Body Action		2-Way Stem Open	2-Way Stem Up Closed	3-Way Mixing/Diverting[a]	
Linkage Kit Part Number			AV-822[b]		
Flow Type		Equal %	Equal %	Modifier Linear	
Material	Body	Cast Iron	Cast Iron	Cast Iron	
	Seat	Forged Brass	Forged Brass	Forged Brass	
	Stem	Stainless Steel	Stainless Steel	Stainless Steel	
	Plug	Forged Brass	Forged Brass	Forged Brass	
	Packing	Spring Loaded TFE/EPDM	Spring Loaded TFE/EPDM	Spring Loaded TFE/EPDM	
	Seat Ring	EPDM	EPDM	None	
ANSI Pressure Class, psig		125			
ANSI Seat Leakage		ANSI IV		ANSI III	
Maximum Inlet Pressure Steam psig (kPa)		35 psig (241 kPa)		—	
Allowable Control Media temperature °F (°C) [c]		20°F to 281°F (-7°C to 138°C)			
Close-Off Pressure psi (kPa)		125 psi (856 kPa) [d]		35 psi (241 kPa) [d]	
P-Code	Valve Size (in)	Cv (kvs)		Cv (kvs) Mixing [e]	Cv (kvs) Diverting [f]
12	2½	56 (48)	56 (48)	80 (69)	95 (82) [g]
					115 (99) [h]
13	3	85 (74)	85 (74)	110 (95)	120 (104) [i]
14	4	145 (125)	145 (125)	190 (164)	190 (164) [i]

a. VB-8303 valves may be used as either mixing or diverting valves. VB-8303 valves will also operate satisfactorily as two-way angle valves if either end (side) port is closed off.
b. AV-822 linkage kit. Purchase separately.
c. CAUTION: Freeze protection required for temperatures below 32×F (0 ×C). Avoid ice formation on stems.
d. Valve in closed position. See Table 5 for maximum allowable VB-8xxx differential pressure for valve in any open position.
e. Mixing configuration, ports A and B are inlets, port AB is outlet. Port AB located on bottom.
f. Diverting configuration, port AB is inlet, ports A and B are outlets. Port AB located on bottom..
g. Diverting configuration, flow AB to A ports.
h. Diverting configuration, flow AB to B ports.
i. All diverting flow configurations, flow AB to either A or B ports.

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Table 2: VB-9313 Valve Bodies

Three-way Mixing/Diverting ANSI 125 Flanged Cast Iron Body		Applications
		Chilled or Hot Water
		ANSI Flanged
		
Size		2½"…4"
Valve Body Part Number		VB-9313-0-5-P
Valve Body Action		
Linkage Kit Part Number		AV-822 [a]
Flow Type		Mixing [b]
Material	Body	Cast Iron
	Seat	Cast Iron
	Stem	Stainless Steel
	Plug	Brass
	Packing	Spring Loaded TFE/EPDM
	Disc	None
ANSI Pressure Class, psig		125
ANSI Seat Leakage		ANSI III
Allowable Control Media temperatire °F (°C)[c]		40°F to 281°F (4°C to 138°C)
Close-Off Pressure psi (kPa) [d]		35 psi (241 kPa)
P-Code	Valve Size (in)	Cv (kvs) Rating
12	2½	67 (58)
13	3	91 (79)
14	4	170 (147)

a. AV-822 linkage kit. Purchase separately.
b. Port AB is the common port, ports A and B are inlets. Flow is from B to AB when valve stem is in up position (port A closed). Flow is from port A to AB when valve stem is down (port B closed). Common port AB is on the side.
c. CAUTION: Freeze protection required for temperatures below 32×F (0 ×C). Avoid ice formation on stems.
d. Maximum recommended differential in full open position. Do not exceed recommended differential pressure (pressure drop) or integrity of parts may be affected.

Table 3. Schneider Electric M900A Actuator Model Table

Model	Act Code	Force	Power	Running Watts	Transformer Size	Floating Control[a]	Proportional Control[b]	Feedback	(2) SPDT Aux Switches[e]	Linkage[c]	Spring Return Action	IP Rating
M900AR	650	202 lbf (900 N)	24 Vac 50/60Hz	21 W	50 Va	Yes	0…10 Vdc, 2…10 Vdc, 4…20 Ma	2…10 Vdc or 0…5 Vdc	No	AV-822	Return	NEMA 2
M900AE	652										Extend	
M900ARW	660										Return	NEMA 4
M900ARW-S2	661								24 Vac 4A			
M900AEW-S2	663										Extend	

a. Dip switch selectable
b. 0…5, 2…6 or 5…10, 6…10 also selectable by dip switch
c. Order seperately
d. Factory assembies not offered
e. S2 auxiliary switches may be added in the field. Order 8800104000

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Table 4 Ambient Temperature Restrictions for Valve Actuators

Fluid Temperature in Valve Body	Maximum Allowable Ambient Temperature[a]
Chilled Water	122°F (50°C)
281°F (138°C)	113°F (45°C)
300°F (149°C)	107°F (42°C)
340°F (171°C)	100°F (38°C)
366°F (186°C)	90°F (32°C)

a. Minimum allowable ambient operating temperature 14°F (-10°C)

Table 5 Select Valve/Actuator Combination Having Sufficient close-off for Application

Valve Body	P-Code	Size	Close-off Ratings psi	Maximum Operating Pressure Differential, psi
			M900A[a]	
VB-8213-0-5-P VB-8223-0-5-P	12 13 14	2½" - 4"	125	35 [b]
VB-8303-0-5-P			35	
VB-9313-0-5-P	12	2½"	24	
	13	3"	16	
	14	4"	9	

a. Requires AV-822 Linkage Order Separately
b. Maximum differental in any open position, For proper VB-8xxx valve operation do not exceed maximum operating differential

Factory Assemblies

Table 6 Factory Valve and Actuator Assemblies

VB-8000 Series Valve Assembly Part Number	P Code	Size	Actuator Model (Actuator Code [b])	VB-9313 Serie Valve Assembly Part Number	P Code	Size	Actuator Model (Actuator Code b)
			M900A (650, 652, 660, 661, 663)				M900A (650, 652, 660, 661, 663)
VU-8213-xxx-5-P VU-8303-xxx-5-P VU-8223-xxx-5-P	12	2½"	X	VU-9313-xxx-5-P	12	2½"	X
	13	3"			13	3"	
	14	4"			14	4"	

Table 7 VB-8xxx and VB-9313 Valve Body Actions

Valve Body	Valve Body Description	Stem Up Position	Action (As actuator strokes and valve stem goes down)
VB-8213-0-5-P VU-8213-xxx-5-P	Two Way Stem Up Open	Valve Open	A to AB flow decreases
VB-8223-0-5-P VU-8223-xxx-5-P	Two Way Stem Up Closed	Valve Closed	A to AB flow increases
VB-8303-0-5-P VU-8303-xxx-5-P	Three Way Mixing	Flow B to AB	B to AB flow decreases A to AB flow increases (common port bottom)
	Three Way Diverting	Flow AB to B	AB to B flow decreases AB to A flow increases (common port bottom)
VB-9313-0-5-P VU-9313-xxx-5-P	Three Way Mixing	Flow B to AB	B to AB flow decreases A to AB flow increases (common port side)

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Dimensions

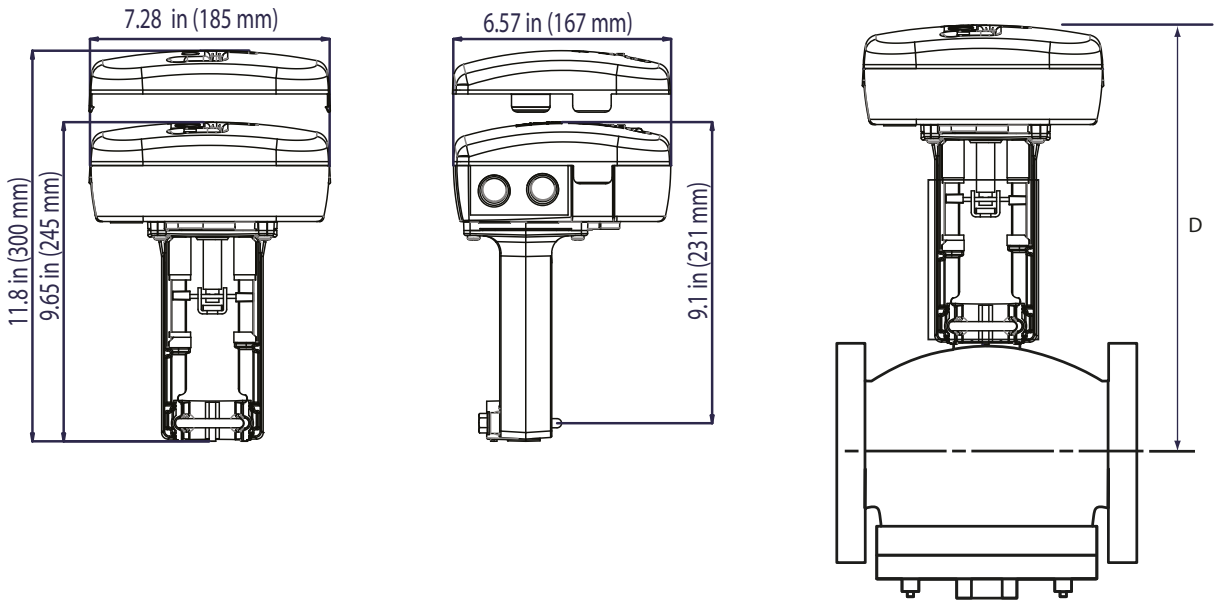
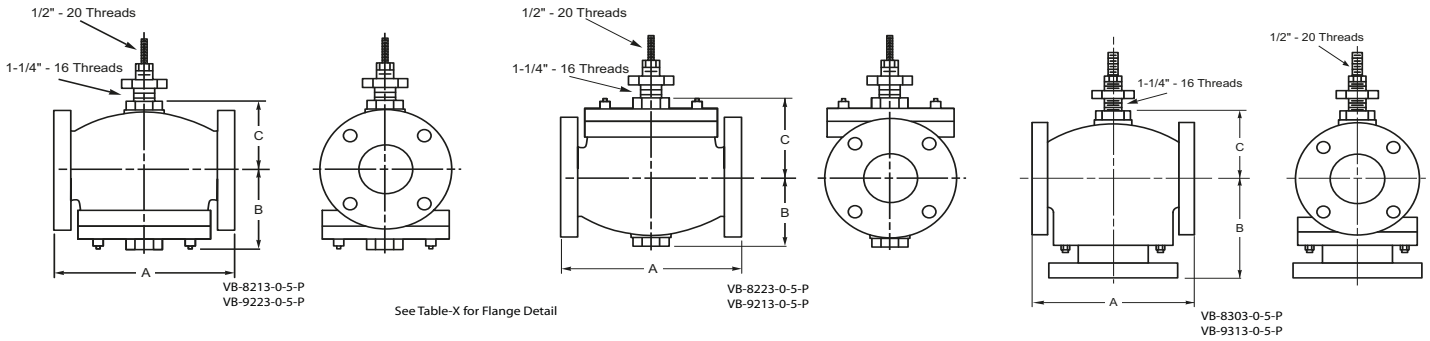
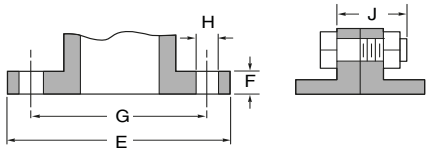


Figure-1 M900A Actuator Dimensions



Flange Dimensions



Nominal Pipe Size	Flanges		Drilling		Bolting		
	Flange Diameter E	Flange Thickness F	Diameter of Bolt Circle G	Diameter of Bolt Holes H	Number of Bolts	Diameter of Bolts	Length of Machine Bolts J
2-1/2	7"	11/16"	5-1/2"	3/4"	4	5/8"	2-1/2"
3	7-1/2"	3/4"	6"				
4	9"	15/16"	7-1/2"		8		3"
5	10"	15/16"	8-1/2"	7/8"		3/4"	
6	11"	1"	9-1/2"				3-1/4"

Figure-2 VB-8xxx and VB-9xxx Valve Body and Flange Dimensions

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Table 8 VB-8xxx Dimensions (see Figure-1 and Figure-2)

Valve Body Part Number	Size, Inches	Dimensions in Inches (mm) [a]			
		A	B	C	D[b]
VB-8213-0-5-P	2½	8-9/16 (217)	4 (102)	3-3/8 (86)	9-17/32 (242)
	3	9½ (241)	4-5/8 (117)	3-3/4 (95)	9-17/32 (242)
	4	11½ (292)	5-1/2 (140)	4½ (114)	9-17/32 (242)
VB-8223-0-5-P	2½	8-9/16 (217)	4 (102)	3-11/16 (94)	9-17/32 (242)
	3	9½ (241)	4-1/4 (108)	4-1/16 (103)	9-17/32 (242)
	4	11½ (292)	4-15/16 (125)	5-5/16 (135)	9-17/32 (242)
VB-8303-0-5-P	2½	8-9/16 (217)	5-7/16 (138)	3-1/16 (78)	9-17/32 (242)
	3	9½ (241)	6-3/8 (162)	3-11/16 (94)	9-17/32 (242)
	4	11½ (292)	8-7/16 (214)	4-5/16 (110)	9-17/32 (242)

a. See Figure-2 for flange dimensions
b. Assembly height, centerline of valve body to top of actuator (see Figure-1). Leave an additional 3" (76 mm) clearance for cover removal.

Table 9 VB-9313 Dimensions (see Figure-1 and Figure-2)

Valve Body Part Number	Size, Inches	Dimensions in Inches (mm) [a]			
		A	B	C	D[b]
VB-9313-0-5-P	2½	8-9/16 (217)	5-3/8 (137)	3-½ (89)	9-17/32 (242)
	3	9½ (241)	6-3/8 (162)	3-3/4 (95)	9-17/32 (242)
	4	11½ (292)	8-1/2 (216)	4½ (114)	9-17/32 (242)

a. See Figure-2 for flange dimensions
b. Assembly height, centerline of valve body to top of actuator (see Figure-1). Leave an additional 3" (76 mm) clearance for cover removal.

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