Butterfly Valve Assemblies Selection Guide





Product Description

Schneider Electric's butterfly valve line offers a wide range of 2 and 3-way sizes, along with electric non-spring return, and spring return actuator models that operate with on/off, floating, or proportional control signals. Models include Standard Resiliency valve bodies for 2 and 3-way applications and High Performance valve bodies for 2-way applications that require larger close offs and wider temperature ranges.

All Standard Resiliency assemblies include industry leading butterfly valve features, stainless steel double "D" shafts, a 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 resilient seat maintenance or replacement. 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.

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

Standard Models

- 2…18" 2-Way assemblies and 2…16" 3-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 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

- 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

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 = Proprotional (Vdc, mAdc)

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

Accessory
S = Auxilary switch

Leave the digit blank for no accessories

Type
6 = Butterfly

Style
2 = 2-Way
3 = 3-Way

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

Actuator Code
See Table 1

If actuator code is only three digits, leave the fourth digit blank.

Body Style
L = Nylon disc and lug body
H1= High Performance Stainless Steel
M = AlumBronze Disc*
SS = Stainless Steel Disc*
*Note: (Consult Factory)

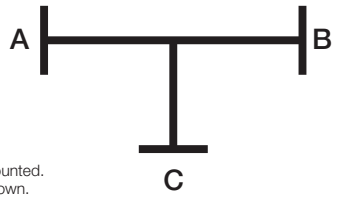
High Performance Models 2.5"-18" 2-Way only (refer to the section for specific information on high performance valve assemblies)

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”

*Note:
Larger Sizes
(Consult Factory)

Flow Pattern[b]
0 = 2-Way
C = 3-Way

Configuration Number	Main Valve[a]	Main Valve Position*	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 of the stem side of the valve pointing down.
* For spring return models this column also indicates 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.

Table 1: Actuator Codes and Part Numbers[a]

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

Actuator Code[b]	On/Off or Floating SR	Actuator Code[b]	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[b]	**On/Off or Floating SR with Two SPDT Auxiliary Switches**	**Actuator Code[b]**	**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[b]	**On/Off or Floating NSR**	**Actuator Code[b]**	**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[b]	**On/Off or Floating NSR with Two SPDT Auxiliary Switches**	**Actuator Code[b]**	**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[c]	**On/Off NSR with Two SPDT Auxiliary Switches and Heater[c]**	**Actuator Code[c]**	**Modulating (0…10 Vdc, 4…20 mA) NSR with Two SPDT Auxiliary Switches and Heater[c]**
E10	S70-120-0061-H (VAxS)	E12	S70-120-0061-SV (VSxS)
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. E1x through E5x available as 24 Vac powered: change actuator code E to “F” and 120 to 24, e.g. E10 to F10, then “S70-24-0061-H”

Butterfly Valve Assemblies and Actuators

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

Size	Close Off	2-Way Butterfly Valve Assemblies[a]				3-Way Butterfly Valve Assemblies[a]			
		Schneider Electric SmartX™ SR[b]	Direct Coupled NSR[c]	NEMA 4 with Hand Wheel NSR[c]		Schneider Electric SmartX SR[b]	Direct Coupled NSR[c]	NEMA 4 with Hand Wheel NSR[c]	
				2 Pos[d]	Mod[d]			2 Pos[d]	Mod[d]
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[e]
	285			E50	E52			–	
14”	50			E50	E52			E50	E52
	150			E60	E62			–	
	285			E60	E62			–	
16”	50			E60	E62			E60	E62[e]
	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. E1x through E5x available as 24 Vac powered: change actuator code E to “F” and 120 to 24, e.g. E10 to F10, then “S70-24-0061-H”
e. 120 Vac only: E6x, E7x, E8x.

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)

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).
Manual Operator	Provided on single mount units.
Option	Auxiliary switches 7 A @250 Vac.
Agency Listings	UL, CUL, CE



SmartX Spring Return
Mx41-7153 Actuator

Table 4: Schneider Electric SmartX SR Actuators for 2"…4" 2 and 3-Way Valves

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

NR-22xx NSR Actuators for 2"…6" 2 and 3-Way Valves

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



Table 5: NR-22xx NSR Actuators for 2"…6" 2 and 3-Way Valves

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[a]
NR-2216-541			0…10 Vdc , 4…20 mA	0…10 Vdc		–
NR-2216-542						Two SPDT Auxiliary Switches[a]
NR-2224-521	E25 or E25D[b]		On/off, floating	–		–
NR-2224-522						Two SPDT Auxiliary Switches[a]
NR-2224-541			0…10 Vdc , 4…20 mA	0…10 Vdc		–
NR-2224-542						Two SPDT Auxiliary Switches[a]

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…10 Vdc, 4…20 mA.
Power Requirements	20…30 Vac, 24 Vdc ± 10% NR-2216 6.5VA, NR-2224 7.5VA

Environment	NEMA 2.
Ambient Temperatures	–4…122 °F (–2…50 °C).
Agency Listings	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.

S70 NSR Actuators for 2”…18” 2-Way and 2”…16” 3-Way Valves



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[a]	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.
Control Signal	
Actuator Code	
Ex0 (120 Vac) or Fx0 (24 Vac)	On/off, floating
Ex2 (120 Vac) or Fx2 (24 Vac)	Factory configured for 4…20 mA with a 250 W input impedance, field configrable for 0…10 Vdc or 2…10 Vdc.
Power Requirements	
E1x/F1x	
E2x/F2x,E3x/F3x	
E4x/F4x,E5x/F5x,E6x	

Environment	NEMA 4.
Ambient Temperatures	–40…150 °F (–40…60 °C).
Standard Auxiliary Switch	(Included) 10 A resistive at 125/250 Vac, 1/2 A at 125 Vdc.
Heater	15 W.
Manual Operator with Disconnect	Hand wheel with power disconnect provided on all S70 actuator models
Agency Listings	UL, CSA, CE.

2-Way Valve and SR Actuator Assemblies

Table 7: 2-Way Butterfly Valve Assemblies With S70 Series NSR Actuator and NEMA 4, Hand Wheel with Two SPDT Auxiliary Switches and Heater

Model Number		Power[a]	Valve Size	Close Off PSI (kPa)	Cv (Kvs) at 90°
On/Off	Modulating				
VAFS-6200-E10-L-11	VSFS-6200-E12-L-11	E=120 Vac F=24 Vac	2”	175 (1207)	144 (125)
VAFS-6200-E10-L-12	VSFS-6200-E12-L-12		2.5”	175 (1207)	282 (244)
VAFS-6200-E10-L-13	VSFS-6200-E12-L-13		3”	175 (1207)	461 (399)
VAFS-6200-E10-L-14	VSFS-6200-E12-L-14		4”	175 (1207)	841 (727)
VAUS-6200-E10-L-15	VSUS-6200-E12-L-15		5”	50 (345)	1376 (1190)
VAFS-6200-E10-L-15	VSFS-6200-E12-L-15		5”	175 (1207)	1376 (1190)
VAFS-6200-E10-L-16	VSFS-6200-E12-L-16		6”	175 (1207)	1850 (1600)
VAUS-6200-E20-L-17	VSUS-6200-E22-L-17		8”	50 (345)	3316 (2868)
VAFS-6200-E30-L-17	VSFS-6200-E32-L-17		8”	175 (1207)	3316 (2868)
VAUS-6200-E30-L-18	VSUS-6200-E32-L-18		10”	50 (345)	5430 (4697)
VAFS-6200-E40-L-18	VSFS-6200-E42-L-18		10”	175 (1207)	5430 (4697)
VAUS-6200-E40-L-19	VSUS-6200-E42-L-19		12”	50 (345)	8077 (6987)
VAFS-6200-E50-L-19	VSFS-6200-E52-L-19		12”	175 (1207)	8077 (6987)
VAUS-6200-E50-L-20	VSUS-6200-E52-L-20		14”	50 (345)	10,538 (9115)
VAFS-6200-E60-L-20[b]	VSFS-6200-E62-L-20[b]		14”	150 (1034)	10,538 (9115)
VAUS-6200-E60-L-21[b]	VSUS-6200-E62-L-21[b]		16”	50 (345)	13,966 (12,081)
VAUS-6200-E60-L-22[b]	VSUS-6200-E62-L-22[b]		18”	50 (345)	17,214 (14,890)

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 and E62 only available in 120 Vac

Model Number[b]			Power	Valve Size	Close Off PSI (kPa)	Cv (Kvs) at 90°
On/Off[a]	Floating[a]	Modulating[a]				
VAF-632C-556-L-11	VFF-632C-556-L-11	VSF-632C-556-L-11	24 Vac	2”	175 (1207)	144 (125)
VAF-632C-556D-L-12	VFF-632C-556D-L-12	VSF-632C-556D-L-12		2.5”		282 (244)
VAF-632C-556D-L-13	VFF-632C-556D-L-13	VSF-632C-556D-L-13		3”		461 (399)
VAU-632C-556D-L-14	VFU-632C-556D-L-14	VSU-632C-556D-L-14		4”	50 (345)	841 (727)

a. For optional two SPDT auxiliary switch models, the letter “S” must be added to the first part number field. Ex.: VxxS. 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. All 3-Way Butterfly Valves are configurable, with selection of flow done in iPortal or noted on manual purchase order. Configuration number 1 or 2 can be used with these actuators; See Flow pattern on page 2.

Model Number[b]			Power	Valve Size	Close Off PSI (kPa)	Cv (Kvs) at 90°
On/Off[a]	Floating[a]	Modulating[a]				
VAF-631C-556-L-11	VFF-631C-556-L-11	VSF-631C-556-L-11	24 Vac	2”	175 (1207)	144 (125)
VAF-631C-556D-L-12	VFF-631C-556D-L-12	VSF-631C-556D-L-12		2.5”		282 (244)
VAF-631C-556D-L-13	VFF-631C-556D-L-13	VSF-631C-556D-L-13		3”		461 (399)
VAU-631C-556D-L-14	VFU-631C-556D-L-14	VSU-631C-556D-L-14		4”	50 (345)	841 (727)

a. For optional two SPDT auxiliary switch models, the letter “S” must be added to the first part number field. Ex.: VxxS. 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. All 3-Way Butterfly Valves are configurable, with selection of flow done in iPortal or noted on manual purchase order. Configuration number 7 or 8 can be used with these actuators; See Flow pattern on page 2.

3-Way Butterfly Valve Assemblies With NSR Actuators

Table 10: Direct Coupled Non-Spring Return Actuator and Valve Assemblies

Model Number[b]		Power	Valve Size	Close Off PSI (kPa)	Cv (Kvs) at 90°
On/Off or Floating[a]	Modulating[a]				
VFF-630C-E24-L-11	VSF-630C-E24-L-11	24 Vac	2”	175 (1207)	144 (125)
VFF-630C-E25-L-12	VSF-630C-E25-L-12		2.5”		282 (244)
VFF-630C-E25-L-13	VSF-630C-E25-L-13		3”		461 (399)
VFF-630C-E25D-L-14	VSF-630C-E25D-L-14		4”		841 (727)
VFU-630C-E25-L-14	VSU-630C-E25-L-14		4”	50 (345)	841 (727)
VFU-630C-E25D-L-15	VSU-630C-E25D-L-15		5”		1376 (1190)
VFU-630C-E25D-L-16	VSU-630C-E25D-L-16		6”		1850 (1600)

a. For optional two SPDT auxiliary switch models, the letter “S” must be added to the first part number field. Ex.: VxxS. 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. All 3-Way Butterfly Valves are configurable, with selection of flow done in iPortal or noted on manual purchase order. Configuration number 1, 2, 7 or 8 can be used with these actuators; See Flow pattern on page 2.

Model Number[c]		Power[a]	Valve Size	Close Off PSI (kPa)	Cv (Kvs) at 90°
On/Off	Modulating				
VAFS-630C-E10-L-11	VSFS-630C-E12-L-11	E=120 Vac F=24 Vac	2”	175 (1207)	144 (125)
VAFS-630C-E10-L-12	VSFS-630C-E12-L-12		2.5”	175 (1207)	282 (244)
VAFS-630C-E10-L-13	VSFS-630C-E12-L-13		3”	175 (1207)	461 (399)
VAUS-630C-E10-L-14	VSUS-630C-E12-L-14		4”	50 (345)	841 (727)
VAFS-630C-E10-L-14	VSFS-630C-E12-L-14		4”	175 (1207)	841 (727)
VAUS-630C-E10-L-15	VSUS-630C-E12-L-15		5”	50 (345)	1376 (1190)
VAFS-630C-E10-L-15	VSFS-630C-E12-L-15		5”	175 (1207)	1376 (1190)
VAUS-630C-E20-L-16	VSUS-630C-E22-L-16		6”	50 (345)	1850 (1600)
VAFS-630C-E20-L-16	VSFS-630C-E22-L-16		6”	175 (1207)	1850 (1600)
VAUS-630C-E20-L-17	VSUS-630C-E22-L-17		8”	50 (345)	3316 (2868)
VAFS-630C-E30-L-17	VSFS-630C-E32-L-17		8”	175 (1207)	3316 (2868)
VAUS-630C-E30-L-18	VSUS-630C-E32-L-18		10”	50 (345)	5430 (4697)
VAFS-630C-E50-L-18	VSFS-630C-E52-L-18		10”	175 (1207)	5430 (4697)
VAUS-630C-E50-L-19	VSUS-630C-E52-L-19		12”	50 (345)	8077 (6987)
VAFS-630C-E60-L-19[b]	VSFS-630C-E62-L-19[b]		12”	175 (1207)	8077 (6987)
VAUS-630C-E50-L-20	VSUS-630C-E52-L-20		14”	50 (345)	10,538 (9115)
VAUS-630C-E60-L-21[b]	VSUS-630C-E62-L-21[b]		16”	50 (345)	13,966 (12,081)

a. 120 Vac powered models shown, for 24 Vac models change the letter E to F. Example VAFS-630C-F10-L-11 would be 24 Vac powered.
b. E60 and E62 only available in 120 Vac.
c. All 3-Way Butterfly Valves are configurable, with selection of flow done in iPortal or noted on manual purchase order. Configuration number 1, 2, 7 or 8 can be used with these actuators; See Flow pattern on page 2.

Service	Hot and chilled water, up to 60% glycol. See EN-205 Water System Guidelines, F-26080.
Fluid Temperature limits	–40…250 °F (–40…120 °C).
Sizes	2…18” 2-Way models. 2…16“ 3-Way models.
Neck	2” extended neck.
Flow	Bidirectional
Leakage	Bubble Tight Shut Off

Materials: Body	Polyester coated cast Iron ASTM A126 Class B lug. Mates with ANSI Class 125/150 flanges.
Stem	
2…8”	416 stainless steel double D stem.
10” and 12”:	316 stainless steel double D stem.
14” and up	316 stainless steel round shaft woodruff key slot
Disc	Ductile iron nylon 11 coated disc
Seat	EPDM tongue and groove seat and molded O-ring flange seal

Cv Flows Based on Disc Position

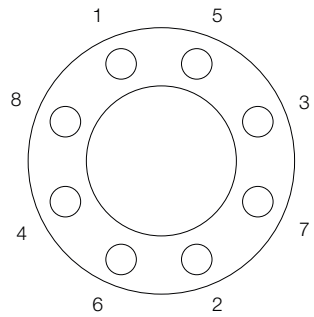
Table 12: Cv Values[a]

	Disc Position in Degrees								
Valve Size	**10°**	**20°**	**30°**	**40°**	**50°**	**60°**	**70°**	**80°**	**90°**
2”	1	7	16	27	43	61	84	114	144
2-1/2”	1.5	11	24	43	67	107	163	223	282
3”	2	15	35	61	96	154	267	364	461
4”	3	27	62	109	171	274	496	701	841
5”	5	43	98	170	268	428	775	1146	1376
6”	6	56	129	225	354	567	1025	1542	1850
8”	12	102	241	421	690	1081	1862	2842	3316
10”	19	162	382	667	1076	1710	2948	4525	5430
12”	27	235	555	1005	1594	2563	4393	6731	8077
14”	34	299	756	1320	2149	3384	5939	8874	10,538
16”	45	397	1001	1749	2847	4483	7867	11,761	13,966
18”	58	507	1281	2237	3643	5736	10,065	14,496	17,214

a. Cv x .865 = Kvs
Cv is defined as the volume of water in US gallon per minute (GPM) that flows through a given restriction or valve opening with a pressure drop of one PSI at room temperature.
The best equal percentage flow characteristic is between 20 to 70 degrees of disc opening. Above 70 degrees the flow characteristic is primarily quick opening. Application engineers requiring good equal percentage floating or proportional control should size the valve for the required Cv according to Table 15, and limit the disc rotation to a maximum of 70 degrees in the field. Various methods can be used to limit the disc rotation including in the controller, electrically at the actuator (for proportional actuators only), or mechanically at the actuator. Two position actuators should not be selected for applications requiring equal percentage flow characteristics.

Required Tightening Torque

BOLT TIGHTENING SEQUENCE (TYPICAL)



Valve Size	Bolt Size/ Threads UNC-28	Max Bolt Torque (ft-lbs)
2”, 3”, 4”	5/8”-11	35
5”, 6”, 8”	3/4”-10	60
10”, 12”	7/8”-9	75-110
14”, 16”	1”-8	120
18”	1-1/8”-7	130

a. Installation: Lower the valve into the open pipe work with the disc in the 10° open position. Valves with non-spring actuators are shipped in this position. Once the valve is place in the pipe work, turn the disc to the full-open position. Gradually remove the flange spreaders (if used). Center the valve body to the flanges, and tighten the bolts hand-tight. Slowly close the valve clockwise to check for adequate disc clearance. Return disc to full-open position and cross tighten all bolts to proper torque specification. Do not install with the disc in fully closed position. This will cause seat distortion. When flange bolts are tightened, rubber will close around disc edge creating excessive torque in initial operation.

2-Way High Performance Valve and Actuator Assemblies

Table 16 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	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”	285psi	160
VAFS-6200-E10-H1-13	VSFS-6200-E12-H1-13		3”	285psi	185
VAFS-6200-E10-H1-14	VSFS-6200-E12-H1-14		4”	285psi	375
VAFS-6200-E20-H1-15	VSFS-6200-E22-H1-15		5”	285psi	790
VAFS-6200-E20-H1-16	VSFS-6200-E22-H1-16		6”	285psi	1350
VAFS-6200-E30-H1-17	VSFS-6200-E32-H1-17		8”	285psi	2800
VAFS-6200-E40-H1-18	VSFS-6200-E42-H1-18		10”	285psi	4300
VAFS-6200-E50-H1-19	VSFS-6200-E52-H1-19		12”	285psi	6650
VAFS-6200-E60-H1-20[b]	VSFS-6200-E62-H1-20[b]		14”	285psi	7650
VAFS-6200-E70-H1-21[b]	VSFS-6200-E72-H1-21[b]		16”	285psi	9800
VAFS-6200-E80-H1-22[b]	VSFS-6200-E82-H1-22[b]		18”	285psi	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.

Valve Body Technical Data

Service	Hot Water, Chilled Water, Condenser Water, Steam
Fluid Temperature Limits	-40…500 °F
Max Steam Pressure	On/Off 150 PSI Proportional 50 PSI
Sizes	2.5”…18”
Flow Characteristic	Modified Equal Percentage
Leakage	Bubble Tight

Materials	
Body	Carbon Steel
Stem	17-4 Stainless Steel
Disc	316 Stainless Steel
Seat	RTFE

Table 14: Cv Values[a]

	Disc Position in Degrees								
Valve Size	**10°**	**20°**	**30°**	**40°**	**50°**	**60°**	**70°**	**80°**	**90°**
2.5”	3	8	16	30	50	78	100	136	160
3”	5	14	32	56	87	123	155	178	185
4”	10	31	63	115	175	250	315	365	375
5”	16	41	78	146	238	360	500	675	790
6”	35	81	140	218	330	510	750	1070	1350
8”	65	165	280	456	685	1060	1590	2230	2800
10”	100	250	450	700	1050	1630	2430	3450	4300
12”	155	390	700	1080	1630	2530	3750	5330	6650
14”	175	450	810	1250	1890	2900	4300	6100	7650
16”	230	580	1020	1530	2420	3700	5510	7560	9800
18”	170	500	1180	2220	3520	5100	6960	9100	10500

a. Cv x .865 = Kvs
Cv is defined as the volume of water in US gallons per minute (GPM) that flows through a given restriction or valve opening with a pressure drop of one PSI at room temperature.
The best equal percentage flow characteristic is between 20 to 70 degrees of disc opening. Above 70 degrees the flow characteristic is primarily quick opening. Application engineers requiring good equal percentage floating or proportional control should size the valve for the required Cv according to the table, and limit the disc rotation to a maximum of 70 degrees in the field. Various methods can be used to limit the disc rotation including in the controller, electrically at the actuator (for proportional actuators only), or mechanically at the actuator. Two position actuators should not be selected for applications requiring equal percentage flow characteristics.

High Performance Required Tightening Torque

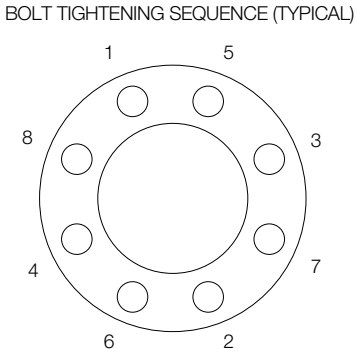
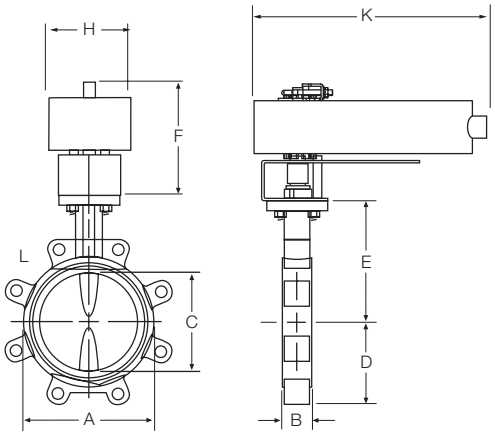


Table 15: High Performance H1 Valve Bodies Required Tightening Torque[a]

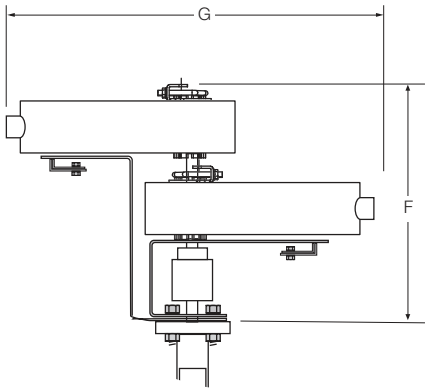
Valve Size in.	Bolts Size/ Threads UNC-28	# of Holes	Max Bolt Torque (ft-lbs)
2.5	5/8 -11	4	22
3	5/8 -11	4	30
4	5/8 -11	8	36
5	3/4 -10	8	49
6	3/4 -10	8	62
8	3/4 -10	8	107
10	7/8 -9	12	110
12	7/8 -9	12	156
14	1 -8	12	228
16	1 -8	16	268
18	1 1/8 -8	16	400

a. Installation: Lower the valve into the open pipe work with the disc in the 10° open position. Valves with non-spring actuators are shipped in this position. Once the valve is place in the pipe work, turn the disc to the full-open position. Gradually remove the flange spreaders (if used). Center the valve body to the flanges, and tighten the bolts hand-tight. Slowly close the valve clockwise to check for adequate disc clearance. Return disc to full-open position and cross tighten all bolts to proper torque specification. Do not install with the disc in fully closed position. This will cause seat distortion. When flange bolts are tightened, rubber will close around disc edge creating excessive torque in initial operation.

2…4” 2-Way Butterfly Valve Assemblies With SmartX SR Actuator Dimensions



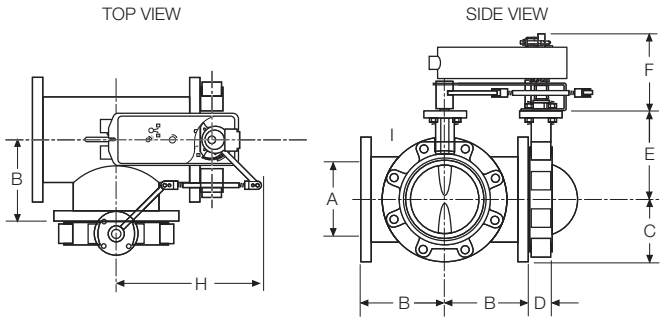
SINGLE ACTUATOR (556)



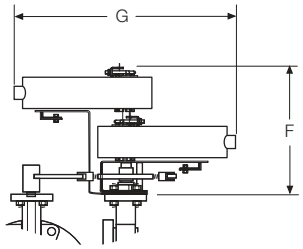
DUAL MOUNT (556D)

Table 17: 2-Way SR

Valve Assembly Part Number	Valve Size in.	Dimensions in inches (mm)									
		A	B	C	D	E	F	G	H	K	L Lug Bolt Threads
VxFx-62x0-556-L-11	2”	3.69 (94)	1.62 (41)	2.00 (51)	2.30 (59)	5.50 (140)	6.00 (152)	—	4.00 (102)	12.5 (318)	(4) - 5/8”-11
VxFx-62x0-556-L-12	2-1/2”	4.19 (106)	1.75 (45)	2.50 (64)	2.57 (65)	6.00 (152)	6.00 (152)	—	4.00 (102)	12.5 (318)	(4) - 5/8”-11
VxFx-62x0-556D-L-13	3”	4.88 (124)	1.75 (45)	3.00 (76)	2.81 (71)	6.25 (159)	11.75 (298)	19.00 (483)	4.00 (102)	—	(4) - 5/8”-11
VxUx-62x0-556D-L-14	4”	6.06 (154)	2.00 (51)	4.00 (102)	4.09 (104)	7.00 (179)	11.75 (298)	19.00 (483)	4.00 (102)	—	(8) - 5/8”-11



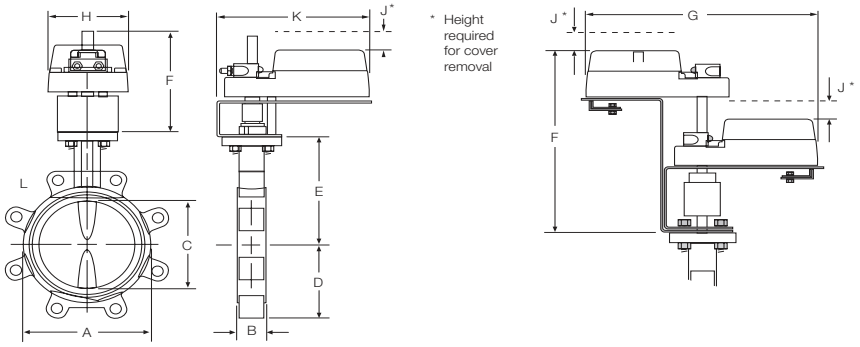
SINGLE MOUNT (556)



DUAL MOUNT (556D)

Table 18: 3-Way SR

Valve Assembly Part Number	Valve Size in.	Dimensions in inches (millimetres)								
		A	B	C	D	E	F	G	H	I Lug Bolt Threads
VxFx-63xx-556-L-11	2”	2.00 (51)	4.50 (114)	3.00 (76)	1.62 (41)	5.50 (140)	7.50 (190.5)	—	12.00 (305)	(4) - 5/8”-11
VxFx-63xx-556D-L-12	2-1/2”	2.50 (64)	5.00 (127)	3.50 (89)	1.80 (46)	6.00 (152)	13.25 (336)	19.00 (483)	13.00 (330)	(4) - 5/8”-11
VxFx-63xx-556D-L-13	3”	3.00 (76)	5.50 (140)	3.80 (97)	1.80 (46)	6.20 (157)	13.25 (336)	19.00 (483)	13.50 (343)	(4) - 5/8”-11
VxUx-63xx-556D-L-14	4”	4.00 (102)	6.50 (1.65)	4.50 (114)	2.00 (51)	7.00 (179)	13.25 (336)	19.00 (483)	14.50 (368)	(8) - 5/8”-11

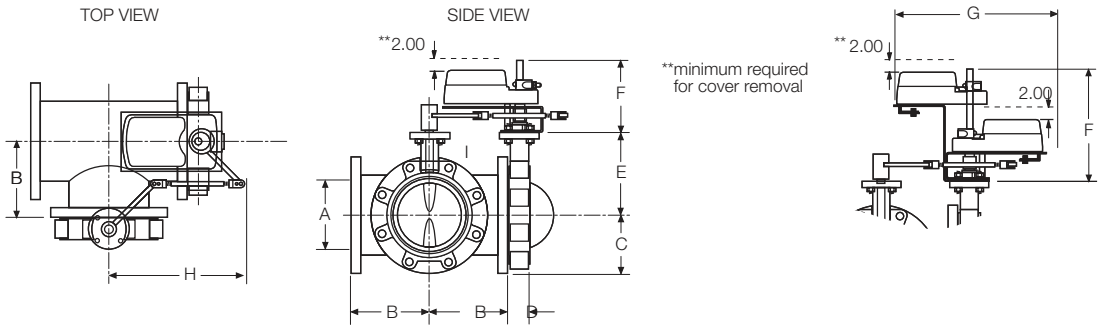


SINGLE MOUNT

DUAL MOUNT

Table 19: 2-Way NSR

Valve Assembly Part Number	Valve Size in.	Dimensions in inches (millimetres)										
		A	B	C	D	E	F	G	H	J	K	L Lug Bolt Threads
VxFx-6200-E24-L-11	2”	3.69 (94)	1.62 (41)	2.00 (51)	2.30 (59)	5.50 (140)	6.00 (152)	—	4.00 (102)	2.00 (51)	7.50 (191)	(4) -5/8”-11
VxFx-6200-E24-L-12	2-1/2”	4.19 (106)	1.75 (45)	2.50 (64)	2.57 (65)	6.00 (152)	6.00 (152)	—	4.00 (102)	2.00 (51)	7.50 (191)	(4)- 5/8”-11
VxFx-6200-E25-L-13	3”	4.88 (124)	1.75 (45)	3.00 (76)	2.81 (71)	6.25 (159)	6.00 (152)	—	4.00 (102)	2.00 (51)	7.50 (191)	(4)- 5/8”-11
VxUx-6200-E25-L-14	4”	6.06 (154)	2.00 (51)	4.00 (102)	4.09 (104)	7.00 (179)	6.00 (152)	—	4.00 (102)	2.00 (51)	7.50 (191)	(4) -5/8”-11
VxFx-6200-E25D-L-14	4”	6.06 (154)	2.00 (51)	4.00 (102)	4.09 (104)	7.00 (179)	11.75 (298)	16.00 (404)	5.00 (127)	2.00 (51)	—	(4) -5/8”-11
VxUx-6200-E25-L-15	5”	7.06 (179)	2.12 (54)	5.00 (127)	4.61 (117)	7.50 (190)	6.00 (152)	—	4.00 (102)	2.00 (51)	7.50 (191)	(4)- 3/4”-10
VxUx-6200-E25D-L-16	6”	8.12 (206)	2.12 (54)	5.75 (146)	5.06 (129)	8.00 (203)	11.75 (298)	16.00 (404)	5.00 (127)	2.00 (51)	—	(8) -3/4”-10



SINGLE MOUNT

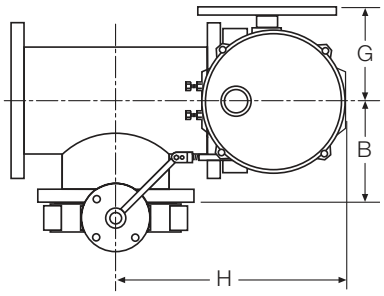
DUAL MOUNT

Table 20: 3-Way NSR

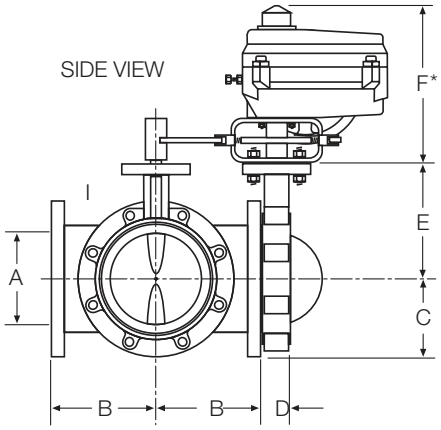
Valve Assembly Part Number	Valve Size in.	Dimensions in inches (millimetres)								
		A	B	C	D	E	F	G	H	I Lug Bolt Threads
VxFx-630x-E24-L-11	2”	2.00 (51)	4.50 (114)	3.00 (76)	1.62 (41)	5.50 (140)	7.50 (191)	—	12.00 (305)	(4)- 5/8”-11
VxFx-630x-E24-L-12	2-1/2”	2.50 (64)	5.00 (127)	3.50 (89)	1.80 (46)	6.00 (152)	7.50 (191)	—	13.00 (330)	(4)- 5/8”-11
VxFx-630x-E25-L-13	3”	3.00 (76)	5.50 (140)	3.80 (97)	1.80 (46)	6.20 (157)	7.50 (191)	—	13.50 (343)	(4)- 5/8”-11
VxUx-630x-E25-L-14	4”	4.00 (102)	6.50 (165)	4.50 (114)	2.00 (51)	7.00 (179)	7.50 (191)	—	14.50 (368)	(4)- 5/8”-11
VxFx-630x-E25D-L-14	4”	4.00 (102)	6.50 (165)	4.50 (114)	2.00 (51)	7.00 (179)	13.25 (337)	16.00 (406)	14.50 (368)	(4)- 5/8”-11
VxUx-630x-E25D-L-15	5”	5.00 (127)	7.50 (190)	5.00 (127)	2.12 (54)	7.50 (190)	13.25 (337)	16.00 (406)	15.50 (394)	(4)- 3/4”-10
VxUx-630x-E25D-L-16	6”	5.80 (147)	8.00 (203)	5.50 (140)	2.12 (54)	8.00 (203)	13.25 (337)	16.00 (406)	16.25 (413)	(4)- 3/4”-10

2…16” 3-Way Butterfly Valve Assemblies With S70 NSR NEMA4 Actuator Dimensions

TOP VIEW



SIDE VIEW

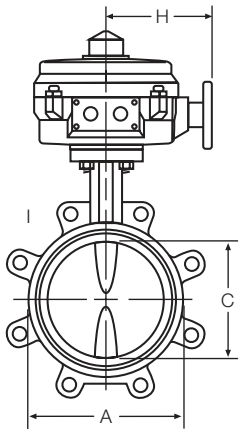


* allow 3.38"(86) for cover removal

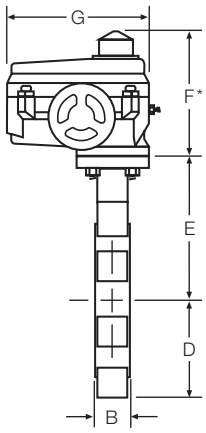
Valve Assembly Part Number[a]	Valve Size in.	Dimensions in inches (mm)								
		A	B	C	D	E	F	G	H	I Lug Bolt Threads
VxFS-630x-E1x-L-11	2”	2.00 (51)	4.50 (114)	3.00 (76)	1.62 (41)	5.50 (140)	9.70 (246)	5.80 (147)	11.00 (279)	(4)- 5/8”-11
VxFS-630x-E1x-L-12	2-1/2”	2.50 (63)	5.00 (127)	3.50 (89)	1.80 (46)	6.00 (152)	9.70 (246)	5.80 (147)	11.60 (295)	(4)- 5/8”-11
VxFS-630x-E1x-L-13	3”	3.00 (76)	5.50 (140)	3.80 (97)	1.80 (46)	6.20 (157)	9.70 (246)	5.80 (147)	12.00 (305)	(4) - 5/8”-11
VxUS-630x-E1x-L-14	4”	4.00 (102)	6.50 (165)	4.50 (114)	2.00 (51)	7.00 (179)	9.70 (246)	5.80 (147)	13.90 0(353)	(8) - 5/8”-11
VxFS-630x-E2x-L-14	4”	4.00 (102)	6.50 (165)	4.50 (114)	2.00 (51)	7.00 (179)	11.10 (282)	7.80 (198)	15.20 (386)	(8) - 5/8”-11
VxUS-630x-E1x-L-15	5”	5.00 (127)	7.50 (190)	5.00 (127)	2.12 (54)	7.50 (190)	9.70 (246)	5.80 (147)	14.29 (363)	(8) - 3/4”-10
VxFS-630x-E2x-L-15	5”	5.00 (127)	7.50 (190)	5.00 (127)	2.12 (54)	7.50 (190)	11.10 (282)	7.80 (198)	16.30 (414)	(8) - 3/4”-10
VxUS-630x-E2x-L-16 VxFS-630x-E2x-L-16	6”	5.80 (147)	8.00 (203)	5.50 (140)	2.12 (54)	8.00 (203)	11.10 (282)	7.80 (198)	16.80 (427)	(8) - 3/4”-10
VxUS-630x-E2x-L-17 VxFS-630x-E3x-L-17	8”	7.80 (198)	9.00 (229)	6.80 (173)	2.50 (63)	9.50 (241)	11.10 (282)	7.80 (198)	18.00 (457)	(8) - 3/4”-10
VxUS-630x-E3x-L-18	10”	9.80 (249)	11.00 (279)	8.00 (203)	2.50 (63)	10.80 (274)	11.10 (282)	7.80 (198)	20.00 (508)	(12) - 7/8”-9
VxFS-630x-E5x-L-18	10”	9.80 (249)	11.00 (279)	8.00 (203)	2.50 (63)	10.80 (274)	12.80 (325)	9.50 (241)	21.50 (546)	(12) - 7/8”-9
VxUS-630x-E5x-L-19 VxFS-630x-E6x-L-19	12”	11.80 (300)	12.00 (305)	9.50 (241)	3.00 (76)	12.20 (310)	12.80 (325)	9.50 (241)	22.74 (578)	(12) - 7/8”-9
VxUS-630x-E5x-L-20	14”	13.20 (335)	14.00 (356)	10.50 (267)	3.00 (76)	13.60 (345)	12.80 (325)	9.50 (241)	24.74 (628)	(12) - 1”- 8
VxFS-630x-E6x-L-21	16”	15.20 (386)	15.00 (381)	11.80 (300)	4.00 (102)	14.80 (376)	12.80 (325)	9.50 (241)	26.25 (667)	(16) - 1”- 8

a. Actuator code Exx or Fxx Dimensions are the same.

2…18” 2-Way Butterfly Valve Assemblies with S70 NSR NEMA 4 Actuator Dimensions



FRONT VIEW



SIDE VIEW

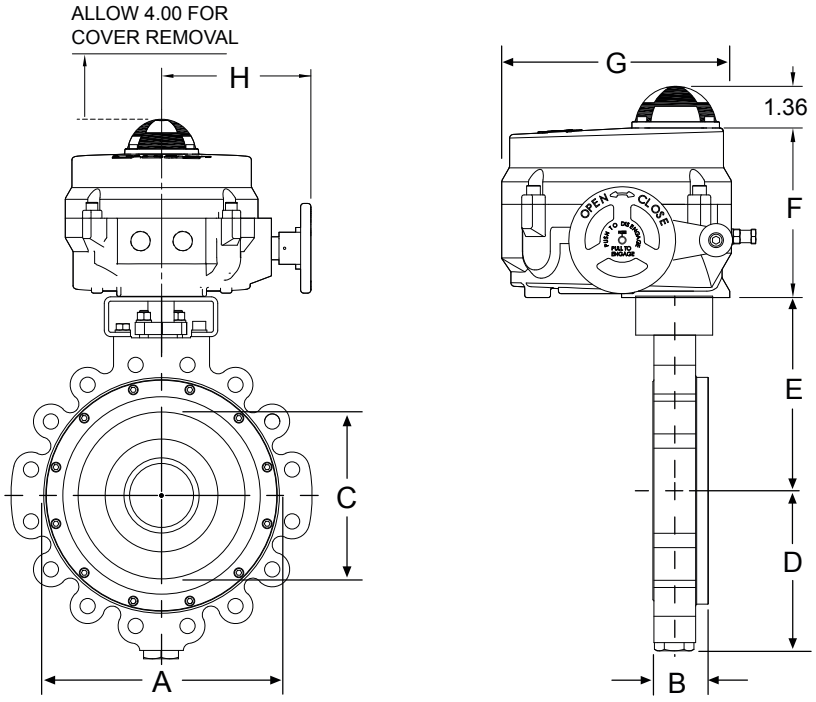
* allow 3.38"(86) for cover removal

Table 21: 2-Way N4 NSR

Valve Assembly Part Number[a]	Valve Size In	Dimensions in inches (millimetres)								
		A	B	C	D	E	F	G	H	I Lug Bolt Threads
VxFS-6200-E1x-L-11	2”	3.69 (94)	1.62 (41)	2.00 (51)	2.30 (58)	5.50 (140)	6.70 (170)	7.50 (191)	5.80 (147)	(4) - 5/8”-11
VxFS-6200-E1x-L-12	2-1/2”	4.19 (106)	1.75 (44)	2.50 (63)	2.57 (65)	6.00 (152)	6.70 (170)	7.50 (191)	5.80 (147)	(4) - 5/8”-11
VxFS-6200-E1x-L-13	3”	4.88 (124)	1.75 (44)	3.00 (76)	2.81 (71)	6.25 (159)	6.70 (170)	7.50 (191)	5.80 (147)	(4) - 5/8”-11
VxFS-6200-E1x-L-14	4”	6.06 (154)	2.00 (51)	4.00 (102)	4.09 (104)	7.00 (178)	6.70 (170)	7.50 (191)	5.80 (147)	(8) - 5/8”-11
VxUS-6200-E1x-L-15	5”	7.06 (179)	2.12 (54)	5.00 (127)	4.61 (117)	7.50 (190)	6.70 (170)	7.50 (191)	5.80 (147)	(8) - 3/4”-10
VxFS-6200-E2x-L-15	5”	7.06 (179)	2.12 (54)	5.00 (127)	4.61 (117)	7.50 (190)	8.10 (206)	10.10 (257)	7.80 (198)	(8) - 3/4”-10
VxFS-6200-E2x-L-16	6”	8.12 (206)	2.12 (54)	5.75 (146)	5.06 (129)	8.00 (203)	8.10 (206)	10.10 (257)	7.80 (198)	(8) - 3/4”-10
VxUS-6200-E2x-L-17 VxFS-6200-E3x-L-17	8”	10.50 (267)	2.50 (63)	7.75 (199)	6.05 (154)	9.50 (241)	8.10 (206)	10.10 (257)	7.80 (198)	(8) - 3/4”-10
VxUS-6200-E3x-L-18	10”	12.75 (324)	2.50 (63)	9.75 (248)	7.69 (195)	10.75 (273)	8.10 (206)	10.10 (257)	7.80 (198)	(12) - 7/8”-9
VxFS-6200-E4x-L-18	10”	12.75 (324)	2.50 (63)	9.75 (248)	7.69 (195)	10.75 (273)	8.80 (224)	12.10 (307)	9.50 (241)	(12) - 7/8”-9
VxUS-6200-E4x-L-19 VxFS-6200-E5x-L-19	12”	14.88 (378)	3.00 (76)	11.75 (298)	9.02 (229)	12.25 (311)	8.80 (224)	12.10 (307)	9.50 (241)	(12) - 7/8”-9
VxUS-6200-E5x-L-20 VxFS-6200-E6x-L-20	14”	17.05 (433)	3.00 (76)	13.25 (337)	9.93 (252)	13.62 (346)	8.80 (224)	12.10 (307)	9.50 (241)	(12) - 1”- 8
VxUS-6200-E6x-L-21	16”	19.21 (488)	4.00 (102)	15.25 (338)	11.30 (287)	14.75 (375)	8.80 (224)	12.10 (307)	9.50 (241)	(16) - 1”- 8
VxUS-6200-E6x-L-22	18”	21.12 (536)	4.25 (108)	17.25 (438)	12.16 (309)	16.00 (406)	8.80 (224)	12.10 (307)	9.50 (241)	(16) - 1 1/8”-7

a. Actuator code Exx or Fxx Dimensions are the same

2.5…18” High Performance 2-Way Valve Assemblies with S70 NSR NEMA 4 Actuator Dimensions



Valve Assembly Part Number	Valve Size in.	Dimensions in.								
		A	B	C	D	E	F	G	H	I (Lug Bolt Threads)
VxFS-6200-E1x-H1-12	2.5”	4.75	1.88	2.28	3.81	6.38	5.6	7.5	5.8	5/8-11
VxFS-6200-E1x-H1-13	3”	5.25	1.88	2.86	4.09	6.63	5.6	7.5	5.8	5/8-11
VxFS-6200-E1x-H1-14	4”	6.72	2.03	3.72	4.71	7.5	5.6	7.5	5.8	5/8-11
VxFS-6200-E2x-H1-15	5”	7.62	2.23	4.8	5.07	7.5	6.6	10.1	7.8	3/4-10
VxFS-6200-E2x-H1-16	6”	8.62	2.23	5.88	5.57	8	6.6	10.1	7.8	3/4-10
VxFS-6200-E3x-H1-17	8”	10.81	2.4	7.8	6.94	9.5	6.6	10.1	7.8	3/4-10
VxFS-6200-E4x-H1-18	10”	13.06	2.75	9.78	8.56	10.75	7.2	12.1	9.5	7/8-9
VxFS-6200-E5x-H1-19	12”	15.42	3.08	11.74	10.18	12.25	7.2	12.1	9.5	7/8-9
VxFS-6200-E6x-H1-20	14”	17.24	3.73	12.9	11.95	14.5	7.2	12.1	9.5	1” -8
VxFS-6200-E7x-H1-21	16”	19.5	4.11	14.68	12.94	17.75	12.5	18.8	9.5	1” -8
VxFS-6200-E8x-H1-22	18”	21.38	4.61	16.6	14.15	20	12.5	18.8	9.5	1 1/8” -8