
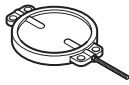


# 2-Way Butterfly Valves, Flangeless (2 to 24 in.) with Electric Gear Train and Pneumatic Actuators

**TABLE 1.** Select **Valve Assembly** with correct Input Signal (refer to Table 3, Table 3A and Table 3B also) less **Actuator Code (XXX)** including the **P Code** (Size, Cv Rating, Port Code). (Refer to Pages 172 to 179 for Valve Sizing.)

			Application			
			Chilled or Hot Water			
Size			35 psig Steam	15 psig Steam		
			Flangeless Wafer <sup>a</sup>	2 in. -6 in. Lug 8 in. -12 in. Wafer		
						
			2 to 24 in.	2 to 12 in.		
Actuator	Normal Position	Input Signal	Valve Assemblies			
MC-431	None	SPDT	VC-6064-113-2-P	VC-6164-113-2-P		
MK4-7121	Normally Open or Closed; specify when ordered	Pneumatic	VK-6064-221-2-P	VK-6164-221-2-P		
MK4-7121 and MK-7121		Pneumatic	VK-6064-321-2-P	VK-6164-321-2-P		
MP-485	None	Electric (Refer to Table 3B)	VP-6064-103-2-P	VP-6164-103-2-P		
MP-9750	None		VP-6065-906-2-P	VP-6165-906-2-P		
MP-9810	None		VP-6065-908-2-P	VP-6165-908-2-P		
MP-4851	None		Electric (Refer to Table 3B)	VP-6064-442-2-P VP-6065-442-2-P	VP-6164-442-2-P VP-6165-442-2-P	
<p><b>NOTE:</b> These charts are color coded as shown below to assist valve selection. Note it is only possible to select a valve assembly.</p> <p><b>ORDERING EXAMPLES:</b></p> <p><b>1. Valve Assembly:</b> VK-6164-321-2-16</p> <p><input type="checkbox"/> Valve Assembly less Actuator Code (XXX) and less P Code (Size, Cv Rating, Port Code)</p> <p><input type="checkbox"/> P Code (Size, Cv Rating, Port Code)</p> <p><input type="checkbox"/> Actuator Code (XXX) for Valve Assemblies</p>			Flow Type		Equal %	Equal %
			Material	Body	Iron	Iron
				Seat	1.5 to 3% Leakage	EPDM (EPT) Rubber Liner
				Stem	Stainless Steel	Stainless Steel
				Packing	Graphited Teflon	"O" Ring
Disc	Iron	Aluminum Bronze				
STEAM						
Pressure psig (kPa)	Static	150 (1034)	150 (1034)			
	Inlet	35 (241)	15 (103)			
	Recom. Diff	Refer to Table 2				
Fluid Temp. °F (°C)	Max.	281 (138)	275 (135)			
WATER						
Pressure psig (kPa)	Static	150 (1034)	150 (1034)			
	Recom. Diff.	Refer to Table 2				
Fluid Temp. °F (°C) <sup>b</sup>	Min.	-10 (-23)	-10 (-23)			
	Max.	350 (177)	250 (121)			

**TO SELECT A PORT CODE (P).**

P Code	Valve Size in. <sup>c</sup>	Cv <sup>d</sup>	
-11	2	54	47
-12	2-1/2	95	80
-13	3	155	136
-14	4	275	249
-15	5	435	404
-16	6	630	597
-17	8	1115	1200
-18	10	1740	1890
-19	12	2515	2860
-20	14	3013	—
-21	16	4000	—
-22	18	5125	—
-23	20	6390	—
-24	24	9350	—

<sup>a</sup> Flangeless wafer with four alignment holes for mounting between two 125/150 ASA flanges.  
<sup>b</sup> CAUTION: Freeze protection required for fluid temperatures below 32°F (0°C).  
<sup>c</sup> CAUTION: Fittings and/or pipe schedules must meet or exceed working static pressure requirements.  
<sup>d</sup> Based on 60° opening for optimum control characteristics.

# 2-Way Butterfly Valves, Flangeless (2 to 24 in.) with Electric Gear Train and Pneumatic Actuators

**TABLE 2.** Factory Assemblies, select **Actuator Code (XXX)** series with correct Input Signal having sufficient close-off for the application.

Input Signal			Refer to Table 3A and Table 3B		Refer to Table 3B		Refer to Table 3A and Table 3B		Pneumatic		Pneumatic	
Actuator Code (XXX)			MC-431 (113) MP-485 (103) MP-4851 (442)		MP-9750 (906)		MP-9810 (908)		MK4-7121 (221) <sup>a</sup>		MK4-7121 and MK-7121 (321) <sup>a</sup>	
Valve Assemblies	P Code	Size in.	Close-Off (psi) 0 <sup>b</sup>	Max. Recom. Diff. Press. Full Open (psi) (60°)	Close-Off (psi) 0 <sup>b</sup>	Max. Recom. Diff. Press. Full Open (psi) (60°)	Close-Off (psi) 0 <sup>b</sup>	Max. Recom. Diff. Press. Full Open (psi) (60°)	Close-Off (psi) 0 <sup>b</sup>	Max. Recom. Diff. Press. Full Open (psi) (60°)	Close-Off (psi) 0 <sup>b</sup>	Max. Recom. Diff. Press. Full Open (psi) (60°)
VC-6064-113-2-P VK-6064-221-2-P VK-6064-321-2-P VP-6064-103-2-P VP-6065-906-2-P VP-6065-908-2-P	-11	2	150	3.8 <sup>c</sup>	—	—	—	—	150	3.8 <sup>c</sup>	—	—
	-12	2-1/2		2.5 <sup>c</sup>	—	—	—	—		2.5 <sup>c</sup>	—	—
	-13	3		2.2 <sup>c</sup>	—	—	—	—		2.2 <sup>c</sup>	—	—
	-14	4	125	2.1 <sup>c</sup>	—	—	—	—	125	2.1 <sup>c</sup>	—	—
	-15	5	100	—	—	—	—	—	100	—	—	—
	-16	6	50	2.0 <sup>c</sup>	—	—	—	—	80	2.0	—	—
	-17	8	30	1.9 <sup>c</sup>	90	1.9 <sup>c</sup>	90	1.9 <sup>c</sup>	83	1.9 <sup>c</sup>	90	1.9 <sup>c</sup>
	-18	10	25	1.6 <sup>c</sup>	70	2.0 <sup>c</sup>	70	2.0 <sup>c</sup>	36	2.0 <sup>c</sup>	70	2.0 <sup>c</sup>
	-19	12	15	1.0 <sup>c</sup>	50	1.9 <sup>c</sup>	50	1.9 <sup>c</sup>	27	1.9 <sup>c</sup>	50	1.9 <sup>c</sup>
	-20	14	10	0.7 <sup>c</sup>	30	2.0 <sup>c</sup>	30	2.0 <sup>c</sup>	16	1.7	30	2.0 <sup>c</sup>
	-21	16	—	—		1.7	40	2.0 <sup>c</sup>	13	1.2	27	
	-22	18	—	—	20	1.1	30	1.9	—	—	17	1.8
	-23	20	—	—	15	0.8	25	1.4	—	—	13	1.4
-24	24	—	—	10	0.5	15	0.8	—	—	8	0.8	
VC-6164-113-2-P VK-6164-221-2-P VK-6164-321-2-P VP-6164-103-2-P VP-6165-906-2-P VP-6165-908-2-P	-11	2	50 <sup>d</sup>	2.8 <sup>c</sup>	—	—	—	—	50 <sup>d</sup>	5.0 <sup>c</sup>	—	—
	-12	2-1/2		3.7 <sup>c</sup>	—	—	—	—		3.5 <sup>c</sup>	—	—
	-13	3		3.0 <sup>c</sup>	—	—	—	—		2.8 <sup>c</sup>	—	—
	-14	4		2.2 <sup>c</sup>	50 <sup>d</sup>	2.2 <sup>c</sup>	—	—		—	2.5 <sup>c</sup>	—
	-15	5	1.4 <sup>c</sup>	1.4 <sup>c</sup>		—	—	2.4 <sup>c</sup>	—	—		
	-16	6	—	—	50 <sup>d</sup>	1.3 <sup>c</sup>	50 <sup>d</sup>	1.3 <sup>c</sup>	2.3 <sup>c</sup>	—	2.3 <sup>c</sup>	
	-17	8	—	—		1.3 <sup>c</sup>	—	—	—	50 <sup>d</sup>	1.7 <sup>c</sup>	
	-18	10	—	—	—	—	25 <sup>d e</sup>	1.3 <sup>c</sup>	—	—	Consult Factory	Consult Factory
	-19	12	—	—	—	—	—	1.3 <sup>c</sup>	—	—	Consult Factory	Consult Factory

<sup>a</sup> Ratings based on 20 psi main pressure.  
<sup>b</sup> For steam applications close-off ratings are 35 psig metal seat / 15 psig rubber lined maximum unless listed close-off is lower.  
<sup>c</sup> Based on 10 ft./sec. fluid velocity. Contact factory concerning higher rating.  
<sup>d</sup> Bubble tight.  
<sup>e</sup> Based on wet service.

**TABLE 3.** Factory Assemblies (VK-6X64), Pneumatic Input, select exact **Actuator Code (XXX)**.

Input Signal	Normal Position	Effective Area	Spring Range (psig)	Positive Positioner	Actuator(s)	Actuator Code (XXX) for Factory Available Assembly
Pneumatic	N.O. or N.C. specify when ordered	20 sq. in.	8 to 13	Yes	MK4-7121	221
		40 sq. in.			MK4-7121 and MK-7121	321

## 2-Way Butterfly Valves, Flangeless (2 to 24 in.) with Electric Gear Train and Pneumatic Actuators

**TABLE 3A.** Factory Assemblies (VC-6X64), SPDT (Snap Acting) Input, select exact Actuator Code (XXX).

Input Signal	Normal Position	Voltage Vac	Hz	VA	Auxiliary Switch	Actuator	Actuator Code (XXX) for Factory Available Assembly
SPDT Snap Acting	None	120	60	96	Yes	MC-431	113

**TABLE 3B.** Factory Assemblies VP-6X6X), Multiple Input (refer to table below), select exact Actuator Code (XXX). Any 220 lb-in. MP-3XX, MP-4XX, or MP-9XXX electric gear train actuator can be assembled to valve bodies with the close-off pressure ratings listed in Table 2. Select Actuator Type having sufficient close-off for the application. Select actuator, linkage, valve body and field assemble.

Normal Position	INPUT SIGNAL							Voltage Vac (Hz)	Aux. Switch	Actuator Part Number	Actuator Code (XXX) for Factory Avail. Assem.
	2 to 15 Vdc TAC System 8000	4 to 20 mA etc.	Slidewire (Series 90)	SPST	SPDT Snap Acting	Pneumatic	SPDT Floating Direct Digital Control				
None	1	2, 8	3	—	Yes	4, 9	Yes	120 (60)	Yes	MP-485	103
	6	2	7			4				MP-9750	906
						MP-9810				908	

- |  |   |
|--|---|
| <ol style="list-style-type: none"> <li>1. Requires CP-8301-120, CP-9301 or CP-9302 ordered separately.</li> <li>2. Requires CP-8391-716 or CP-9302 ordered separately.</li> <li>3. Requires AE-504 ordered separately.</li> <li>4. Requires CP-8391-716 or CP-9302 and PP-8311.</li> </ol> | <ol style="list-style-type: none"> <li>6. Requires CP-8391-456 or CP-930X ordered separately.</li> <li>7. Requires AE-504 and AM-345 ordered separately.</li> <li>8. Requires CP-8391-910 or CP-9302 ordered separately.</li> <li>9. Requires CP-8391-910 or CP-9302 and PP-8311 ordered separately.</li> </ol> |
|--|---|

**TABLE 4.** Optional Input signal Interface to Pneumatic.

Input Signal Type	Interface Module Required
Two-Position, SPST (Electric)	AL-1XX
Two-Position, SPDT Snap Acting (Electric)	AL-1XX
Voltage 2 to 15 Vdc, TAC System 8000	CP-8511-XXX
Current Input 4 to 20 mA etc.	CP-8511-XXX, CP-8551

## 2-Way Butterfly Valves, Flangeless (2 to 24 in.) with Electric Gear Train and Pneumatic Actuators

**TABLE 5.** Dimensions in Inches  
(Millimeters). (Refer to page 63)

Part Number	Size	Valve				
		A	B	C	D	E
<b>VC-6064</b> <b>VK-6064</b> <b>VP-6064</b> <b>VP-6065</b>	2	1-1/2 (38)	2-3/4 (70)	5-3/8 (137)	3-7/8 (98)	10-1/2 (267)
	2-1/2		3 (76)	5-5/8 (143)	4-5/8 (118)	10-3/4 (273)
	3		3-1/8 (79)	5-7/8 (149)	5-1/4 (133)	11 (279)
	4		4-1/4 (108)	6-3/8 (162)	6-3/8 (162)	11-5/8 (295)
	5		4-7/8 (129)	6-7/8 (175)	7-1/2 (191)	12-1/8 (308)
	6		5-3/8 (137)	7-3/8 (187)	8-1/2 (216)	12-5/8 (321)
	8	1-7/8 (48)	6-1/2 (165)	9-5/8 (244)	10-3/4 (273)	15-3/8 (391)
	10		8 (203)	10-5/8 (270)	13 (330)	16-3/8 (416)
	12		9-1/2 (241)	11-5/8 (295)	15-1/4 (387)	17-3/8 (441)
	14		10-1/2 (267)	12-1/8 (308)	16-3/8 (416)	17-7/8 (454)
	16	2-3/8 (60)	12-3/4 (324)	14-1/2 (368)	18-1/4 (464)	20-1/4 (514)
	18		13-7/8 (352)	15-1/2 (394)	20-3/4 (527)	21-1/4 (565)
	20		14-7/8 (378)	16-1/2 (419)	22-3/4 (578)	22-1/4 (565)
	24		17-1/4 (438)	18-1/2 (470)	27 (686)	23-1/4 (591)
<b>VC-6164</b> <b>VK-6164</b> <b>VP-6164</b> <b>VP-6165</b>	2	1-5/8 (41)	2-7/8 (73)	5-3/4 (146)	6-1/8 (156)	—
	2-1/2	1-3/4 (45)	3-1/8 (79)	6-1/4 (159)	6-7/8 (175)	—
	3		3-1/2 (89)	6-1/2 (165)	7-1/4 (184)	—
	4	2 (51)	4-1/2 (114)	7-1/4 (184)	8-3/4 (222)	—
	5	2-1/8 (54)	5-5/8 (143)	7-3/4 (197)	9-7/8 (251)	—
	6		6-1/4 (159)	8-3/4 (222)	11 (279)	—
	8	2-3/8 (60)	7-7/8 (200)	9-5/8 (245)	12 (305)	—
	10	2-3/4 (70)	9-1/4 (235)	11 (279)	14-1/2 (368)	—
	12	3 (76)	10-5/8 (270)	12-1/2 (318)	16-1/8 (410)	—