

# 10. Butterfly Valve Assemblies

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# Butterfly Valve Actuators & Assembly Ordering

## Product Description

Schneider Electric's butterfly valve line offers a wide range of two- and three-way sizes, along with electric non-spring return, and spring return actuator models that operate with on/off, floating, or proportional control signals. All assemblies include industry leading butterfly valve features, stainless steel double "D" shafts, nylon 11 coated ductile iron disc machined to provide bubble tight shut off, minimum torque, and longer seat life. The tongue and groove resilient seat design with molded in O-ring eliminates the use of flange gaskets and allows for ease of maintenance or replacement of the resilient seat. These features provide years of optimum performance and reliability.

## Applications

Typical applications include data centers, cooling towers, central system shutoff and bypass piping control, thermal storage, and chiller and boiler control. High Performance Butterfly Valves are ideally suited to both high pressure, high temperature, high cycle HVAC applications and mission critical HVAC applications. This includes chiller isolation, cooling tower isolation, change-over systems, large air handler's coil control, bypass and process control applications. With ANSI Class 150 rating, all valves are tested for bubble tight close-off to API 598 standards at maximum rated differential pressure.

## Standard Features

- 2...18" two-way assemblies and 2...16" three-way assemblies
- Chilled/hot water/glycol applications
- EPDM resilient seats with tongue and groove design and build in O-ring seal
- Stainless steel double D stem, requires no pins or screws to connect the disc and stem
- Extended neck design for temperature isolation and ease of insulation installation
- Nylon 11 coated ductile iron disc
- Wide choice of pneumatic and electric actuators and control signals
- Cast iron lug bodies mate with ANSI class 125/150 flanges
- Bubble tight shut off
- Bidirectional Flow
- Series S70 NEMA 4 actuators available in 24 or 120 Vac

## High Performance Features

- Double Offset Stem/Disc Design
  - Reduced seat wear, zero leakage, and low torque
- Blow-out Proof Stem
  - Safety and ease of use
- Energized RTFE Seat
  - Zero leakage, self-adjusting for wear and easy field replacement
- Pressure Assisted, but not Pressure Dependent Seat Design
  - Optimal performance and sealing at high or low differential pressures
- Adjustable PTFE Packing
  - Packing can be adjusted while the valve is in service
- Dead End Rating Equal to Nominal Pressure Rating
  - Allows the control valve to function as an isolation valve.



## Part Numbering System

**Flow Pattern<sup>b</sup>**  
0 = 2-Way  
C = 3-Way

Configuration Number	C		
	Main Valve <sup>a</sup>	Main Valve Position <sup>c</sup>	Linked Valve
1	A	NC	C
2	B	NC	C
7	B	NO	C
8	A	NO	C

a. The letter indicates the main valve and where the actuator is mounted.  
b. The view represented is looking down on the stem side of the valve.  
c. Spring return models position on loss of power

Three-way valves are configurable during the order process. When placing an order manually through customer care please note the Configuration Number above. When ordering online through iPortal, please select the proper configuration from the drop-downs on the Cart Page. Refer to flow diagram above.

V X X X - 6 X X X - X X X X - X - X X

**Control Signal Type**  
A = 2-Position  
B = Body only  
F = Floating (SPDT, center off)  
S = Proportional (Vdc, mAcd)

**Type**  
6 = Butterfly

**Actuator Code**  
See Table 1  
If actuator code is only three digits, leave the fourth digit blank.

**Port Code**  
11 = 2"  
12 = 2.5"  
13 = 3"  
14 = 4"  
15 = 5"  
16 = 6"  
17 = 8"  
18 = 10"  
19 = 12"  
20 = 14"  
21 = 16"  
22 = 18"  
\*Notes: Larger Sizes (Consult Factory)

**Disc**  
F = Full 175 psi close to 12"  
U = Undercut 50 psi close

**Style**  
2 = 2-Way  
3 = 3-Way

**Body Style**  
L = Nylon disc and lug body  
M = AlumBronze Disc\*  
SS = Stainless Steel Disc\*  
\*Notes: (Consult Factory)

**Accessory**  
S = Auxiliary switch  
Leave the digit blank for no accessories

**Power Loss Action**  
0 = NSR  
1 = NO  
2 = NC

Table 1: Actuator Codes and Part Numbers<sup>a</sup>

Refer to the part numbering system illustration on the previous page.

Actuator Code <sup>b</sup>	On/Off or Floating SR	Actuator Code <sup>b</sup>	Modulating (2...10 Vdc, 4...20mA) SR with the addition of a 500 ohm resistor
556	MA41-7153 (VAx) (On/Off)	556	MS41-7153 (VSx)
556D	2 MA41-7153 (VAx) (On/Off)	556D	2 MS41-7153 (VSx) (Modulating)
556	MF41-7153 (VFx) (Floating)	-	-
556D	2 MF41-7153 (VFx) (Floating)		
Actuator Code <sup>b</sup>	On/Off or Floating SR with Two SPDT Auxiliary Switches	Actuator Code <sup>b</sup>	Modulating (2...10 Vdc, 4...20 mA) SR with the addition of a 500 ohm resistor with Two Auxiliary Switches
556	1 MA41-7153-502 (VAxS) (On/Off)	556	MS41-7153-502 (VSxS) (Modulated)
556D	1 MA41-7153 & 1 MA41-7153-502 (VAxS) (On/Off)	556D	1 MS41-7153 & 1 MS41-7153-502 (VSxS) (Modulated)
556	1 MF41-7153-502 (VFxS) (Floating)	-	-
556D	1 MF41-7153 & 1 MF41-7153-502 (VFxS) (Floating)		
Actuator Code <sup>b</sup>	On/Off or Floating NSR	Actuator Code <sup>b</sup>	Modulating (0...10 Vdc, 4...20 mA) NSR
E24	NR-2216-521 (VFx)	E24	NR-2216-541 (VSx)
E25	NR-2224-521 (VFx)	E25	NR-2224-541 (VSx)
E25D	2 NR-2224-521 (VFx)	E25D	2 NR-2224-541 (VSx)
Actuator Code <sup>b</sup>	On/Off or Floating NSR with Two SPDT Auxiliary Switches	Actuator Code <sup>b</sup>	Modulating (0...10 Vdc, 4...20 mA) NSR with Two SPDT Auxiliary Switches
E24	NR-2216-522 (VFxS)	E24	NR-2216-542 (VSxS)
E25	NR-2224-522 (VFxS)	E25	NR-2224-542 (VSxS)
E25D	1 NR-2224-521 & 1 NR-2224-522 (VFxS)	E25D	1 NR-2224-541 & 1 NR-2224-542 (VSxS)
Actuator Code <sup>c</sup>	On/Off NSR with Two SPDT Auxiliary Switches and Heater	Actuator Code <sup>c</sup>	Modulating (0...10 Vdc, 4...20 mA) NSR with Two SPDT Auxiliary Switches and Heater
E10	S70-120-0061-H (VAxS)	E12	S70-120-0061-SV (VAxS)
E20	S70-120-0121-H (VAxS)	E22	S70-120-0121-SV (VSxS)
E30	S70-120-0201-H (VAxS)	E32	S70-120-0201-SV (VSxS)
E40	S70-120-0301-H (VAxS)	E42	S70-120-0301-SV (VSxS)
E50	S70-120-0501-H (VAxS)	E52	S70-120-0501-SV (VSxS)
E60 (120 Vac only)	S70-120-0651-H (VAxS)	E62 (120 Vac only)	S70-120-0651-SV (VSxS)
E70 (120 Vac only)	S70-120-1300-H (VAxS)	E72 (120 Vac only)	S70-120-1300-SV (VSxS)
E80 (120 Vac only)	S70-120-1800-H (VAxS)	E82 (120 Vac only)	S70-120-1800-SV (VSxS)

a. See Table 2 to verify the correct actuator application for the valve selected.

b. D = Dual actuators

c. E10 through E50 available as 24 Vac powered: change actuator code E to "F" and 120 to 24, e.g. F10 = "S70-24-0061-H"

Table 2: 2-Way and 3-Way Valve Assemblies

Size	Close Off	2-Way Butterfly Valve Assemblies <sup>a</sup>				3-Way Butterfly Valve Assemblies <sup>a</sup>			
		Schneider Electric SmartX™ SR <sup>b</sup>	Direct Coupled NSR <sup>c</sup>	NEMA 4 with Hand Wheel NSR <sup>c</sup>		Schneider Electric SmartX SR <sup>b</sup>	Direct Coupled NSR <sup>c</sup>	NEMA 4 with Hand Wheel NSR <sup>c</sup>	
				2 Pos	Mod			2 Pos	Mod
2"	175	556	E24	E10	E12	556	E24	E10	E12
2.5"	175	556	E24	E10	E12	556 D	E25	E10	E12
	285	-	-	E10	E12	-	-	-	-
3"	175	556 D	E25	E10	E12	556 D	E25	E10	E12
	285	-	-	E10	E12	-	-	-	-
4"	50	556 D	E25	-	-	556 D	E25	E10	E12
	175	-	E25 D	E10	E12	-	E25 D	E10	E12
	285	-	-	E10	E12	-	-	-	-
5"	50	-	E25	E10	E12	-	E25 D	E10	E12
	175	-	-	E10	E12	-	-	E10	E12
	285	-	-	E20	E22	-	-	-	-
6"	50	-	E25 D	-	-	-	E25 D	E20	E22
	175	-	-	E10	E12	-	-	E20	E22
	285	-	-	E20	E22	-	-	-	-
8"	50	-	-	E20	E22	-	-	E20	E22
	175	-	-	E30	E32	-	-	E30	E32
	285	-	-	E30	E32	-	-	-	-
10"	50	-	-	E30	E32	-	-	E30	E32
	175	-	-	E40	E42	-	-	E50	E50
	285	-	-	E40	E42	-	-	-	-
12"	50	-	-	E40	E42	-	-	E50	E52
	175	-	-	E50	E52	-	-	E60	E62 <sup>g</sup>
	285	-	-	E50	E52	-	-	-	-
14"	50	-	-	E50	E52	-	-	E50	E52
	150	-	-	E60	E62	-	-	-	-
	285	-	-	E60	E62	-	-	-	-
16"	50	-	-	E60	E62	-	-	E60	E62 <sup>g</sup>
	285	-	-	E70	E72	-	-	-	-
18"	50	-	-	E60	E62	-	-	-	-
	285	-	-	E80	E82	-	-	-	-

- a. D = Dual actuators
- b. SR = Spring return actuator available as configured for normally open and normally closed butterfly valves.
- c. NSR = Non-spring return actuator.
- d. For 24 Vac use "F"
- e. 120 Vac only: E6x, E7x, E8x.

Table 3: Actuator Features

Actuator Family	Spring Return	Available Input Signals	Available Options
Schneider Electric SmartX SR MX41-7153	Yes	24 Vac. Two Position, Floating, 2...10 Vdc, 4...20 mA with the addition of a 500 ohm resistor, Proportional	Auxiliary Switch
Direct Coupled NSR NR-22xx	No	24 Vac. Three Wire Two Position, Floating, 0...10 Vdc, 4...20 mA, Proportional	Auxiliary Switch
NEMA 4 with Hand Wheel NSR S70-xxx-	No	120 Vac. or 24 Vac. Three Wire Two Position, Floating, 0...10 Vdc, 4...20 mA, Proportional	Auxiliary Switch (standard) and Heater (standard)

## 10. Butterfly Valve Assemblies

# 2" ... 4" 2 and 3-Way SR SmartX Actuators

### Specifications

Actuator Code 556, 556D (Mx41-7153 Series)

Power Loss Mode	Spring return
Control Signal	On/off, floating, or proportional 2...10 Vdc., 4...20 mA with the addition of a 500 ohm resistor
Power Requirements	24 Vac ± 20%, 22...30 Vdc, 9.7VA.
Environment	NEMA 2
Ambient Temperatures	-22...140 °F (-12...60 °C).
Regulatory Compliance	c-UL-us LISTED mark and CE mark.
Manual Operator	Provided on single mount units.
Option	Auxiliary switches 7 A @250 Vac.



SmartX Spring Return  
Mx41-7153 Actuator



Model Number	Actuator Code	Power	Input Signal	Feedback	Power Loss Mode	Accessories	
MA41-7153	556 or 556D <sup>b</sup>	24 Vac	On/off	-	SR	-	
MF41-7153			Floating				
MS41-7153			2 to 10 Vdc	2 to 10 Vdc			
MA41-7153-502			On/off	-			Two SPDT Auxiliary Switches <sup>a</sup>
MF41-7153-502			Floating				
MS41-7153-502			2 to 10 Vdc				

a - Optional. The first part number field of the valve assembly must call out VxxS-6xxx. Note models with 556D actuator code that require auxiliary switch option will ship with one actuator without switches and one actuator with auxiliary switches.

b - 556D = Dual Actuators



Non-Spring Return  
NR-22xx-5xx Actuator

# NR-22xx 2" ... 6" 2 and 3-Way NSR Actuators

Model Number	Actuator Code	Power	Input Signal	Feedback	Power Loss Mode	Accessories
NR-2216-521	E24	24 Vac	On/off, floating	-	NSR	-
NR-2216-522						Two SPDT Auxiliary Switches <sup>a</sup>
NR-2216-541			0...10 Vdc, 4...20 mA	0...10 Vdc		-
NR-2216-542						Two SPDT Auxiliary Switches <sup>a</sup>
NR-2224-521	E25 or E25D <sup>b</sup>	24 Vac	On/off, floating	-	NSR	-
NR-2224-522						Two SPDT Auxiliary Switches <sup>a</sup>
NR-2224-541			0...10 Vdc, 4...20 mA	0...10 Vdc		-
NR-2224-542						Two SPDT Auxiliary Switches <sup>a</sup>

a - Optional. The first part number field of the valve assembly must call out VxxS-6xxx. Note models with E25D actuator code that require auxiliary switch option will ship with one actuator without switches and one actuator with auxiliary switches.

b - E25D = Dual Actuators

### Specifications

Actuator Code E24, E25, E25D (NR-2000 Series)

Power Loss Mode	Non-spring return.
Control Signal	On/off, floating, or 2 to 10 Vdc, 4...20 mA.
Power Requirements	20 to 30 Vac, 24 Vdc ± 10% NR-2216 6.5VA, NR-2224 7.5VA
Environment	NEMA 2.

Ambient Temperatures	-4 to 122 °F (-2 to 50 °C).
Regulatory Compliance	UL, CSA, CE.
Optional Auxiliary Switch	2 SPDT 24 Vac 1.5 A inductive, 3 A resistive, 35 VA per switch.
Manual Operator	Provided on all models.



Non-Spring Return S70-xxxx Actuator

Table 6: S70 NSR Actuators for 2"…18" 2-Way and 2"…16" 3-Way Valves

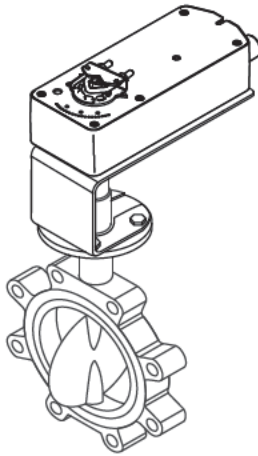
Model Number	Actuator Code	Power <sup>a</sup>	Input Signal	Feedback	Power Loss Mode	Accessories
S70-120-0061-H (VAxS)	E10	E=120 Vac F=24 Vac	On/off, floating	-	NSR	Two SPDT Auxiliary Switches and heater (standard)
S70-120-0121-H (VAxS)	E20					
S70-120-0201-H (VAxS)	E30					
S70-120-0301-H (VAxS)	E40					
S70-120-0501-H (VAxS)	E50					
S70-120-0651-H (VAxS)	E60 (120 Vac Only)					
S70-120-1300-H (VAxS)	E70 (120 Vac Only)					
S70-120-1800-H (VAxS)	E80 (120 Vac Only)					
S70-120-0061-SV (VSxS)	E12		0...10 Vdc, 4...20 mA	0...10 Vdc, 4...20 mA		
S70-120-0121-SV (VSxS)	E22					
S70-120-0201-SV (VSxS)	E32					
S70-120-0301-SV (VSxS)	E42					
S70-120-0501-SV (VSxS)	E52					
S70-120-0651-SV (VSxS)	E62 (120 Vac Only)					
S70-120-1300-SVH (VSxS)	E72 (120 Vac Only)					
S70-120-1800-SVH (VSxS)	E82 (120 Vac Only)					

a. For 24 Vac valve assemblies use F in place of E in the third field (VAFS-6200-F10-L-11). E10 becomes F10 for 24 Vac powered. (F10 actuator code=S70-24-0061-H actuator) For additional voltages contact customer service.

Specifications

Actuator Code (70 Series)

Power Loss Mode	Non-spring return.	Ambient Temperatures	-40 to 150 °F (-40 to 60 °C).
Control Signal		Regulatory Compliance	c-UL-us LISTED mark and CE mark
Actuator Code	Ex0 (120 Vac) or Fx0 (24 Vac) On/off, floating	Standard Auxiliary Switch	(Included) 10 A resistive at 125/250 Vac, 1/2 A at 125 Vdc.
Actuator Code	Ex2 (120 Vac) or Fx2 (24 Vac) Factory configured for 4...20 mA with a 250 W input impedance, field configurable for 0...10 Vdc or 2...10 Vdc.	Heater	15 W.
Power Requirements	120 Vac or 24 Vac, 50/60 Hz.	Manual Operator with Disconnect	Hand wheel with power disconnect provided on all S70 actuator models.
E1x/F1x	1.5 <sup>a</sup>		
E2x/F2x,E3x/F3x	2.1 <sup>a</sup>		
E4x/F4x,E5x/F5x,E6x	3.0 <sup>a</sup>		
Environment	NEMA 4.		



<b>Flow Type</b>	Equal % bidirectional.
<b>Material</b>	<p><b>Body</b> Polyester coated cast iron, ASTM A126 Class B lug. Mates with ANSI 125/150 flanges.</p> <p><b>Seat</b> EPDM tongue and groove seat and molded O-ring flange seal. Peroxide cured.</p> <p><b>Stem</b> Stainless steel double D stem.</p> <p><b>Stem Seals</b> Self adjusting double U cup.</p> <p><b>Disc</b> Ductile iron nylon 11 coated disc.</p>
<b>Fluid Temperatures</b>	-40 to 250°F (-40 to 121°C).
<b>Close-Off Rating</b>	ANSI VI Bubble tight.
<b>Application</b>	Chilled or hot water up to 60% glycol.

Two-Way

Size in.	Cv (Kvs) @ 90°	Close-Off Pressure psi (kPa)	Two Position	Floating	Proportional	Voltage Vac
2	144 (125)	175 (1207)	VAF-6220-556-L-11	VFF-6220-556-L-11	VSF-6220-556-L-11	24
2.5	282 (244)	175 (1207)	VAF-6220-556-L-12	VFF-6220-556-L-12	VSF-6220-556-L-12	24
3	461 (399)	175 (1207)	VAF-6220-556D-L-13	VFF-6220-556D-L-13	VSF-6220-556D-L-13	24
4	841 (727)	50 (345)	VAU-6220-556D-L-14	VFF-6220-556D-L-14	VSF-6220-556D-L-14	24

Actuator Code Table.

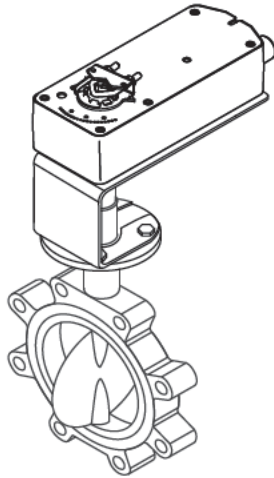
Vxxx-6220-556x-L-xx

Actuator Codes	Model Prefix <sup>a</sup>	Actuator Model	Description
556 <sup>b</sup>	VAxx	MA41-7153	24 Vac, on/off, SR
556 <sup>bc</sup>	VAxS	MA41-7153-502	24 Vac, on/off, SR, 2 SPDT aux switches
556 <sup>b</sup>	VFxx	MF41-7153	24 Vac, Floating, SR
556 <sup>bc</sup>	VFxS	MF41-7153-502	24 Vac, Floating, SR, 2 SPDT aux switches
556 <sup>b</sup>	VSxx	MS41-7153	24 Vac, Modulating, SR
556 <sup>bc</sup>	VSxS	MS41-7153-502	24 Vac, on/off, SR, 2 SPDT aux switches

<sup>a</sup> For optional two SPDT auxiliary switch models the letter "S" must be added to the model prefix field. EX: VxxS

<sup>b</sup> D = Dual mounting.

<sup>c</sup> Dual mounted application. One Mx41-7153 and one Mx41-7153-502 are supplied.



<b>Flow Type</b>	Equal % bidirectional.
<b>Body</b>	Polyester coated cast iron, ASTM A126 Class B lug. Mates with ANSI 125/150 flanges.
<b>Seat</b>	EPDM tongue and groove seat and molded O-ring flange seal. Peroxide cured.
<b>Material</b>	
<b>Stem</b>	Stainless steel double D stem.
<b>Stem Seals</b>	Self adjusting double U cup.
<b>Disc</b>	Ductile iron nylon 11 coated disc.
<b>Fluid Temperatures</b>	-40 to 250°F (-40 to 121°C).
<b>Close-Off Rating</b>	ANSI VI Bubble tight.
<b>Application</b>	Chilled or hot water up to 60% glycol.

**Two-Way Normally Open Assemblies**

Size in.	Cv (K <sub>vs</sub> ) @ 90°	Close-Off Pressure psi (kPa)	Two Position	Floating	Proportional	Voltage Vac
2	144 (125)	175 (1207)	VAF-6210-556-L-11	VFF-6210-556-L-11	VSF-6210-556-L-11	24
2.5	282 (244)	175 (1207)	VAF-6210-556-L-12	VFF-6210-556-L-12	VSF-6210-556-L-12	24
3	461 (399)	175 (1207)	VAF-6210-556D-L-13	VFF-6210-556D-L-13	VSF-6210-556D-L-13	24
4	841 (727)	50 (345)	VAU-6210-556D-L-14	VFU-6210-556D-L-14	VSU-6210-556D-L-14	24

**Actuator Code Table.**

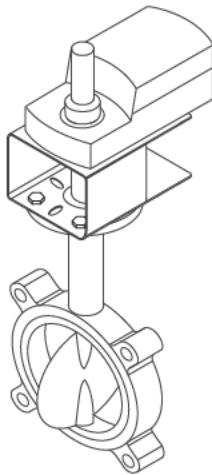
Vxxx-6210-556x-L-xx

Actuator Codes	Model Prefix <sup>a</sup>	Actuator Model	Description
556 <sup>b</sup>	VAx	MA41-7153	24vac, on/off, SR
556 <sup>bc</sup>	VAxS	MA41-7153-502	24vac, on/off, SR, 2-SPDT aux switches
556 <sup>b</sup>	VFx	MF41-7153	24vac, Floating, SR
556 <sup>bc</sup>	VFxS	MF41-7153-502	24vac, Floating, SR, 2-SPDT aux switches
556 <sup>b</sup>	VSx	MS41-7153	24vac, modulating, SR
556 <sup>bc</sup>	VSxS	MS41-7153-502	24vac, on/off, SR, 2-SPDT aux switches

<sup>a</sup> For optional two SPDT auxiliary switch models the letter "S" must be added to the model prefix field. EX: VxxS

<sup>b</sup> D = Dual mounting.

<sup>c</sup> Dual mounted application. One Mx41-7153 and one Mx41-7153-502 are supplied.



<b>Flow Type</b>	Equal % bidirectional.
<b>Body</b>	Polyester coated cast iron, ASTM A126 Class B lug. Mates with ANSI 125/150 flanges.
<b>Seat</b>	EPDM tongue and groove seat and molded O-ring flange seal. Peroxide cured.
<b>Material</b>	
<b>Stem</b>	Stainless steel double D stem.
<b>Stem Seals</b>	Self adjusting double U cup.
<b>Disc</b>	Ductile iron nylon 11 coated disc.
<b>Fluid Temperatures</b>	-40 to 250°F (-40 to 121°C).
<b>Close-Off Rating</b>	ANSI VI Bubble tight.
<b>Application</b>	Chilled or hot water up to 60% glycol.

Size in.	Cv (Kvs) @ 90°	Close-Off Pressure psi (kPa)	Two Position or Floating	Proportional	Voltage Vac
2	144 (125)	175 (1207)	VFF-6200-E24-L-11	VSF-6200-E24-L-11	24
2.5	282 (244)	175 (1207)	VFF-6200-E24-L-12	VSF-6200-E24-L-12	24
3	461 (399)	175 (1207)	VFF-6200-E25-L-13	VSF-6200-E25-L-13	24
4	841 (727)	175 (1207)	VFF-6200-E25D-L-14	VSF-6200-E25D-L-14	24
			VFU-6200-E25-L-14	VSU-6200-E25-L-14	24
5	1376 (1190)	50 (345)	VFU-6200-E25-L-15	VSU-6200-E25-L-15	24
6	1850 (1600)		VFU-6200-E25D-L-16	VSU-6200-E25D-L-16	24

Actuator Code Table.

Vxxx-6200-E2xx-L-xx

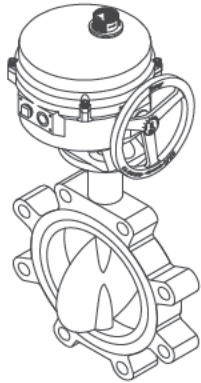
Actuator Codes	Model Prefix <sup>a</sup>	Actuator Model	Description
E24	VFxx	NR-2216-521	24 Vac, Floating, on/off, NSR
E24	VFxS	NR-2216-522	24 Vac, Floating, on/off, NSR, 2 SPDT aux Switch
E24	VSxx	NR-2216-541	24 Vac, Modulated, NSR
E24	VSxS	NR-2216-542	24 Vac, Modulated, NSR, 2 SPDT aux Switch
E25 <sup>b</sup>	VFxx	NR-2224-521	24 Vac, Floating, on/off, NSR
E25 <sup>b,c</sup>	VFxS	NR-2224-522	24 Vac, Floating, on/off, NSR, 2 SPDT aux Switch
E25 <sup>b</sup>	VSxx	NR-2224-541	24 Vac, Modulated, NSR
E25 <sup>b,c</sup>	VSxS	NR-2224-542	24 Vac, Modulated, NSR, 2 SPDT aux Switch

<sup>a</sup> For optional two SPDT auxiliary switch models the letter "S" must be added to the model prefix field. EX: VxxS

<sup>b</sup> D = Dual mounting.

<sup>c</sup> Dual mounted application. One NR-22xx-5x2 and one NR-22xx-5xx are supplied.

# 10. Butterfly Valve Assemblies 2"...18" Lug Bodies 2-Way NSR w/ Hand Wheel Assemblies



<b>Flow Type</b>	Equal % bidirectional.
<b>Material</b>	
<b>Body</b>	Polyester coated cast iron, ASTM A126 Class B lug. Mates with ANSI 125/150 flanges.
<b>Seat</b>	EPDM tongue and groove seat and molded O-ring flange seal. Peroxide cured.
<b>Stem</b>	Stainless steel double D stem.
<b>Stem Seals</b>	Self adjusting double U cup.
<b>Disc</b>	Ductile iron nylon 11 coated disc.
<b>Fluid Temperatures</b>	-40 to 250°F (-40 to 121°C).
<b>Close-Off Rating</b>	ANSI VI Bubble tight.
<b>Application</b>	Chilled or hot water up to 60% glycol.

Size in.	Cv (K <sub>Vs</sub> ) @ 90°	Close-Off Pressure psi (kPa)	Two Position	Proportional	Voltage Vac
2	144 (125)	175 (1207)	VAFS-6200-E10-L-11	VSFS-6200-E12-L-11	120
2.5	282 (244)	175 (1207)	VAFS-6200-E10-L-12	VSFS-6200-E12-L-12	120
3	461 (399)	175 (1207)	VAFS-6200-E10-L-13	VSFS-6200-E12-L-13	120
4	841 (727)	50 (345)	VAUS-6200-E10-L-14	VSUS-6200-E12-L-14	120
		175 (1207)	VAFS-6200-E10-L-14	VSFS-6200-E12-L-14	120
5	1376 (1190)	50 (345)	VAUS-6200-E10-L-15	VSUS-6200-E12-L-15	120
		175 (1207)	VAFS-6200-E20-L-15	VSFS-6200-E22-L-15	120
6	1850 (1600)	50 (345)	VAUS-6200-E20-L-16	VSUS-6200-E22-L-16	120
		175 (1207)	VAFS-6200-E20-L-16	VSFS-6200-E22-L-16	120
8	3316 (2868)	50 (345)	VAUS-6200-E20-L-17	VSUS-6200-E22-L-17	120
		175 (1207)	VAFS-6200-E30-L-17	VSFS-6200-E32-L-17	120
10	5430 (4697)	50 (345)	VAUS-6200-E30-L-18	VSUS-6200-E32-L-18	120
		175 (1207)	VAFS-6200-E40-L-18	VSFS-6200-E42-L-18	120
12	8077 (6987)	50 (345)	VAUS-6200-E40-L-19	VSUS-6200-E42-L-19	120
		175 (1207)	VAFS-6200-E50-L-19	VSFS-6200-E52-L-19	120
14	10538 (9115)	50 (345)	VAUS-6200-E50-L-20	VSUS-6200-E52-L-20	120
		1750 (1207)	VAFS-6200-E60-L-20	VSFS-6200-E62-L-20	120
16	13966 (12081)	50 (345)	VAUS-6200-E60-L-21	VSUS-6200-E62-L-21	120
18	17214 (14890)	50 (345)	VAUS-6200-E60-L-22	VSUS-6200-E62-L-22	120

\* For 24 Vac powered change two-position or proportional "E" code to "F," e.g. VAFS-6200-F10-L-11"

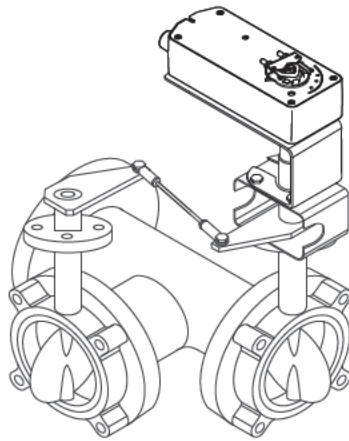
Actuator Code Table  
VxxS-6200-Exx-L-xx

Actuator Codes	Model Prefix	Actuator Model	Description
E10	VAxS	S70-0051-H	120 Vac, on/off, NEMA4, 2 SPDT aux switch, manual override
E20		S70-0121-H	
E30		S70-0201-H	
E40		S70-0301-H	
E50		S70-0501-H	
E60		S70-0651-H	
E12	VSxS	S70-0051-SVH	120 Vac, modulated, NEMA4, 2 SPDT aux switch, manual override
E22		S70-0121-SVH	
E32		S70-0201-SVH	
E42		S70-0301-SVH	
E52		S70-0501-SVH	
E62		S70-0651-SVH	

Actuator Code Table  
VxxS-6200-Fxx-L-xx

Actuator Codes	Model Prefix	Actuator Model	Description
F10	VAxS	S70-24-0051-H	24 Vac, on/off, NEMA4, 2 SPDT aux switch, manual override
F20		S70-24-0121-H	
F30		S70-24-0201-H	
F40		S70-24-0301-H	
F50		S70-24-0501-H	
F60		S70-24-0651-H	
F12	VSxS	S70-24-0051-SVH	24 Vac, modulated, NEMA4, 2 SPDT aux switch, manual override
F22		S70-24-0121-SVH	
F32		S70-24-0201-SVH	
F42		S70-24-0301-SVH	
F52		S70-24-0501-SVH	
F62		S70-24-0651-SVH	

10. Butterfly Valve Assemblies



<b>Flow Type</b>	Equal % linear bidirectional. Mixing or diverting configurations.
<b>Body</b>	Polyester coated cast iron, ASTM A126 Class B lug. Mates with ANSI 125/150 flanges.
<b>Seat</b>	EPDM tongue and groove seat and molded O-ring flange seal. Peroxide cured.
<b>Material</b>	
<b>Stem</b>	Stainless steel double D stem.
<b>Stem Seals</b>	Self adjusting double U cup.
<b>Disc</b>	Ductile iron nylon 11 coated disc.
<b>Fluid Temperatures</b>	-40 to 250°F (-40 to 121°C).
<b>Close-Off Rating</b>	ANSI VI Bubble tight.
<b>Application</b>	Chilled or hot water up to 60% glycol.

Size in.	Cv (K <sub>vs</sub> ) @ 90°	Close-Off Pressure psi (kPa)	Two Position <sup>a</sup>	Floating <sup>a</sup>	Proportional <sup>a</sup>	Voltage Vac
2	144 (125)	175 (1207)	VAF-632x-556-L*11	VFF-632x-556-L*11	VSF-632x-556-L-11	24
2.5	282 (244)	175 (1207)	VAF-632x-556D-L-12	VFF-632x-556D-L-12	VSF-632x-556D-L-12	24
3	461 (399)	175 (1207)	VAF-632x-556D-L-13	VFF-632x-556D-L-13	VSF-632x-556D-L-13	24
4	841 (727)	50 (345)	VAU-632x-556D-L-14	VFU-632x-556D-L-14	VSU-632x-556D-L-14	24

a-Select 1, 2 or C for the "x".

1 = Actuator is mounted on the main valve at "A" and is NC.

2 = Actuator is mounted on the main valve at "B" and is NC.

The linked valve for 1 and 2 is "C".

C = Configurable option at time of ordering in IPortal.



Actuator Code Table.

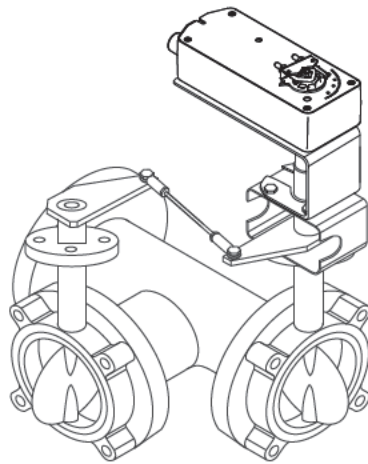
Vxxx-632x-556x-L-xx

Actuator Codes	Model Prefix <sup>a</sup>	Actuator Model	Description
556 <sup>b</sup>	VAXx	MA41-7153	24 Vac, on/off, SR
556 <sup>bc</sup>	VAXS	MA41-7153-502	24 Vac, on/off, SR, 2 SPDT aux switches
556 <sup>b</sup>	VFxx	MF41-7153	24 Vac, Floating, SR
556 <sup>bc</sup>	VFXS	MF41-7153-502	24 Vac, Floating, SR, 2 SPDT aux switches
556 <sup>b</sup>	VSxx	MS41-7153	24 Vac, Modulating, SR
556 <sup>bc</sup>	VSxS	MS41-7153-502	24 Vac, on/off, SR, 2 SPDT aux switches

a-For optional two SPDT auxiliary switch models the letter "S" must be added to the model prefix field. Ex: vxxxs

b-D = Dual mounting.

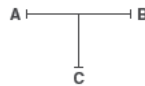
c-Dual mounted application. One Mx41-7153 and one Mx41-7153-502 are supplied.



<b>Flow Type</b>	Equal % linear bidirectional. Mixing or diverting configurations.
<b>Body</b>	Polyester coated cast iron, ASTM A126 Class B lug. Mates with ANSI 125/150 flanges.
<b>Seat</b>	EPDM tongue and groove seat and molded O-ring flange seal. Peroxide cured.
<b>Material</b>	
<b>Stem</b>	Stainless steel double D stem.
<b>Stem Seals</b>	Self adjusting double U cup.
<b>Disc</b>	Ductile iron nylon 11 coated disc.
<b>Fluid Temperatures</b>	-40 to 250°F (-40 to 121°C).
<b>Close-Off Rating</b>	ANSI VI Bubble tight.
<b>Application</b>	Chilled or hot water up to 60% glycol.

Size in.	Cv (K <sub>v</sub> ) @ 90°	Close-Off Pressure psi (kPa)	Two Position <sup>a</sup>	Floating <sup>a</sup>	Proportional <sup>a</sup>	Voltage Vac
2	144 (125)	175 (1207)	VAF-631x-556-L-11	VFF-631x-556-L-11	VSF-631x-556-L-11	24
2.5	282 (244)	175 (1207)	VAF-631x-556D-L-12	VFF-631x-556D-L-12	VSF-631x-556D-L-12	24
3	461 (399)	175 (1207)	VAF-631x-556D-L-13	VFF-631x-556D-L-13	VSF-631x-556D-L-13	24
4	841 (727)	50 (345)	VAU-631x-556D-L-14	VFU-631x-556D-L-14	VSU-631x-556D-L-14	24

<sup>a</sup> Select 7 or 8 for the "x".  
 8 = Actuator is mounted on the main valve at "A" and is NO.  
 7 = Actuator is mounted on the main valve at "B" and is NO.  
 The linked valve for 7 and 8 is "C".  
 C = Configurable option at time of ordering in iPortal.

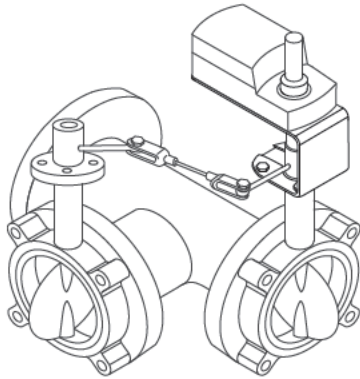


Actuator Code Table.

Vxxx-631x-556x-L-xx

Actuator Codes	Model Prefix <sup>a</sup>	Actuator Model	Description
556 <sup>b</sup>	VAx	MA41-7153	24 Vac, on/off, SR
556 <sup>bc</sup>	VAxS	MA41-7153-502	24 Vac, on/off, SR, 2 SPDT aux switches
556 <sup>b</sup>	VFx	MF41-7153	24 Vac, Floating, SR
556 <sup>bc</sup>	VFxS	MF41-7153-502	24 Vac, Floating, SR, 2 SPDT aux switches
556 <sup>b</sup>	VSx	MS41-7153	24 vac, Modulating, SR
556 <sup>bc</sup>	VSxS	MS41-7153-502	24 Vac, on/off, SR, 2 SPDT aux switches

<sup>a</sup> For optional two SPDT auxiliary switch models the letter "S" must be added to the model prefix field. EX: VxxS  
<sup>b</sup> D = Dual mounting.  
<sup>c</sup> Dual mounted application. One Mx41-7153 and one Mx41-7153-502 are supplied.



<b>Flow Type</b>	Equal % linear bidirectional. Mixing or diverging configuration.
<b>Body</b>	Polyester coated cast iron, ASTM A126 Class B lug. Mates with ANSI 125/150 flanges.
<b>Seat</b>	EPDM tongue and groove seat and molded O-ring flange seal. Peroxide cured.
<b>Material</b>	
<b>Stem</b>	Stainless steel double D stem.
<b>Stem Seals</b>	Self adjusting double U cup.
<b>Disc</b>	Ductile iron nylon 11 coated disc.
<b>Fluid Temperatures</b>	-40 to 250°F (-40 to 121°C).
<b>Close-Off Rating</b>	ANSI VI Bubble tight.
<b>Application</b>	Chilled or hot water up to 60% glycol.

Size in.	Cv (K <sub>vs</sub> ) @ 90°	Close-Off Pressure psi (kPa)	On/Off or Floating <sup>a</sup>	Proportional <sup>a</sup>	Voltage Vac
2	144 (125)	175 (1207)	VFF-630x-E24-L-11	VSF-630x-E24-L-11	24
2.5	282 (244)	175 (1207)	VFF-630x-E25-L-12	VSF-630x-E25-L-12	24
3	461 (399)	175 (1207)	VFF-630x-E25-L-13	VSF-630x-E25-L-13	24
4	841 (727)	175 (1207)	VFF-630x-E25D-L-14	VSF-630x-E25D-L-14	24
		50 (345)	VFU-630x-E25-L-14	VSU-630x-E25-L-14	24
5	1376 (1190)	50 (345)	VFU-630x-E25D-L-15	VSU-630x-E25D-L-15	24
6	1850 (1600)		VFU-630x-E25D-L-16	VSU-630x-E25D-L-16	24

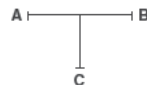
a-Select 1 or 2 for the "x".

1 = Actuator is mounted on the main valve at "A" and is NC.

2 = Actuator is mounted on the main valve at "B" and is NC.

The linked valve for 1 and 2 is "C".

C = Configurable option at time of ordering in iPortal.



Actuator Code Table.

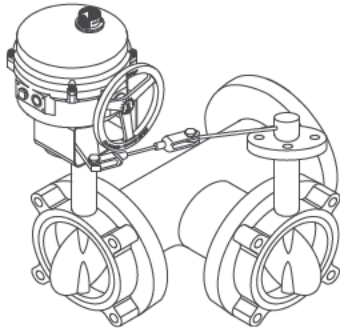
Vxxx-E2xx-L-xx

Actuator Codes	Model Prefix <sup>a</sup>	Actuator Model	Description
E24	VFxx	NR-2216-521	24 Vac, Floating, on/off, NSR
E24	VFxS	NR-2216-522	24 Vac, Floating, on/off, NSR, 2 SPDT aux switch
E24	VSxx	NR-2216-541	24 Vac, Modulated, NSR
E24	VSxS	NR-2216-542	24 Vac, Modulated, NSR, 2 SPDT aux switch
E25 <sup>b</sup>	VFxx	NR-2224-521	24 Vac, Floating, on/off, NSR
E25 <sup>bc</sup>	VFxS	NR-2224-522	24 Vac, Floating, on/off, NSR, 2 SPDT aux switch
E25 <sup>b</sup>	VSxx	NR-2224-541	24 Vac, Modulated, NSR
E25 <sup>bc</sup>	VSxS	NR-2224-542	24 Vac, Modulated, NSR, 2 SPDT aux switch

a-For optional two SPDT auxiliary switch models the letter "S" must be added to the model prefix field. EX: VxxS

b-D = Dual mounting (E25D).

c-Dual mounted application. One NR-22xx-5x1 and one NR-22xx-5x2 are supplied.



<b>Flow Type</b>	Equal % linear bidirectional. Mixing or diverting configurations.
<b>Body</b>	Polyester coated cast iron, ASTM A126 Class B lug. Mates with ANSI 125/150 flanges.
<b>Seat</b>	EPDM tongue and groove seat and molded O-ring flange seal. Peroxide cured.
<b>Material</b>	
<b>Stem</b>	Stainless steel double D stem.
<b>Stem Seals</b>	Self adjusting double U cup.
<b>Disc</b>	Ductile iron nylon 11 coated disc.
<b>Fluid Temperatures</b>	-40 to 250°F (-40 to 121°C).
<b>Close-Off Rating</b>	ANSI VI Bubble tight.
<b>Application</b>	Chilled or hot water up to 60% glycol.

Size in.	Cv (K <sub>vs</sub> ) @ 90°	Close-Off Pressure psi (kPa)	Two Position <sup>a</sup>	Proportional <sup>a</sup>	Voltage Vac
2	144 (125)	175 (1207)	VAFS-630x-E10-L-11	VSFS-630x-E12-L-11	120
2.5	282 (244)	175 (1207)	VAFS-630x-E10-L-12	VSFS-630x-E12-L-12	120
3	461 (399)	175 (1207)	VAFS-630x-E10-L-13	VSFS-630x-E12-L-13	120
4	841 (727)	50 (345)	VAUS-630x-E10-L-14	VSUS-630x-E12-L-14	120
		175 (1207)	VAFS-630x-E10-L-14	VSFS-630x-E12-L-14	120
5	1376 (1190)	50 (345)	VAUS-630x-E10-L-15	VSUS-630x-E12-L-15	120
		175 (1207)	VAFS-630x-E20-L-15	VSFS-630x-E22-L-15	120
6	1850 (1600)	50 (345)	VAUS-630x-E20-L-16	VSUS-630x-E22-L-16	120
		175 (1207)	VAFS-630x-E20-L-16	VSFS-630x-E22-L-16	120
8	3316 (2868)	50 (345)	VAUS-630x-E20-L-17	VSUS-630x-E22-L-17	120
		175 (1207)	VAFS-630x-E30-L-17	VSFS-630x-E32-L-17	120
10	5430 (4697)	50 (345)	VAUS-630x-E30-L-18	VSUS-630x-E32-L-18	120
		175 (1207)	VAFS-630x-E40-L-18	VSFS-630x-E42-L-18	120
12	8077 (6987)	50 (345)	VAUS-630x-E40-L-19	VSUS-630x-E42-L-19	120
		175 (1207)	VAFS-630x-E50-L-19	VSFS-630x-E52-L-19	120
14	10538 (9115)	50 (345)	VAUS-630x-E50-L-20	VSUS-630x-E52-L-20	120
		1750 (1207)	VAFS-630x-E60-L-20	VSFS-630x-E62-L-20	120
16	13966 (12081)	50 (345)	VAUS-630x-E60-L-21	VSUS-630x-E62-L-21	120

a-Select 1 or 2 for the "x".  
 1 = Actuator is mounted on the main valve at "A" and is NC.  
 2 = Actuator is mounted on the main valve at "B" and is NC.  
 The linked valve for 1 and 2 is "C".  
 C = Configurable option at time of ordering in iPortal.



Actuator Code Table  
VxxS-630x-Exx-L-xx

Actuator Codes	Model Prefix	Actuator Model	Description
E10	VAxS	S70-0051-H	120 Vac, on/off, NEMA4, 2 SPDT aux switch, manual override
E20		S70-0121-H	
E30		S70-0201-H	
E40		S70-0301-H	
E50		S70-0501-H	
E60		S70-0651-H	
E12	VSxS	S70-0051-SVH	120 Vac, modulated, NEMA4, 2 SPDT aux switch, manual override
E22		S70-0121-SVH	
E32		S70-0201-SVH	
E42		S70-0301-SVH	
E52		S70-0501-SVH	
E62		S70-0651-SVH	

Actuator Code Table  
VxxS-630x-Fxx-L-xx

Actuator Codes	Model Prefix	Actuator Model	Description
F10	VAxS	S70-24-0051-H	120 Vac, on/off, NEMA4, 2 SPDT aux switch, manual override
F20		S70-24-0121-H	
F30		S70-24-0201-H	
F40		S70-24-0301-H	
F50		S70-24-0501-H	
E60		S70-24-0651-H	
F12	VSxS	S70-24-0051-SVH	120 Vac, modulated, NEMA4, 2 SPDT aux switch, manual override
F22		S70-24-0121-SVH	
F32		S70-24-0201-SVH	
F42		S70-24-0301-SVH	
F52		S70-24-0501-SVH	
F62		S70-24-0651-SVH	

## 10. Butterfly Valve Assemblies

# 2.5" ... 18" 2-Way High Performance Assemblies

### Product Description

Schneider Electric's High Performance Butterfly Valves are ideally suited to both high pressure, high temperature, high cycle HVAC applications and mission critical HVAC applications. This includes chiller isolation, cooling tower isolation, change-over systems, large air handler's coil control, bypass and process control applications.

With ANSI Class 150 rating, all valves are tested for bubble tight close-off to API 598 standards at maximum rated differential pressure.

### Features

- Double Offset Stem/Disc Design
  - Reduced seat wear, zero leakage, and low torque
- Blow-out Proof Stem
  - Safety and ease of use
- Energized RTFE Seat
  - Zero leakage, self-adjusting for wear and easy field replacement
- Pressure Assisted, but not Pressure Dependent Seat Design
  - Optimal performance and sealing at high or low differential pressures
- Adjustable PTFE Packing
  - Packing can be adjusted while the valve is in service
- Dead End Rating Equal to Nominal Pressure Rating
  - Allows the control valve to function as an isolation valve.



### Specifications

Service	Hot Water, Chilled Water, Condenser Water, Steam	Leakage	Bubble Tight
Fluid Temperature Limits	-40...500 °F	Materials	Carbon Steel
Max Steam Pressure	On/Off 150 PSI Proportional 50 PSI	Body	17-4 Stainless Steel
Sizes	2.5" ... 18"	Stem	316 Stainless Steel
Flow Characteristic	Modified Equal Percentage	Disc	RTFE
		Seat	

### 2-Way High Performance Butterfly Valve Assemblies With S70 Series NSR Actuator and NEMA 4, Hand Wheel with Two SPDT Auxiliary Switches and Heater

Model Number		Power <sup>a</sup>	Valve Size	Close Off PSI	Cv at 90°
On/Off	Modulating				
VAFS-6200-E10-H1-12	VSFS-6200-E12-H1-12	E=120 Vac F=24 Vac	2.5"	285 psi	160
VAFS-6200-E10-H1-13	VSFS-6200-E12-H1-13		3"		185
VAFS-6200-E10-H1-14	VSFS-6200-E12-H1-14		4"		375
VAFS-6200-E20-H1-15	VSFS-6200-E22-H1-15		5"		790
VAFS-6200-E20-H1-16	VSFS-6200-E22-H1-16		6"		1350
VAFS-6200-E30-H1-17	VSFS-6200-E32-H1-17		8"		2800
VAFS-6200-E40-H1-18	VSFS-6200-E42-H1-18		10"		4300
VAFS-6200-E50-H1-19	VSFS-6200-E52-H1-19		12"		6650
VAFS-6200-E60-H1-20b	VSFS-6200-E62-H1-20b		14"		7650
VAFS-6200-E70-H1-21b	VSFS-6200-E72-H1-21b		16"		9800
VAFS-6200-E80-H1-22b	VSFS-6200-E82-H1-22b		18"		10500

a. 120 Vac powered models shown, for 24 Vac models change the letter E to F. Example VAFS-6200-F10-L-11 would be 24 Vac powered  
 b. E60/62 E70/72 E80/82 only available in 120 Vac.

## 10. Butterfly Valve Assemblies

Notes

10. Butterfly Valve Assemblies