



2012 Valve & Valve Actuator Catalog

For new construction or retrofits, simplify projects with our complete selection.

[CLICK anywhere in this document to return to ZONE VALVE INFORMATION at InspectApedia.com](#)

Our dynamic duos provide comprehensive control.

Fast installation and sophisticated features make Siemens selection of valves and actuators the perfect pair for all types of HVAC applications.

A history of engineering excellence, backed with superior customer support

We've been manufacturing energy-efficient, cost-effective valves for over 100 years. Siemens valves are relied on to improve comfort in all types of environments, in all types of facilities. Every valve and actuator is 100% factory tested to ensure quality and reliability; many of our products are assembled and distributed from our Buffalo Grove, IL manufacturing facility.

Lasting dependability

Pair our valves with pneumatic or electronic actuators for excellent control of water, steam, and glycol solutions. Ranging in size from ½ to 20", valves are designed for easy installation and compatibility with existing parts. They get to work right away, making an immediate impact on energy efficiency and building comfort. With our retrofit kits, you can upgrade existing valves by simply installing higher quality Siemens actuators—eliminating the need for costly and time-consuming whole-valve replacements.

Free factory assembly and valve tagging

Valves and valve actuators are assembled and tagged for direct delivery to any job-site, free of charge. All you have to do is specify each valve's location when placing your initial order and we will tag them before shipping to save you installation time and expense.

Modular accessories

Save money building the components you need from one source. Accessories that easily guide and snap into place make customizing for a job site or location simple and straightforward. Choose from retrofit kits, potentiometers, auxiliary switches, function modules, stem heaters, weathershields, and more to meet your needs.

EASY WAYS TO PLACE ORDERS ANYTIME.

We offer a variety of ways to place orders or contact us. You can rest assured that our customer support teams are happy to assist you with ordering, fulfillment, and shipping questions.

- **Web:** usa.siemens.com/buildingtechnologiesonlineordering
Find and order over 17,000 standard Siemens products 24/7. Our online Webshop gives you fast access to documentation, submittal sheets, product availability, FREE valve tagging, and order placement. See inside back cover for more details.
- **Email:** order.management.us.sbt@siemens.com
Our team will quickly and accurately respond to your requests.
- **Phone: 7am to 5:30pm (CST) Monday through Friday.**
Contractor or Wholesalers: 1-888-593-7876
Siemens Solution Partners: 1-800-516-9964
Canadian Customers: 1-800-236-2967
All other customers, please call your local Siemens branch.
- **Fax: 877-765-4295**
We'll send you an order confirmation to let you know your fax was received.

From sizing to selection, we look forward to helping you today!



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599 Series Zone Valves

More options for zone control

Zone Valves in 1/2 to 1-inch sizes provide excellent control of fan coils, unit ventilators and other applications where on/off, floating or proportional control is required. All-metal plugs and seat deliver superior control of water and glycol solutions with NPT or sweat connections. Proven linear stroke globe valve design — no “water hammer” effects caused by rubber paddles or flappers.

Consistent engineering and direct-coupled technology enables interchangeability among actuators and valve bodies. Actuators can be easily changed out through a quick connection and without the need for tools.

All valves and valve actuators are factory assembled and tagged to jobsite specifications at no additional charge. They are 100% factory tested for quality assurance.



Features

- Metal-to-metal seat/plug design
- Direct coupled installation of actuator to valve without tools
- Low ANSI Class III Leakage
- Manual override
- Visual position indication
- Choose from interchangeable on/off (2P), floating (3P), and 0-10V proportional actuators.

Two- and Three-Way Zone Valves

1/2 to 1"

Normally Open, Normally Closed, Diverting

ANSI Class 125

Description

Two- and Three-Way Zone Valves have a 1/10-inch (2.5 mm) stroke. The Zone Valves work with any SFA/SFP Series, SSA/SSP Series electric actuator, or with the STA/STP Series Thermic actuator. The actuators accept one of either 24 Vac or 120 Vac power supply signal to provide on/off, floating or 0 to 10 Vdc control.

Features

- All metal plug and seat for superior control
- Direct-coupled universal bonnet — install actuators without tools
- Sweat or NPT end connections
- Standard 2.5 mm stroke
- Change from Normally Open to Normally Closed by simply changing out the actuator
- Visual position indication
- SFA/P and SSA/P actuators are UL listed for plenum installations
- Order separately or with any SFA/SFP Series or SSA/SSP Series electronic actuator, or with ST Series Thermic actuator as a complete assembly

Applications

Typical applications for Two- and Three-Way Zone Valves are hot or chilled water for zones with radiators; floor heating via manifolds; fan coil units; cooling ceilings; wall-mounted boilers; and VAV applications.

Recommendation

Use only with Zone Valve Actuators.

Specifications

Line Size	1/2-inch to 1-inch (15 mm to 25 mm)
Body Style	Globe
Action	
2-way.....	NO/NC Determined by Actuator
3-way.....	Diverting/Mixing (Limited Application)
Valve Body Rating	ANSI Class 125
Stem Travel (Stroke)	1/10-inch (2.5 mm)
Materials	
Body	Brass
Trim	Brass
Stem	Stainless Steel ASTM A582 Type 303
Packing	EPDM O-rings
Controlled Medium	Water, Glycol Solutions to 50%
Medium Temperature Range	34 to 230°F (1 to 110°C)
Maximum Inlet Pressure	125 psig
Leakage Rate	ANSI Class III
Close-off Ratings	According to ANSI/FCI 70-2
Flow Characteristic	Linear

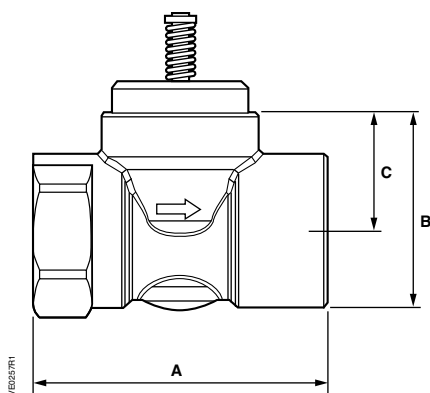
Two-Way NPT Zone Valve.



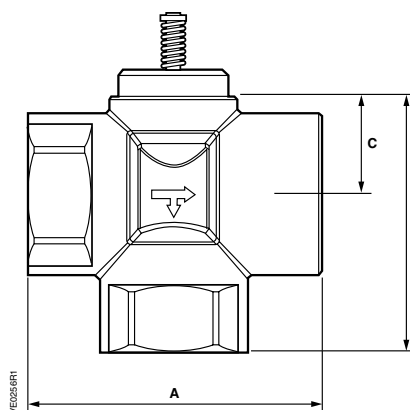
Three-Way Sweat Zone Valve.



Two-Way Zone Valve Body Dimensions



Three-Way Zone Valve Body Dimensions



Valve Size in. (mm)	2-Way Valve				Valve Size in. (mm)	3-Way Valve			
	A	B	C	Weight lb. (kg)		A	B	C	Weight lb. (kg)
NPT Connection									
0.5 (15)	2.76 (70)	1.63 (41.5)	1.00 (25.4)	0.82 (0.37)	0.5 (15)	2.76 (70)	2.34 (59.5)	1.00 (25.4)	1.08 (0.49)
0.75 (20)	2.76 (70)	1.77 (45)	1.00 (25.4)	0.99 (0.45)	0.75 (20)	2.76 (70)	2.34 (59.5)	1.00 (25.4)	1.26 (0.57)
1.0 (25)	3.50 (89)	2.10 (54)	1.00 (25.4)	1.68 (0.76)	1.0 (25)	3.50 (89)	2.85 (67.3)	1.00 (25.4)	2.14 (0.97)
Sweat Connection									
0.5 (15)	2.66 (66)	1.48 (38)	1.00 (25.4)	0.60 (0.27)	0.5 (15)	2.66 (68)	2.26 (57.5)	1.00 (25.4)	0.71 (0.32)
0.75 (20)	2.76 (70)	1.63 (41.5)	1.00 (25.4)	0.71 (0.32)	0.75 (20)	2.76 (70)	2.34 (59.5)	1.00 (25.4)	0.86 (0.39)
1.00 (25)	3.50 (89)	1.77 (45)	1.00 (25.4)	1.06 (0.48)	1.00 (25)	3.50 (89)	2.65 (67)	1.00 (25.4)	1.24 (0.56)

Table expressed in inches (mm).

Two-Way Zone Valve Body Product Ordering



Nominal Valve Size		Flow Rate		Part No.	
Inch	Mm	Cv	(Kvs)	NPT	Sweat
0.5	15	1.0	(0.85)	599-00210	599-00510
0.5	15	2.5	(2.15)	599-00211	599-00511
0.5	15	4.0	(3.4)	599-00214	599-00514
0.75	20	4.1	(3.5)	599-00212	599-00512
1.00	25	7.0	(6.0)	599-00213	599-00513

Three-Way Zone Valve Body Product Ordering



Nominal Valve Size		Flow Rate		Part No.	
Inch	Mm	Cv	(Kvs)	NPT	Sweat
0.5	15	1.0	(0.85)	599-00230	599-00530
0.5	15	2.5	(2.15)	599-00231	599-00531
0.5	15	4.0	(3.4)	599-00234	599-00534
0.75	20	4.1	(3.5)	599-00232	599-00532
1.00	25	7.0	(6.0)	599-00233	599-00533

Order separately or as a complete assembly.
See pages 14 & 15 for assembly ordering part numbers.

SFA/SFP Series Electronic Valve Actuator

Spring Return

24, 120, 208, or 277 Vac

Description

The SFA/SFP Series of Electronic Valve Actuators accepts 24, 120, 208, or 277 Vac power supply signal to provide two-position control. This actuator works with Zone Valves with 1/10-inch (2.5 mm) stroke.

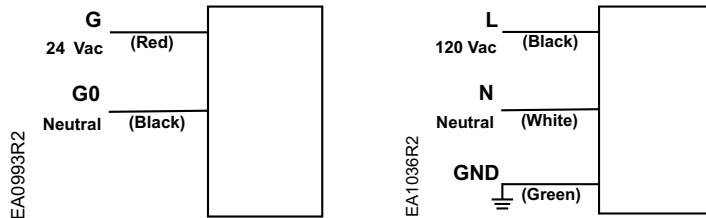
Features

- UL listed for plenum installations
- Direct coupled installation without tools
- Manual override with auto unlock
- Visual position indication

Applications

The SFA/SFP Series of Electronic Valve Actuators is for use in heating and cooling HVAC applications with Zone Valves.

Wiring Diagrams



Specifications

Power Supply

Operating Voltage24 Vac \pm 20%, 120 Vac \pm 20%,
208 Vac, 277 Vac

Frequency

24 Vac 50/60 Hz

120 Vac 60 Hz

Power Consumption

24/120 Vac 9.8 VA

Function

Running Time 10 Seconds

Nominal Stroke 1/10-in. (2.5 mm)

Nominal Force 24 lb. (105N)

Agency Certifications UL Listed to UL873
cUL Certified to Canadian Standard
C22.2 No. 24-93

Ambient Temperature

Operation.....41 to 122°F (5 to 50°C)

Transport and Storage-13 to 158°F (-25 to 70°C)

Medium Temperature34 to 230°F (1 to 110°C)

Mounting Location NEMA 1 (Interior Only)

Noise <35 db

Dimensions..... 3.4" H x 4.4" W x 2.3" D
(85.2 mm H x 111 mm W x 58 mm D)

Shipping Weight..... 1.18 lb. (0.54 kg)

Two-Position SFA/SFP Series Actuator Product Ordering

Description		Part No.	Actuator Prefix Code
2-Way Valves	3-Way Valves		
24 Vac, 2-Position Normally Open, Spring Return	24 Vac, 2-Position Fail AB→A	SFP71U	243
120 Vac, 2-Position Normally Open, Spring Return	120 Vac, 2-Position Fail AB→A	SFP11U	241
208 Vac		SFP208U/25*	**
277 Vac		SFP277U/25*	**
24 Vac, 2-Position Normally Closed, Spring Return	24 Vac, 2-Position Fail AB→B	SFA71U	242
120 Vac, 2-Position Normally Closed, Spring Return	120 Vac, 2-Position Fail AB→B	SFA11U	240
208 Vac		SFA208U/25*	**
277 Vac		SFA277U/25*	**

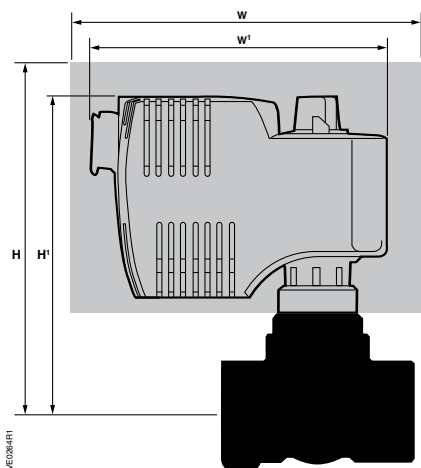
*Part numbers with /25 come with 8.2 ft. (2.5m) leads.

** Actuator only; not available as an assembly.

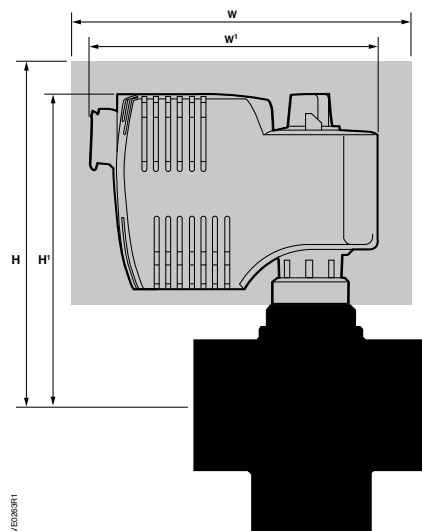
SFA/SFP Series
Electronic Valve Actuator.



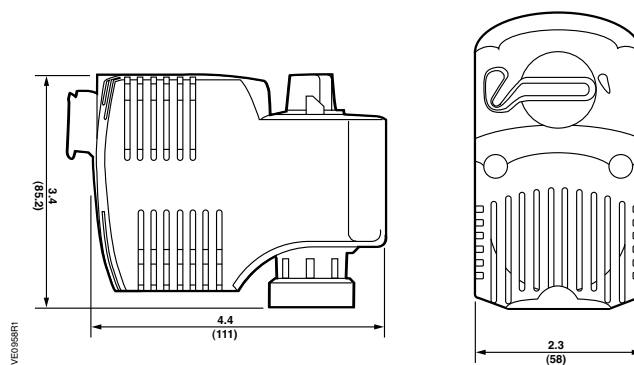
SFA/SFP Series Actuator Dimensions



Service Envelope for Two-Way Valve Assembly



Service Envelope for Three-Way Valve Assembly



Dimensions shown in inches (mm).

Valve Size in. (mm)	Valve Center Line to Top of Actuator H'		Service Height H		Width or Diameter of Actuator W'		Service Width W	
	2-Way	3-Way	2-Way	3-Way	2-Way	3-Way	2-Way	3-Way
0.5 (15)	4.38 (112)	4.38 (112)	12.38 (315)	12.38 (315)	4.38 (112)	4.38 (112)	12.38 (315)	12.38 (315)
0.75 (20)	4.38 (112)	4.38 (112)	12.38 (315)	12.38 (315)	4.38 (112)	4.38 (112)	12.38 (315)	12.38 (315)
1.00 (25)	4.38 (112)	4.38 (112)	12.38 (315)	12.38 (315)	4.38 (112)	4.38 (112)	12.38 (315)	12.38 (315)

Table expressed in inches (mm).

Service height and width are the recommended dimensions to allow access to the product.

SSA/SSP Series Electronic Valve Actuator

Non-Spring Return

24 Vac, Floating or 0-10V Control

Description

The SSA/SSP Electronic Valve Actuator requires a 24 Vac power supply and receives a 0 to 10 Vdc signal or a floating control signal to control a valve. This actuator is designed to work with Zone Control Valves with a 1/10-inch (2.5 mm) stroke and a threaded valve bonnet that fits the actuator.

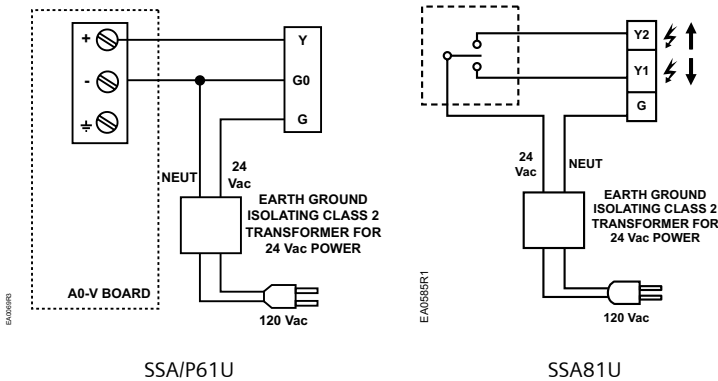
Features

- UL listed for plenum installations
- Direct-coupled installation without tools
- Manual Override with hex wrench
- Visual position indication

Applications

The SSA/SSP Electronic Valve Actuators are for use with heating and cooling HVAC applications with Zone Valves.

Wiring Diagrams



Specifications

Power Supply

Operating Voltage 24 Vac \pm 20%
 Frequency 50/60 Hz

Power Consumption

SSA81 0.8 VA
 SSA/P61 2.5 VA

Agency Certifications

CE Conformance
 EMC Directive 89/336/EEC
 Low Voltage Directive 73/23/EEC
 UL listed UL873
 cUL certified to Canadian Standard
 C22.2 No. 24-93

Function

Running Time
 SSA/P61 34 sec.
 SSA81 150 sec.
 Nominal Stroke 1/10-inch (2.5 mm)
 Nominal Force 24 lb. (105N)

Ambient Temperature

Operation 41 to 122°F (5 to 50°C)
 Transport and Storage -13 to 158°F (-25 to 70°C)

Medium Temperature

..... 34 to 230°F (1 to 110°C)

Dimensions

..... 3.26" H x 3.26" W x 1.9" D

(82 mm H x 83 mm W x 48 mm D)

Shipping Weight

..... 9 oz. (0.25 kg)

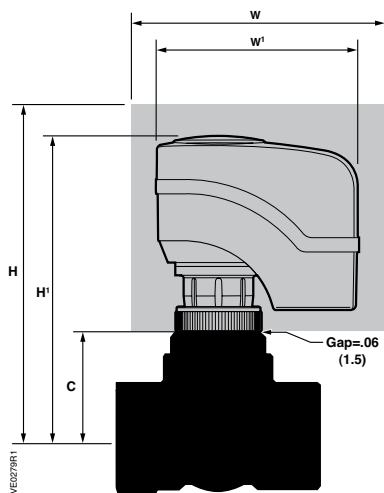
SSA/SSP Series Actuator Product Ordering

Description		Part No.	Actuator Prefix Code
2-Way Valves	3-Way Valves		
24 Vac floating	24 Vac floating	SSA81U	244
24 Vac, 0 to 10 Vdc, NC	24 Vac, 0-10 Vdc, AB→A, NC	SSA61U	245
24 Vac, 0 to 10 Vdc, NO	24 Vac, 0-10 Vdc, AB→A, NO	SSP61U	248

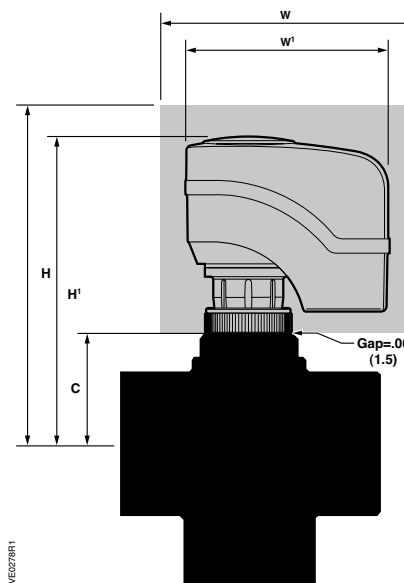
SSA/SSP Series
Electronic Valve Actuator.



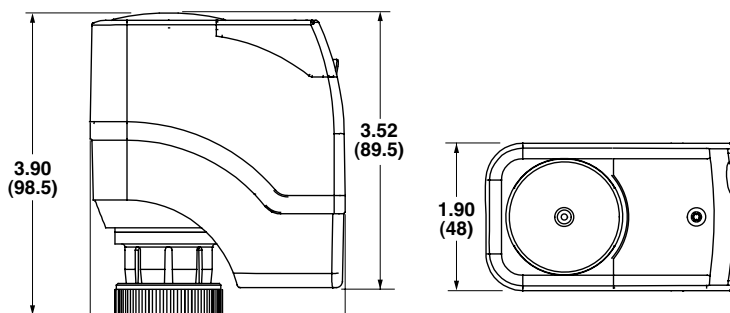
SSA/SSP Series Actuator Dimensions



Service Envelope for Two-Way Valve Assembly



Service Envelope for Three-Way Valve Assembly



Dimensions shown in inches (mm).

Valve Size in. (mm)	Valve Center Line to Top of Actuator H'		Service Height H		Valve Center Line to Actuator Coupling C		Width or Diameter of Actuator W'		Service Width W	
	2-Way	3-Way	2-Way	3-Way	2-Way	3-Way	2-Way	3-Way	2-Way	3-Way
0.5 (15)	4.26 (108.2)	4.26 (108.2)	12.26 (311.4)	12.26 (311.4)	1.00 (25.4)	1.00 (25.4)	3.26 (82.8)	3.26 (82.8)	11.26 (286.0)	11.26 (286.0)
0.75 (20)	4.26 (108.2)	4.26 (108.2)	12.26 (311.4)	12.26 (311.4)	1.00 (25.4)	1.00 (25.4)	3.26 (82.8)	3.26 (82.8)	11.26 (286.0)	11.26 (286.0)
1.00 (25)	4.26 (108.2)	4.26 (108.2)	12.26 (311.4)	12.26 (311.4)	1.00 (25.4)	1.00 (25.4)	3.26 (82.8)	3.26 (82.8)	11.26 (286.0)	11.26 (286.0)

Table expressed in inches (mm).

Service height and width are the recommended dimensions to allow access to the product.

Two- and Three-Way Zone Valve Assemblies

1/2 to 1", ANSI Class 125

Electronic Spring Return and Non-Spring Return Actuators











NO/NC 1/2 to 1" 				Spring Return Actuator				Non-Spring Return Actuator		
				NO	NC	NO	NC	NC	NO	NC
2-Way Valve Body Part No.	Valve Size in.	Flow Rate Cv	Close Off psi	2P 120 Vac		2P 24 Vac		Floating 24 Vac	0-10 Vdc 24 Vac	0-10 Vdc 24 Vac
										
				NPT Connection						
 599-00210	1/2	1.0	44	241-00210	240-00210	243-00210	242-00210	244-00210	248-00210	245-00210
599-00211		2.5	44	241-00211	240-00211	243-00211	242-00211	244-00211	248-00211	245-00211
599-00214		4.0	44	241-00214	240-00214	243-00214	242-00214	244-00214	248-00214	245-00214
599-00212	3/4	4.1	44	241-00212	240-00212	243-00212	242-00212	244-00212	248-00212	245-00212
599-00213	1	7.0	22	241-00213	240-00213	243-00213	242-00213	244-00213	248-00213	245-00213
				Sweat Connection						
 599-00510	1/2	1.0	44	241-00510	240-00510	243-00510	242-00510	244-00510	248-00510	245-00510
599-00511		2.5	44	241-00511	240-00511	243-00511	242-00511	244-00511	248-00511	245-00511
599-00514		4.0	44	241-00514	240-00514	243-00514	242-00514	244-00514	248-00514	245-00514
599-00512	3/4	4.1	44	241-00512	240-00512	243-00512	242-00512	244-00512	248-00512	245-00512
599-00513	1	7.0	22	241-00513	240-00513	243-00513	242-00513	244-00513	248-00513	245-00513

Table Notes:

Part numbers in blue indicate complete assemblies.



Two-Way
Spring Return



Two-Way
Non-Spring Return



Three-Way
Spring Return

Diverting 1/2 to 1"				Spring Return Actuator				Non-Spring Return Actuator			
				AB→A NO	AB→A NC	AB→A NO	AB→A NC	AB→A NC	AB→A NO	AB→A NC	
				2P 120 Vac		2P 24 Vac		Floating 24 Vac	0-10 Vdc 24 Vac	0-10 Vdc 24 Vac	
				SFP11U	SFA11U	SFP71U	SFA71U	SSA81U	SSP61U	SSA61U	
				NPT Connection							
	599-00230	1/2	1.0	44	241-00230	240-00230	243-00230	242-00230	244-00230	248-00230	245-00230
	599-00231		2.5	44	241-00231	240-00231	243-00231	242-00231	244-00231	248-00231	245-00231
	599-00234		4.0	44	241-00234	240-00234	243-00234	242-00234	244-00234	248-00234	245-00234
	599-00232	3/4	4.1	44	241-00232	240-00232	243-00232	242-00232	244-00232	248-00232	245-00232
599-00233	1	7.0	22	241-00233	240-00233	243-00233	242-00233	244-00233	248-00233	245-00233	
				Sweat Connection							
	599-00530	1/2	1.0	44	241-00530	240-00530	243-00530	242-00530	244-00530	248-00530	245-00530
	599-00531		2.5	44	241-00531	240-00531	243-00531	242-00531	244-00531	248-00531	245-00531
	599-00534		4.0	44	241-00534	240-00534	243-00534	242-00534	244-00534	248-00534	245-00534
	599-00532	3/4	4.1	44	241-00532	240-00532	243-00532	242-00532	244-00532	248-00532	245-00532
	599-00533	1	7.0	22	241-00533	240-00533	243-00533	242-00533	244-00533	248-00533	245-00533

Table Notes:

Part numbers in blue indicate complete assemblies. *Flow rate is for AB→A. Valves are for the NC upper part. For NO lower port values, refer to the Reference section, page 170.

Thermic Actuators

Spring Return
24 Vac/dc

Description

Thermic Actuators require a 24 Vac/Vdc control signal to provide two-position, NO or NC control. This actuator is designed to work with Zone Valves with a 1/10-inch (2.5 mm) stroke.

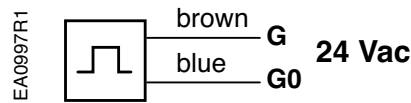
Features

- Direct-coupled — install without tools
- Movement and position indication
- Robust, no maintenance required
- Friction-free
- Two-wire connection
- Standard versions with 3.9 foot connecting cable
- PWM control
- AC/DC two-position control

Applications

Thermic Actuators are for use with 1/10-inch (2.5 mm) stroke Zone Valves.

Wiring Diagrams



Specifications

Power Supply

Supply Voltage 24 Vac, 50 to 60 Hz or 24 Vdc
Power Consumption Normal Operation 2.5W; Power on 6 VA
Switch-on Current (transient) 250 mA

Stroke 1/10-in. (2.5 mm)

Nominal Force 24 lb. (105N)

Operation

Temperature 41 to 122°F (5 to 50°C)
Humidity 5 to 85% RH

Storage

Temperature 41 to 122°F (5 to 50°C)
Humidity 5 to 95% RH

Transport

Temperature -4 to 140°F (-20 to 60°C)
Humidity 5 to 95% RH

Agency Approvals Conforms to CE Requirements

Dimensions (H x W) 2.44" H x 1.71" W (62 mm H x 43.5 mm W)

Shipping Weight 0.33 lb. (0.15 kg)

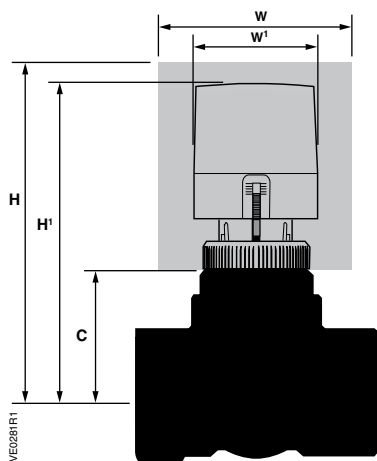
Thermic Actuators Product Ordering

Description		Part No.	Actuator Prefix Code
2-Way Valves	3-Way Valves		
24 Vac/dc, 2-Position NC, Spring Return	24 Vac/dc, 2-Position Fail AB→B	STA71	246
24 Vac/dc, 2-Position NO, Spring Return	24 Vac/dc, 2-Position Fail AB→A	STP71	247

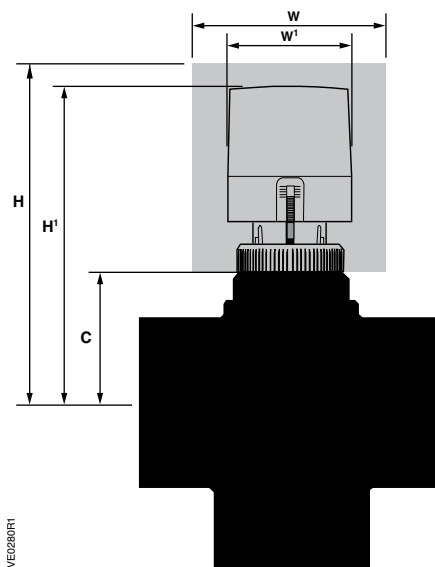


Thermic Electronic Valve Actuator.

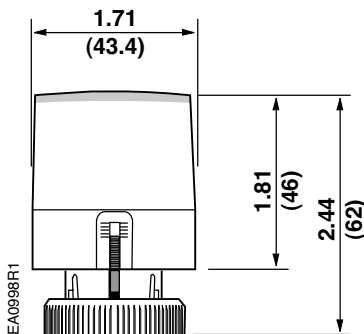
Thermic Actuator Dimensions



Two-Way Valve Assembly Service Envelope



Three-Way Valve Assembly Service Envelope



Dimensions shown in inches (mm).

Valve Size in. (mm)	Valve Center Line to Top of Actuator H'		Service Height H		Valve Center Line to Actuator Coupling C		Width or Diameter of Actuator W'		Service Width W	
	2-Way	3-Way	2-Way	3-Way	2-Way	3-Way	2-Way	3-Way	2-Way	3-Way
0.5 (15)	3.44 (87.4)	3.44 (87.4)	7.44 (189)	7.44 (189)	1.00 (25.4)	1.00 (25.4)	1.86 (47.3)	1.86 (47.3)	9.86 (251)	9.86 (251)
0.5 (15)	3.44 (87.4)	3.44 (87.4)	7.44 (189)	7.44 (189)	1.00 (25.4)	1.00 (25.4)	1.86 (47.3)	1.86 (47.3)	9.86 (251)	9.86 (251)
0.75 (20)	3.44 (87.4)	3.44 (87.4)	7.44 (189)	7.44 (189)	1.00 (25.4)	1.00 (25.4)	1.86 (47.3)	1.86 (47.3)	9.86 (251)	9.86 (251)
1.00 (25)	3.44 (87.4)	3.44 (87.4)	7.44 (189)	7.44 (189)	1.00 (25.4)	1.00 (25.4)	1.86 (47.3)	1.86 (47.3)	9.86 (251)	9.86 (251)

Table expressed in inches (mm)

Service height and width are the recommended dimensions to allow access to the product.

Zone Valve Assemblies

1/2 to 1", ANSI Class 125

Thermic Spring Return Actuators







NO/NC 1/2 to 1"				Spring Return Actuator	
				NO	NC
				2P 24 Vac	
2-Way Valve Body Part No.	Valve Size in.	Flow Rate Cv	Close Off psi		
				STP71	STA71
NPT Connection					
 599-00210	1/2	1.0	44	247-00210	246-00210
599-00211		2.5	44	247-00211	246-00211
599-00214		4.0	44	247-00214	246-00214
599-00212	3/4	4.1	44	247-00212	246-00212
599-00213	1	7.0	22	247-00213	246-00213
Sweat Connection					
 599-00510	1/2	1.0	44	247-00510	246-00510
599-00511		2.5	44	247-00511	246-00511
599-00514		4.0	44	247-00514	246-00514
599-00512	3/4	4.1	44	247-00512	246-00512
599-00513	1	7.0	22	247-00513	246-00513

Table Notes:

Part numbers in blue indicate complete assemblies.





Diverting 1/2 to 1"				Spring Return Actuator	
				AB → A NO	AB → A NC
				2P 24 Vac	
3-Way Valve Body Part No.	Valve Size in.	Flow Rate Cv	Close Off psi		
				STP71	STA71
NPT Connection					
 599-00230	1/2	1.0	44	247-00230	246-00230
599-00231		2.5	44	247-00231	246-00231
599-00234		4.0	44	247-00234	246-00234
599-00232	3/4	4.1	44	247-00232	246-00232
599-00233	1	7.0	22	247-00233	246-00233
Sweat Connection					
 599-00530	1/2	1.0	44	247-00530	246-00530
599-00531		2.5	44	247-00531	246-00531
599-00534		4.0	44	247-00534	246-00534
599-00532	3/4	4.1	44	247-00532	246-00532
599-00533	1	7.0	22	247-00533	246-00533

Table Notes:

Part numbers in blue indicate complete assemblies.

Powermite Globe Valves

Simple to configure, simple to install

MZ and MT Series Powermite Globe Valves feature a compact housing design for ease of installation, even in tight spaces. Direct-coupled technology allows fast connection of valve body and actuator, without requiring tools. 100:1 resolution with <2 % hysteresis provides greater control. ANSI Class 250 valve body with metal-to-metal seating surfaces create the tightest seal possible and ensure long-lasting, reliable performance.

Available separately or with electronic or pneumatic actuators, they are capable of handling a variety of media. Applications include: hot water, chilled water or steam. Flexibility of end connections help meet your application needs.

All valves and valve actuators are factory assembled and tagged to jobsite specifications at no additional charge, reducing installation time. They are 100% factory tested for quality assurance.



MZ Series Features

- 1/2 to 1 Inch line size
- 0.4 to 10 Cv range
- Close-off up to 70 psi
- Electronic actuator only
 - 0 to 10 V non-spring return
 - Floating control, non-spring return
- Low leakage rate (ANSI Class IV)

MT Series Features for Terminal Unit Control

- 1/2 to 1 Inch line size
- 0.4 to 10 Cv range
- Close-off up to 160 psi
- Pneumatic and electronic actuators
 - 3 to 8 psi spring range
 - 8 to 13 psi spring range
 - 10 to 15 psi spring range
 - Floating spring return or non-spring return electronic actuators
 - 0 to 10 V spring return or non-spring return electronic actuators
 - Low leakage rate (ANSI Class IV)

Two- & Three-Way MZ Series Globe Valves

1/2 to 1"

Normally Open, Normally Closed, Mixing

ANSI Class 250

Description

Powermite MZ Series Valve bodies work with the SSB electronic actuator with a 7/32-inch (5.5 mm) stroke.

Features

- Direct-coupled universal bonnet/no tools required for installation
- ANSI Leakage Class IV (0.01% of Cv)
- ANSI Class 250
- Variety of actuators available
 - 0 to 10 V non-spring return
 - Floating control non-spring return
- Choice of end connections
- Greater than 100:1 rangeability for $C_v \geq 1$
- Orderable as a valve only or as a complete valve/actuator assembly

Applications

Typical applications include control of hot or chilled water, glycol solutions up to 50%. Compatible actuators deliver a minimum of 45 lbf. (200 N) of force.

Specifications

Valve Size	1/2 to 1" (15 to 25 mm)
Body Style	Globe
Seat Style	Metal to Metal
Action	NO/NC/Three-Way Mixing
Valve Body Rating	ANSI Class 250
Stem Travel (Stroke)	7/32" (5.5 mm)
Materials	
Body	Forged Brass C37700 or UNS CA 844 Bronze
Trim	Brass
Stem	Stainless Steel ASTM A 582 Type 303
Packing	EPDM O-rings
Controlled Medium	
Two-way	Water, Glycol Solutions up to 50%
Three-way	Water, Glycol Solutions up to 50%
Medium Temperature Range	35 to 250°F (2 to 120°C)
Max. Recommended Differential Pressure for Modulating Service	
Liquid 2W and 3W	25 psig (173 kPa)
Rangeability	
$C_v < 1$	>50:1
$C_v \geq 1$	>100:1
Close-off Ratings	According to ANSI/FCI 70-2
Leakage Rate	Class IV (0.01% of C_v)
Flow Characteristics	
Two-Way NO/NC	Modified Equal Percentage
Three-Way Mixing	
A→AB	Modified Equal Percentage
B→AB	Linear

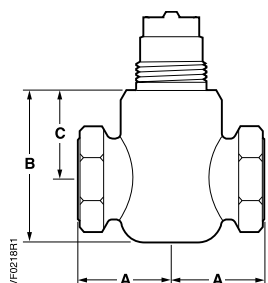
Powermite MZ Series
Two-Way Globe Valve.



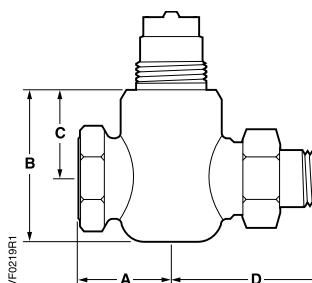
Powermite MZ Series
Three-Way Globe Valve.



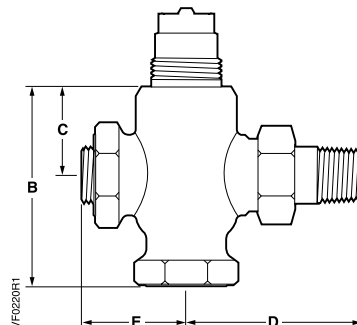
Two-Way Valve Dimensions



Female NPT by Female NPT
(FxF)



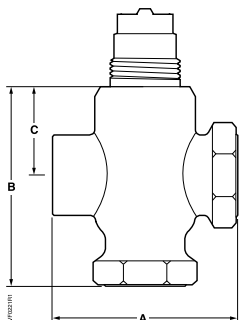
Female NPT by Union Male
(FxUM)



Angle Female by Union Male
(AFxUM)

Valve Size in.	Dimensions						Weight		
	A	B		C	D	E	FxF	FxUM	AFxUM
		FxF & FxUM	AFxUM (NO Only)							(NO Only)
1/2" (15 mm)	1-3/8" (35 mm)	2-1/4" (57 mm)	2-15/16" (74 mm)	1-5/16" (33 mm)	2-5/8" (67 mm)	1-1/2" (38 mm)	1.3 lb. (0.6 kg)	1.5 lb. (0.7 kg)	1.8 lb. (0.8 kg)
3/4" (20 mm)	1-5/8" (41 mm)	2-3/8" (59 mm)	—	1-5/16" (33 mm)	3-1/8" (79 mm)	—	1.8 lb. (0.8 kg)	2.2 lb. (1 kg)	—
1" (25 mm)	1-15/16" (49 mm)	2-3/4" (69 mm)	—	1-9/16" (39 mm)	—	—	2.6 lb. (1.2 kg)	—	—

Three-Way Valve Dimensions



Valve Size in.	Dimensions			Weight
	A	B	C	
1/2" (15 mm)	2-3/4" (70 mm)	2-15/16" (74 mm)	1-5/16" (33 mm)	1.5 lb. (0.7 kg)
3/4" (20 mm)	3-1/4" (83 mm)	2-3/8" (59 mm)	1-5/16" (33 mm)	2.3 lb. (1.05 kg)
1" (25 mm)	3-7/8" (98 mm)	3-15/16" (99 mm)	1-9/16" (39 mm)	3.3 lb. (1.5 kg)

Two- & Three-Way MZ Series Globe Valves

1/2 to 1"

Normally Open, Normally Closed, Mixing

ANSI Class 250

Two-Way Valves Product Ordering



Normally Open or Normally Closed, Brass Trim

Connection	Valve Size		Flow Rate		Normally Open Part No.	Normally Closed Part No.
	in.	(mm)	Cv	(Kvs)		
Female x Female	1/2	(15)	0.4	(0.34)	599-01115	599-01100
	1/2	(15)	0.63	(0.54)	599-01117	599-01102
	1/2	(15)	1	(0.85)	599-01119	599-01104
	1/2	(15)	1.6	(1.37)	599-01121	599-01106
	1/2	(15)	2.5	(2.14)	599-01123	599-01108
	1/2	(15)	4	(3.42)	599-01126	599-01110
	3/4	(20)	6.3	(5.38)	599-01129	599-01112
	1	(25)	10	(8.55)	599-01131	599-01114
Female x Union Male	1/2	(15)	0.4	(0.34)	599-01116	599-01101
	1/2	(15)	0.63	(0.54)	599-01118	599-01103
	1/2	(15)	1	(0.85)	599-01120	599-01105
	1/2	(15)	1.6	(1.37)	599-01122	599-01107
	1/2	(15)	2.5	(2.14)	599-01124	599-01109
	1/2	(15)	4	(3.42)	599-01127	599-01111
	3/4	(20)	6.3	(5.38)	599-01130	599-01113
Angle Female x Union Male	1/2	(15)	2.5	(2.14)	599-01125	—
	1/2	(15)	4	(3.42)	599-01128	—

There are no repair parts for this product. Replace the entire valve body if inoperative.

Powermite MZ Series
Two-Way Globe Valve.



Powermite MZ Series
Three-Way Globe Valve.



Three-Way Valves Product Ordering

Mixing, Brass Trim



Valve Size		Flow Rate		Part No.
in.	(mm)	Cv	(Kvs)	
1/2	(15)	0.4	(0.34)	599-01132
1/2	(15)	0.63	(0.54)	599-01133
1/2	(15)	1	(0.85)	599-01134
1/2	(15)	1.6	(1.37)	599-01135
1/2	(15)	2.5	(2.14)	599-01136
1/2	(15)	4	(3.42)	599-01137
3/4	(20)	6.3	(5.38)	599-01138
1	(25)	10	(8.55)	599-01139

There are no repair parts for this product. Replace the entire valve body if inoperative.

Order separately or as a complete assembly.
See pages 26 & 27 for assembly ordering part numbers.

SSB Series Electronic Valve Actuators

Non-Spring Return

24 Vac, Proportional or Floating 3-Position

Description

SSB61U Electronic Valve Actuators require a 24 Vac supply and receive a 0 to 10 Vdc control signal to proportionally control a valve. SSB81U Electronic Valve Actuators require a 24 Vac supply floating control signal to provide three-position control. SSB series actuators are designed to work with Powermite MZ Series Valves with a 7/32-inch (5.5 mm) stroke and a threaded valve bonnet that fits the actuator.

These actuators automatically calibrate to the specific valve they are mounted to, and have built-in overload and end of stroke protection. They also have a manual over-ride to position the valve for commissioning or in the event of a power loss and for visual position indication.

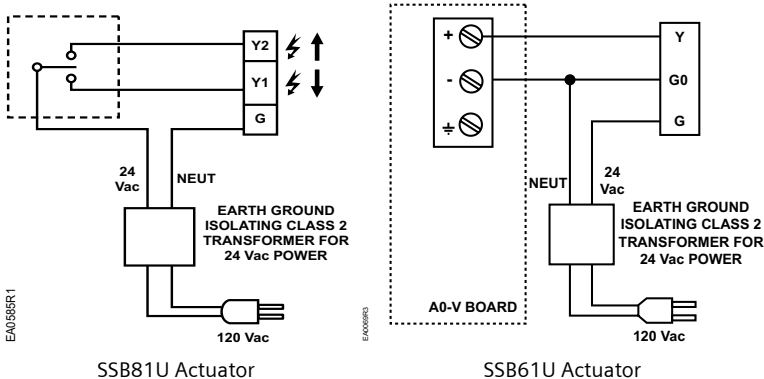
Features

- UL-listed for plenum installations
- Direct-coupled for installation without tools
- Close-off up to 70 psi on 1/2-inch valve
- Non-spring return
- Manual override
- Visual position indication
- Orderable as an actuator only or as a complete valve/actuator assembly

Applications

The Powermite SSB Electronic Valve Actuator is for use in heating and cooling HVAC applications with Powermite Valves that need 45 lbf. (200 N) of nominal force.

Wiring Diagrams



Specifications

Operating Voltage

SSB81U	24 Vac ±20%
SSB61U	24 Vac ±20% or 24 Vdc ±25%

Frequency

50/60 Hz

Power Supply

Earth Ground Isolating, Class 2, 24 Vac Transformer

Power Consumption

SSB81U	0.8 VA
SSB61U	2.0 VA

Control Signal (Y) - SSB61U

Voltage	0 to 10 Vdc
Current	0.1 mA

Running Time

SSB81U	(60 Hz) 150 sec.
SSB61U	75 sec.

Nominal Stroke

7/32" (5.5 mm)

Nominal Force

45 lbf. (200 N)

Agency Approvals

UL/cUL, UL873
CSA C22.2 No. 24-93

Ambient Temperature

Operation	34 to 122°F (1 to 50°C)
Transport and Storage	-13 to 158°F (-25 to 70°C)

Ambient Humidity

0 to 90% RH, Non-condensing

Wiring Connection

Terminal Block for Plenum Cable
(Accessory Available for 3/8-inch Flex Conduit)

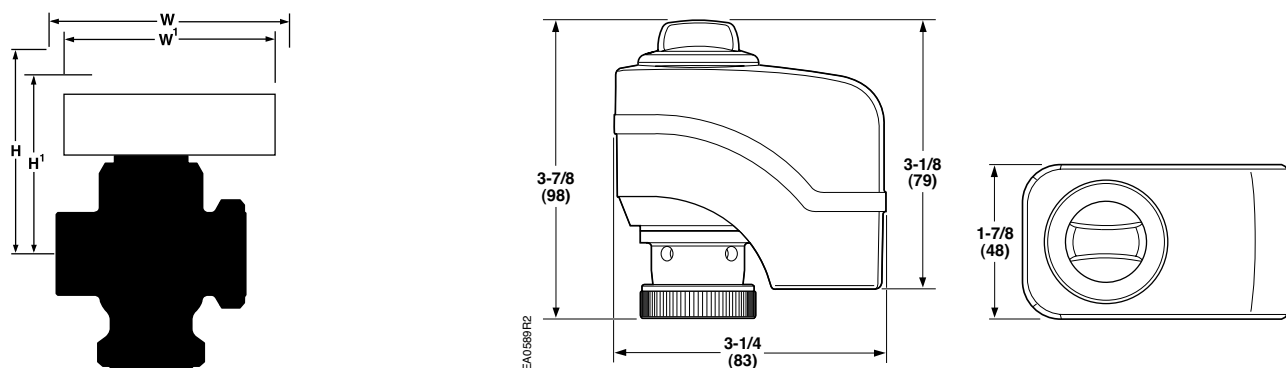
Mounting Location

NEMA 1 (Interior Only)



SSB Series
Electronic Valve Actuator.

Dimensions



Dimensions shown in inches (mm).

Valve Size in.	Center Line to Top of Actuator	Service Height	Actual Width	Service Width
	H'	H	W'	W
1/2" (15 mm)	5-1/8" (130 mm)	13-1/8" (330 mm)	3-1/4" (83 mm)	11-1/4" (282 mm)
3/4" (20 mm)	5-1/8" (130 mm)	13-1/8" (330 mm)	3-1/4" (83 mm)	11-1/4" (282 mm)
1" (25 mm)	5-3/8" (136 mm)	13-3/8" (335 mm)	3-1/4" (83 mm)	11-1/4" (282 mm)

Service height and width are the recommended dimensions to allow access to the product.

SSB Series Actuator Product Ordering

Description		Part No.	Actuator Prefix Code
Electro-Mechanical	24 V, Floating, Non-Spring Return	SSB81U	254
	24 V, 0-10 V, Non-Spring Return	SSB61U	255

There are no repair parts for this product. Replace the entire actuator if inoperative.

Order separately or as a complete assembly.
See pages 26 & 27 for assembly ordering part numbers.

Two- and Three-Way MZ Series Globe Valve Assemblies

1/2 to 1", ANSI Class 250

Electronic, Non-Spring Return Actuators




NO/NC 1/2 to 1"				Non-Spring Return Actuator	
				Floating 3P	0-10 V
	Valve Size in.	Flow Rate Cv	Close Off psi	 SSB81U	 SSB61U
	Normally Open Assemblies				Brass Trim
599-01115	1/2	0.4	60	254-01115	255-01115
599-01117		0.63	60	254-01117	255-01117
599-01119		1	60	254-01119	255-01119
599-01121		1.6	60	254-01121	255-01121
599-01123		2.5	35	254-01123	255-01123
599-01126		4	35	254-01126	255-01126
599-01129	3/4	6.3	30	254-01129	255-01129
599-01131	1	10	30	254-01131	255-01131
Normally Closed Assemblies				Brass Trim	
599-01100	1/2	0.4	70	254-01100	255-01100
599-01102		0.63	70	254-01102	255-01102
599-01104		1	70	254-01104	255-01104
599-01106		1.6	70	254-01106	255-01106
599-01108		2.5	40	254-01108	255-01108
599-01110		4	40	254-01110	255-01110
599-01112	3/4	6.3	30	254-01112	255-01112
599-01114	1	10	30	254-01114	255-01114

Table Notes:

Part numbers in orange indicate complete assemblies.

Powermite MZ Series
Two-Way Globe Valve
& Actuator Assembly



Powermite MZ Series
Three-Way Mixing Globe Valve
& Actuator Assembly






Water Mixing 1/2 to 1"				Non-Spring Return Actuator	
				Floating 3P	0-10 V
	Valve Size in.	Flow Rate Cv	Close Off psi	 SSB81U	 SSB61U
				Brass Trim	
Mixing Assemblies					
	1/2	0.4	70	254-01132	255-01132
599-01133		0.63	70	254-01133	255-01133
599-01134		1	70	254-01134	255-01134
599-01135		1.6	70	254-01135	255-01135
599-01136		2.5	40	254-01136	255-01136
599-01137		4	40	254-01137	255-01137
599-01138	3/4	6.3	30	254-01138	255-01138
599-01139	1	10	30	254-01139	255-01139

Table Notes:

Part numbers in orange indicate complete assemblies. Valves are for the NC upper part.
For NO lower port valves, refer to the Reference section, page 174.

Two- & Three-Way MT Series Globe Valves

1/2 to 1"

Normally Open, Normally Closed, Mixing

ANSI Class 250

Description

The Powermite MT Series Globe Valves are designed to work with either a pneumatic or electronic actuator with a 7/32-inch (5.5 mm) stroke. Compatible actuators deliver a minimum of 67 lbf. (300 N) of force.

Features

- Direct-coupled universal bonnet/no tools required for installation
- Choice of brass or stainless steel trim
- ANSI Leakage Class IV (0.01% of Cv)
- ANSI Class 250
- Available in 3 to 8 psi, 8 to 13 psi, or 10 to 15 psi spring ranges with pneumatic actuation
- Available with spring return and non-spring return 0-10 and floating control electronic actuators
- Greater than 100:1 rangeability for $C_v \geq 1.0$
- Rated for 15 psi steam with stainless steel trim
- Interchangeable pneumatic or electronic actuators

Applications

Typical applications include control of hot or chilled water, glycol solutions up to 50%, or steam up to 15 psi (103 kPa).

Recommendation

Only use the MT Series Valve Actuators. When using this valve with a pneumatic actuator, note that MT valve bodies have the spring in the body, rather than the actuator. To order the correct valve body, select the proper spring range.

Alternate spring ranges for pneumatic sequencing are available as valve and actuator factory assemblies only.

Specifications

Valve Size	1/2 to 1" (15 to 40 mm)
Body Style	Globe
Seat Style	Metal to Metal
Action	NO/NC/Three-Way Mixing
Valve Body Rating	ANSI Class 250
Stem Travel (Stroke)	7/32" (5.5 mm)
Materials	
Body	Forged Brass C37700 or UNS CA 844 Bronze
Trim	Stainless Steel or Brass
Stem	Stainless Steel ASTM A582 Type 303
Packing	EPDM O-rings
Controlled Medium	Water, Steam, Glycol Solutions up to 50%
Spring Range	
Standard – 2-Way	
Normally Closed	10 to 15 psig (69 to 103 kPa)
Normally Open	3 to 8 psig (21 to 55 kPa)
Optional – 2-Way	
Normally Closed	3 to 8 psig (21 to 55 kPa)
	8 to 13 psig (55 to 90 kPa)
Normally Open	8 to 13 psig (55 to 90 kPa)
	10 to 15 psig (69 to 103 kPa)
Standard – 3-Way Mixing	8 to 13 psig (55 to 90 kPa)
Optional – 3-Way Mixing	3 to 8 psig (21 to 55 kPa)
	10 to 15 psig (69 to 103 kPa)
Medium Temperature Range	35 to 250°F (2 to 120°C)
Standard Temperature Packing	20 to 250°F (-7 to 120°C)
Max. Recommended Differential Pressure for Liquid Modulating Service	
Brass Trim	25 psi (173 kPa)
Stainless Steel Trim	50 psi (345 kPa)
Steam Stainless Steel Trim	15 psi (103 kPa)
Rangeability	
$C_v < 1$	>50:1
$C_v \geq 1$	>100:1
Close-off Ratings	According to ANSI/FCI 70-2
Leakage Rate	Class IV (0.01% of C_v)
Flow Characteristics	
Two-Way NO/NC	Modified Equal Percentage
Three-Way Mixing	
A → AB	Modified Equal Percentage
B → AB	Linear

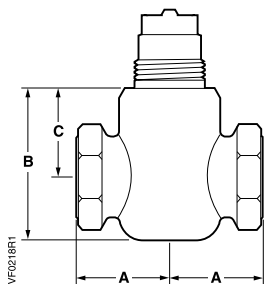
Powermite MT Series
Two-Way Globe Valve.



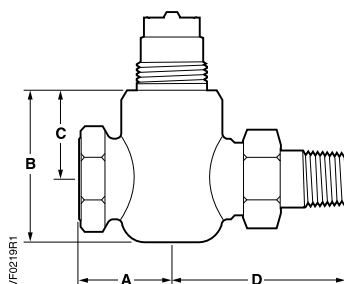
Powermite MT Series
Three-Way Globe Valve.



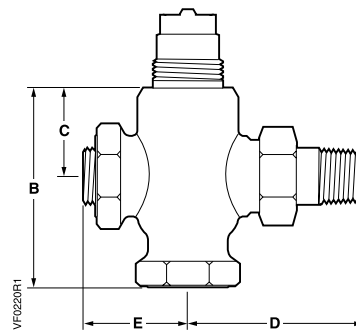
Two-Way Valve Dimensions



Female NPT by Female NPT
(FxF)



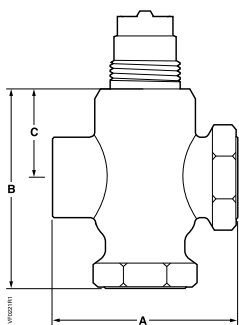
Female NPT by Union Male
(FxUM)



Angle Female by Union Male
(AFxUM)

Valve Size In.	Dimensions						Weight				
	A	B		AFxUM	C		D	E	FxF	FxUM	AFxUM
		NO	NC		NO	NC					
1/2" (15 mm)	1-3/8" (35 mm)	2-1/4" (57 mm)		2-15/16" (74 mm)	1-5/16" (33 mm)		2-5/8" (67 mm)	1-1/2" (38 mm)	1.3 lb. (0.6 kg)	1.5 lb. (0.7 kg)	1.8 lb. (0.8 kg)
3/4" (20 mm)	1-5/8" (41 mm)	2-3/8" (59 mm)		—	1-5/16" (33 mm)		3-1/8" (79 mm)	—	1.8 lb. (0.8 kg)	2.2 lb. (1 kg)	—
1" (25 mm)	1-15/16" (49 mm)	2-3/4" (69 mm)		—	1-9/16" (39 mm)		—	—	2.6 lb. (1.2 kg)	—	—

Three-Way Valve Dimensions



Valve Size in.	Dimensions			Weight
	A	B	C	
1/2" (15 mm)	2-3/4" (70 mm)	2-15/16" (74 mm)	1-5/16" (33 mm)	1.5 lb. (0.7 kg)
3/4" (20 mm)	3-1/4" (83 mm)	2-3/8" (59 mm)	1-5/16" (33 mm)	2.3 lb. (1.05 kg)
1" (25 mm)	3-7/8" (98 mm)	3-15/16" (99 mm)	1-9/16" (39 mm)	3.3 lb. (1.5 kg)

Two- & Three-Way MT Series Globe Valves

1/2 to 1"

Normally Open, Normally Closed, Mixing

Two-Way Valves Product Ordering



Normally Open or Normally Closed, Brass or Stainless Steel Trim

Connection	Valve Size in. (mm)	Flow Rate Cv (Kvs)	Stroke (in.)	Brass Trim Normally Open Part No.	Brass Trim Normally Closed Part No.	Stainless Steel Trim Normally Open Part No.	Stainless Steel Trim Normally Closed Part No.
Female x Female	1/2 (15)	0.4 (0.34)	7/32	599-02030	599-02000	599-02047	599-02015
	1/2 (15)	0.63 (0.54)	7/32	599-02032	599-02002	599-02049	599-02017
	1/2 (15)	1 (0.85)	7/32	599-02034	599-02004	599-02051	599-02019
	1/2 (15)	1.6 (1.37)	7/32	599-02036	599-02006	599-02053	599-02021
	1/2 (15)	2.5 (2.14)	7/32	599-02038	599-02008	599-02055	599-02023
	1/2 (15)	4 (3.42)	7/32	599-02041	599-02010	599-02058	599-02025
	3/4 (20)	6.3 (5.38)	7/32	599-02044	599-02012	599-02061	599-02027
	1 (25)	10 (8.55)	7/32	599-02046	599-02014	599-02063	599-02029
Female x Union Male	1/2 (15)	0.4 (0.34)	7/32	599-02031	599-02001	599-02048	599-02016
	1/2 (15)	0.63 (0.54)	7/32	599-02033	599-02003	599-02050	599-02018
	1/2 (15)	1 (0.85)	7/32	599-02035	599-02005	599-02052	599-02020
	1/2 (15)	1.6 (1.37)	7/32	599-02037	599-02007	599-02054	599-02022
	1/2 (15)	2.5 (2.14)	7/32	599-02039	599-02009	599-02056	599-02024
	1/2 (15)	4 (3.42)	7/32	599-02042	599-02011	599-02059	599-02026
	3/4 (20)	6.3 (5.38)	7/32	599-02045	599-02013	599-02062	599-02028
Angle Female x Union Male	1/2 (15)	2.5 (2.15)	7/32	599-02040	—	599-02057	—
	1/2 (15)	4 (3.44)	7/32	599-02043	—	599-02060	—

There are no repair parts for this product. Replace the entire valve body if inoperative.

Order separately or as a complete assembly.
See pages 38 & 40 for assembly ordering part numbers.

Powermite MT Series
Two-Way Globe Valve.



Powermite MT Series
Three-Way Globe Valve.



Three-Way Valves Product Ordering

Mixing, Brass or Stainless Steel Trim



Valve Size		Flow Rate		Stroke (in.)	Brass Trim Part No.	Stainless Steel Trim Part No.
in.	(mm)	Cv	(Kvs)			
1/2	(15)	0.4	(0.34)	7/32	599-02064	599-02072
1/2	(15)	0.63	(0.54)	7/32	599-02065	599-02073
1/2	(15)	1	(0.85)	7/32	599-02066	599-02074
1/2	(15)	1.6	(1.37)	7/32	599-02067	599-02075
1/2	(15)	2.5	(2.14)	7/32	599-02068	599-02076
1/2	(15)	4	(3.42)	7/32	599-02069	599-02077
3/4	(20)	6.3	(5.38)	7/32	599-02070	599-02078
1	(25)	10	(8.55)	7/32	599-02071	599-02079

There are no repair parts for this product. Replace the entire valve body if inoperative.

Order separately or as a complete assembly.
See pages 39 & 42 for assembly ordering part numbers.

Powermite 2" Pneumatic Valve Actuators

For 1/2 to 1" Valve Bodies Only

Description

The Powermite Two-inch Pneumatic Valve Actuator is designed for use with the 1/2 to 1-inch Powermite MT Series Terminal Unit Valves with a 7/32-inch (5.5 mm) stroke.

Features

- Low profile
- Freely rotates to aid tubing installation
- Easy installation and removal
- All metal housing
- Orderable as an actuator only or as a complete valve/actuator assembly

Applications

The Powermite Two-inch Pneumatic Valve Actuator is designed to be used on 1/2 to 1-inch Powermite Terminal Unit Valves in liquid and steam service applications.

The pneumatic actuator relies on the spring inside the bonnet assembly of the MT Series valve bodies to return to the "normal" position.

Recommendation

Use only for MT Series valve bodies, 1/2 to 1-inch only.

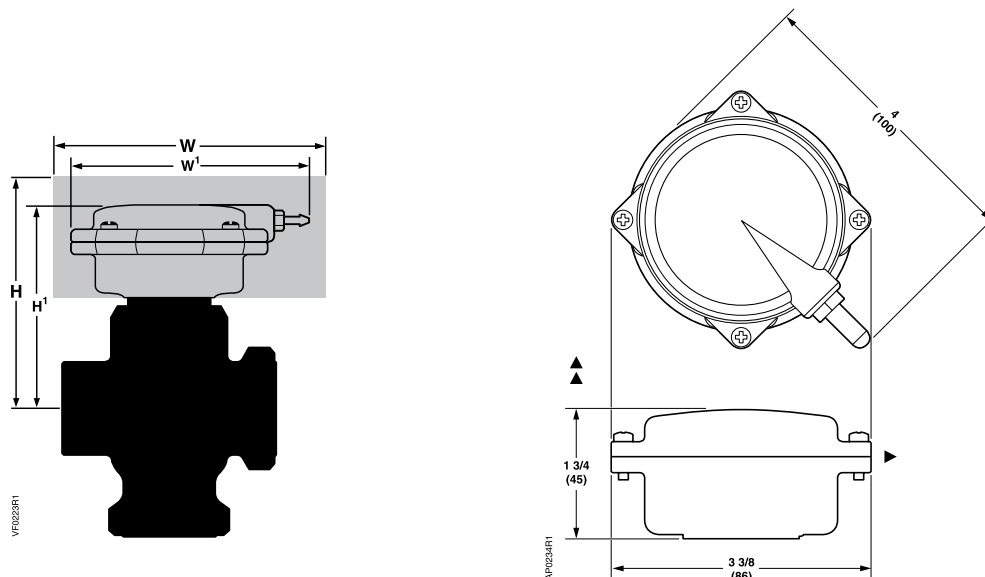
Specifications

Effective Diaphragm Area	..... 3.4 in. ² (22 cm ²)
Diaphragm Material	..... Silicone
Nominal Spring Range	..... Valve Dependent
Span	..... 5 psi (34 kPa)
Nominal Stroke	..... 7/32" (5.5 mm)
Max. Diaphragm Pressure	..... 35 psig (241 kPa)
Air Connection	..... 1/8" NPT Barbed Fitting for 1/4" (6 mm) OD Polyethylene Tubing
Ambient Temperature	
Transportation	..... -40 to 180°F (-40 to 82°C)
Mounting Location	..... NEMA 1 (Interior Only)

Powermite 599 Series
2" Pneumatic Valve Actuator.



Dimensions



Valve Size in.	Center Line to Top of Actuator	Service Height	Actual Width	Service Width
	H'	H	W'	W
1/2" (15 mm)	3-1/16" (78 mm)	11" (280 mm)	4" (100 mm)	10" (250 mm)
3/4" (20 mm)	3-1/16" (78 mm)	11" (280 mm)	4" (100 mm)	10" (250 mm)
1" (25 mm)	3-5/16" (84 mm)	11-1/4" (285 mm)	4" (100 mm)	10" (250 mm)

1. Recommended service dimensions to allow access to the product.

2" Pneumatic Actuator Product Ordering

Description	Part No.	Actuator Prefix Code
3-8 psig (21-55 kPa)	599-01088	257
8-13 psig (55-90 kPa)	599-01088	258
10-15 psig (69-103 kPa)	599-01088	256

Ordering Note:

Spring is inside bonnet assembly of valve body.
See the Valve Selection Charts on pg. 36.

Order separately or as a complete assembly.
See pages 38 & 39 for assembly ordering part numbers.

SSC Series Electronic Valve Actuators

Spring Return or Non-Spring Return
24 Vac, Floating or Proportional Control

Description

Powermite MT Series Electronic Valve Actuators require a 24 Vac supply to control Powermite MT series valves with a 7/32-inch (5.5 mm) stroke and a threaded valve bonnet that fits the actuators.

SSC61 Electronic Valve Actuators require a 24 Vac supply and receive a 0 to 10 Vdc control signal. SSC81 Electronic Valve Actuators receive a 3-position (floating) control signal.

Features

- UL listed for plenum installations
- Direct coupled, one step installation without special tools
- Close off up to 120 psi
- Manual override
- Visual position indication
- Orderable as an actuator only or as a complete valve/actuator assembly

Specifications

Operating Voltage	24 Vac $\pm 20\%$
Frequency	50/60 Hz ± 2 Hz
Power Supply	Earth Ground Isolating, Class 2, 24 Vac Transformer
Power Consumption	
SSC81U	0.8 VA
SSC81.5U, SSC61U, SSC61.5U	2 VA

Control Signal

Floating (SSC81U, SSC81.5U)

Y2	24 Vac Retracts Actuator Shaft
Y1	24 Vac Extends Actuator Shaft

Proportional (SSC61U, SSC61.5U)

Voltage	0 to 10 Vdc (Default) or 0 to 40 mA with External 500 ohm, 0.2W Resistor
Current	0.1 mA

Running Time

SSC81U	125 sec. $\pm 2\%$ at 60 Hz
SSC81.5U	125 sec. $\pm 2\%$ at 50/60 Hz
Spring Return (Floating, SSC81.5U)	~30 sec.
SSC61U, SSC61.5U	30 sec. $\pm 10\%$ at 50/60 Hz
Spring Return (Proportional, SSC61.5U)	~25 sec.

Nominal Stroke 7/32-inch (5.5 mm)

Nominal Force 67 lbf. (300N)

Spring Return (SSC61.5U and SSC81.5U) Non-mechanical, Electronic Return Fails to Stem up (0 Position)

Agency Approvals UL/cUL, UL873 Listed, Certified to Canadian Standard C22.2 No. 24-93

Ambient Temperature

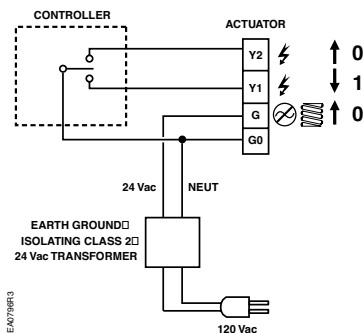
Operation	41 to 122°F (5 to 50°C)
Transport and Storage	-13 to 158°F (-25 to 70°C)

Ambient Humidity 0 to 90% RH, Non-condensing

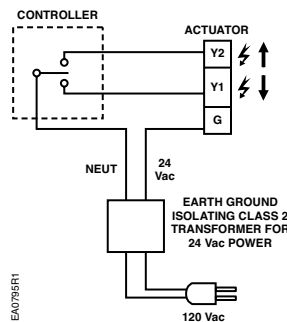
Wiring Connection Plenum Cable or 3/8-inch Flex Conduit

Mounting Location NEMA 1 (Interior Only)

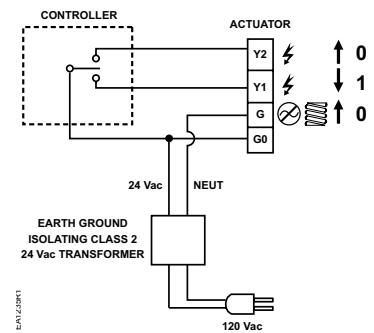
Wiring Diagrams



Spring Return (Neutral Switching)



Non-spring Return

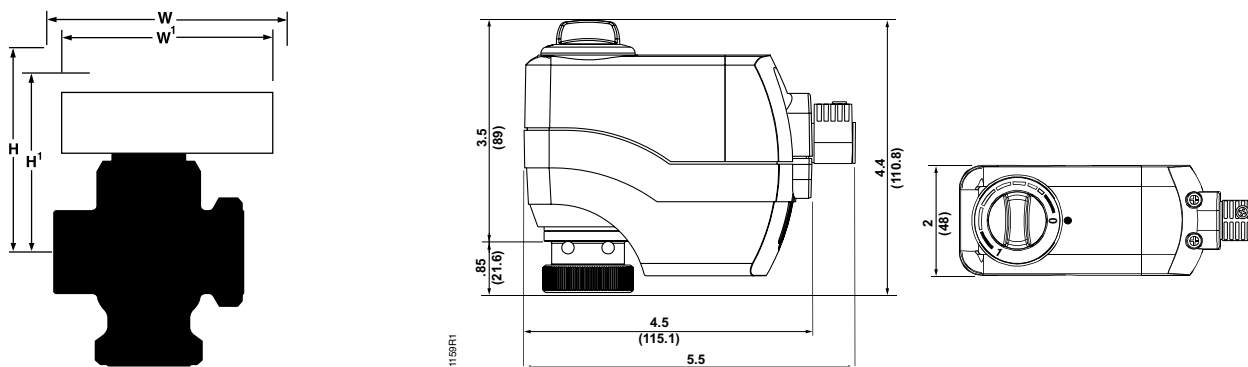


Spring Return (Hot Switching)



SSC Series
Electronic Valve Actuator.

Dimensions



Dimensions shown in inches (mm).

Valve Size in.	Center Line to Top of Actuator		Service Height		Actual Width of Actuator W'	Service Width W
	H'		H			
	NO	NC	NO	NC		
1/2" (15 mm)	5-1/2" (140 mm)		13-1/2" (343 mm)		5-1/2" (140 mm)	13-1/2" (343 mm)
3/4" (20 mm)	5-1/2" (140 mm)		13-1/2" (343 mm)		5-1/2" (140 mm)	13-1/2" (343 mm)
1" (25 mm)	5-3/4" (146 mm)		13-3/4" (349 mm)		5-1/2" (140 mm)	13-1/2" (343 mm)

Service height and width are the recommended dimensions to allow access to the product.

SSC Series Actuators Product Ordering

Description	Part No.	Actuator Prefix Code
24 Vac, Floating, Spring Return	SSC81.5U	260
24 Vac, Floating, Non-Spring Return	SSC81U	259
24 Vac, 0-10 V, Spring Return	SSC61.5U	262
24 Vac, 0-10 V, Non-Spring Return	SSC61U	261

Order separately or as a complete assembly.
See pages 40 & 42 for assembly ordering part numbers.

SQS Series Electro-Mechanical Valve Actuators

Spring Return or Non-Spring Return
24 Vac, Floating or Proportional Control

Description

Powermite SQS65 and SQS65.5 Electronic Valve Actuators require a 24 Vac supply and receive a 0 to 10 Vdc or a 0 to 1000 Ohm control signal to proportionally control a valve. SQS85.53 electronic valve actuators require a 24 Vac supply and receive a floating control signal to provide floating control. Actuators work with Powermite MT Series Valves with a 7/32-inch (5.5 mm) stroke.

Features

- Maintenance-free with reversible motor
- Voltage or resistance signal input
- Close off up to 160 psi
- Position output signal 0 to 10 Vdc
- Small, compact design
- Manual adjustment knob with indication of stroke allows for repositioning in power-off condition (SQS65U actuator only)
- Mechanical spring allows the valve to return to normal position in power off condition (SQS65.5U and SQS85.53U)
- Suitable for low pressure (15 psig) steam applications

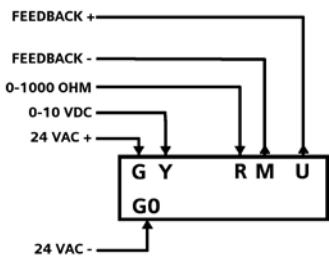
Applications

The SQS Electronic Valve Actuators are for use in small to medium HVAC installations with Powermite MT Series valves that have a 7/32-inch (5.5 mm) stroke.

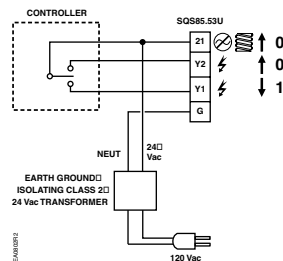
Recommendation

Use only with the MT Series valve bodies. The SQS85.53U actuator is not recommended for 2-position or pulse applications.

Wiring Diagrams



SQS65/65.5 Actuator



SQS85.53 Actuator

Specifications

Operating Voltage

60 Hz 24 Vac, ±20%

Frequency 60 Hz

Power Supply Earth Ground Isolating, Class 2,
24 Vac Transformer

Do not power more than 10 actuators with one transformer.

Power Consumption

SQS65U 4.5 VA

SQS65.5U 7 VA

SQS85.53U 5 VA

Proportional Control Signal (SQS65U, SQS65.5U)

Voltage (Y) 0 to 10 Vdc

Resistance (R) 0 to 1000 Ohms

Position Output (U)

Voltage 0 to 10 Vdc

Floating Control Signal (SQS85.53U)

Y1 24 Vac, Power Extends Actuator Shaft (0 to 1)

Y2 24 Vac, Power Retracts Actuator Shaft (1 to 0)

Running Time at 60 Hz 30 sec.

Spring Return (SQS65.5U, SQS85.53U) 8 sec.

Nominal Stroke 7/32" (5.5 mm)

Nominal Force 90 lbf. (400 N)

Agency Approvals UL/cUL, UL873
CSA C22.2 No. 24-93

Ambient Temperature

Operation 23 to 122°F (-5 to 50°C)

Transport and Storage -13 to 149°F (-25 to 65°C)

Ambient Humidity 0 to 90% RH, Non-condensing

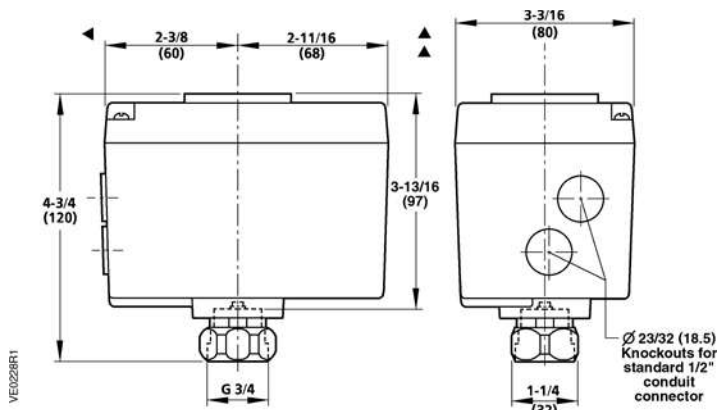
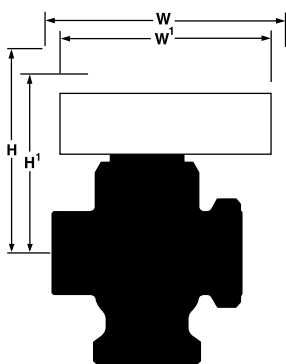
Wiring Connection Plenum Cable or Conduit via a 1/2" Knockout

Mounting Location NEMA 1 (Interior Only)



SQS Series
Electronic Valve Actuator.

Dimensions



Dimensions shown in inches (mm).

Valve Size in.	Center Line to Top of Actuator		Service Height		Actual Width of Actuator W'	Service Width W
	H'		H			
	NO	NC	NO	NC		
Spring Return						
1/2" (15 mm)	6-1/16" (153 mm)		14" (355 mm)		5-1/16" (128 mm)	9" (225 mm)
3/4" (20 mm)	6-1/16" (153 mm)		14" (355 mm)		5-1/16" (128 mm)	9" (225 mm)
1" (25 mm)	6-5/16" (159 mm)		14-1/2" (370 mm)		5-1/16" (128 mm)	9" (225 mm)
Non-Spring Return						
1/2" (15 mm)	6-5/8" (167 mm)		14-1/2" (370 mm)		5-1/16" (128 mm)	9" (225 mm)
3/4" (20 mm)	6-5/8" (167 mm)		14-1/2" (370 mm)		5-1/16" (128 mm)	9" (225 mm)
1" (25 mm)	6-7/8" (173 mm)		15" (380 mm)		5-1/16" (128 mm)	9" (225 mm)

Service height and width are the recommended dimensions to allow access to the product.

SQS Series Actuators Product Ordering

Description	Part No.	Actuator Prefix Code
24V, Floating 3P, Spring Return	SQS85.53U	266
24V, 0-10V, Spring Return	SQS65.5U	265
24V, 0-10V, Non-Spring Return	SQS65U	264

There are no repair parts for this product. Replace the entire actuator if inoperative.

Order separately or as a complete assembly.
See pages 41 & 42 for assembly ordering part numbers.

Two- and Three-Way MT Series Globe Valve Assemblies

1/2 to 1", ANSI Class 250

Pneumatic, Spring Return Actuators






NO/NC 1/2 to 1"			Spring Return Actuator						
			3-8 psi (21-55 kPa)		8-13 psi (55-90 kPa)		10-15 psi (69-103 kPa)		
2-Way Valve Body Part No.	Valve Size in.	Flow Rate Cv							
			599-01088		599-01088		599-01088		
Normally Open Assemblies									
			Close-off psi — Brass Trim						
	1/2	0.4	95	257-02030	45	258-02030C	20	256-02030A	
		0.63	95	257-02032	45	258-02032C	20	256-02032A	
		1	95	257-02034	45	258-02034C	20	256-02034A	
		1.6	95	257-02036	45	258-02036C	20	256-02036A	
		2.5	45	257-02038	25	258-02038C	15	256-02038A	
		4	45	257-02041	25	258-02041C	15	256-02041A	
	3/4	6.3	35	257-02044	10	258-02044C	—		
	1	10	35	257-02046	10	258-02046C	—		
				Close-off psi — Stainless Steel Trim					
	1/2	0.4	95	257-02047	45	258-02047C	20	256-02047A	
0.63		95	257-02049	45	258-02049C	20	256-02049A		
1		95	257-02051	45	258-02051C	20	256-02051A		
1.6		95	257-02053	45	258-02053C	20	256-02053A		
2.5		45	257-02055	25	258-02055C	15	256-02055A		
4		45	257-02058	25	258-02058C	15	256-02058A		
3/4		6.3	35	257-02061	10	258-02061C	—		
1		10	35	257-02063	10	258-02063C	—		
Normally Closed Assemblies									
			Close-off psi — Brass Trim						
	1/2	0.4	40	257-02000B	95	258-02000C	95	256-02000	
		0.63	40	257-02002B	95	258-02002C	95	256-02002	
		1	40	257-02004B	95	258-02004C	95	256-02004	
		1.6	40	257-02006B	95	258-02006C	95	256-02006	
		2.5	28	257-02008B	50	258-02008C	50	256-02008	
		4	28	257-02010B	50	258-02010C	50	256-02010	
	3/4	6.3	18	257-02012B	40	258-02012C	40	256-02012	
	1	10	18	257-02014B	40	258-02014C	40	256-02014	
			Close-off psi — Stainless Steel Trim						
1/2	0.4	40	257-02015B	95	258-02015C	95	256-02015		
	0.63	40	257-02017B	95	258-02017C	95	256-02017		
	1	40	257-02019B	95	258-02019C	95	256-02019		
	1.6	40	257-02021B	95	258-02021C	95	256-02021		
	2.5	28	257-02023B	50	258-02023C	50	256-02023		
	4	28	257-02025B	50	258-02025C	50	256-02025		
	3/4	6.3	18	257-02027B	40	258-02027C	40	256-02027	
	1	10	18	257-02029B	40	258-02029C	40	256-02029	

Table Notes:

Part numbers in orange indicate complete assemblies. Black numbers indicate close-off psi.

Normally Open Values in chart are for 20 psi supplied to the actuator. Normally Closed Values in chart are for 0 psi supplied to the actuator.

Powermite MT Series
Two-Way Globe Valve
& Pneumatic Actuator Assembly



Powermite MT Series
Three-Way Mixing Globe Valve
& Pneumatic Actuator Assembly.







Water Mixing 1/2 to 1"			Spring Return Actuator							
			3-8 psi (21-55 kPa)		8-13 psi (55-90 kPa)		10-15 psi (69-103 kPa)			
3-Way Valve Body Part No.	Valve Size in.	Flow Rate Cv								
			599-01088		599-01088		599-01088			
Mixing Assemblies										
	1/2	0.4	Close-off psi — Brass Trim							
			40	257-02064B	95	258-02064	120	256-02064A		
			40	257-02065B	95	258-02065	120	256-02065A		
			40	257-02066B	95	258-02066	120	256-02066A		
			40	257-02067B	95	258-02067	120	256-02067A		
			28	257-02068B	50	258-02068	65	256-02068A		
			28	257-02069B	50	258-02069	65	256-02069A		
			3/4	6.3	18	257-02070B	40	258-02070	50	256-02070A
			1	10	18	257-02071B	40	258-02071	50	256-02071A
	1/2	0.4	Close-off psi — Stainless Steel Trim							
			40	257-02072B	95	258-02072	120	256-02072A		
			40	257-02073B	95	258-02073	120	256-02073A		
			40	257-02074B	95	258-02074	120	256-02074A		
			40	257-02075B	95	258-02075	120	256-02075A		
			28	257-02076B	50	258-02076	65	256-02076A		
			28	257-02077B	50	258-02077	65	256-02077A		
			3/4	6.3	18	257-02078B	40	258-02078	50	256-02078A
1	10	18	257-02079B	40	258-02079	50	256-02079A			

Table Notes:

Part numbers in red indicate complete assemblies. Black numbers indicate close-off psi. Values in chart are for 0 psi supplied to the actuator. Values are for the NC upper port. For NO lower port values, refer to the Reference section.

Two-Way MT Series Globe Valve Assemblies

1/2 to 1", ANSI Class 250

Electronic, Spring Return or Non-Spring Return Actuators


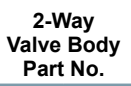








NO/NC 1/2 to 1" 				Spring Return Actuator		Non-Spring Return Actuator		
				Floating	0-10 V	Floating	0-10 V	
	Valve Size in.	Flow Rate Cv	Close Off psi	 SSC81.5U	 SSC61.5U	 SSC81U	 SSC61U	
Normally Open Assemblies				Brass Trim				
	1/2	0.4	120	260-02030	262-02030	259-02030	261-02030	
		0.63	120	260-02032	262-02032	259-02032	261-02032	
		1	120	260-02034	262-02034	259-02034	261-02034	
		1.6	120	260-02036	262-02036	259-02036	261-02036	
		2.5	65	260-02038	262-02038	259-02038	261-02038	
		4	65	260-02041	262-02041	259-02041	261-02041	
	3/4	6.3	55	260-02044	262-02044	259-02044	261-02044	
	1	10	55	260-02046	262-02046	259-02046	261-02046	
	Stainless Steel Trim				Stainless Steel Trim			
		1/2	0.4	120	260-02047	262-02047	259-02047	261-02047
0.63			120	260-02049	262-02049	259-02049	261-02049	
1			120	260-02051	262-02051	259-02051	261-02051	
1.6			120	260-02053	262-02053	259-02053	261-02053	
2.5			65	260-02055	262-02055	259-02055	261-02055	
4			65	260-02058	262-02058	259-02058	261-02058	
3/4		6.3	55	260-02061	262-02061	259-02061	261-02061	
1		10	55	260-02063	262-02063	259-02063	261-02063	
Normally Closed Assemblies				Brass Trim				
	1/2	0.4	95	260-02000	262-02000	259-02000	261-02000	
		0.63	95	260-02002	262-02002	259-02002	261-02002	
		1	95	260-02004	262-02004	259-02004	261-02004	
		1.6	95	260-02006	262-02006	259-02006	261-02006	
		2.5	50	260-02008	262-02008	259-02008	261-02008	
		4	50	260-02010	262-02010	259-02010	261-02010	
	3/4	6.3	40	260-02012	262-02012	259-02012	261-02012	
	1	10	40	260-02014	262-02014	259-02014	261-02014	
	Stainless Steel Trim				Stainless Steel Trim			
		1/2	0.4	95	260-02015	262-02015	259-02015	261-02015
0.63			95	260-02017	262-02017	259-02017	261-02017	
1			95	260-02019	262-02019	259-02019	261-02019	
1.6			95	260-02021	262-02021	259-02021	261-02021	
2.5			50	260-02023	262-02023	259-02023	261-02023	
4			50	260-02025	262-02025	259-02025	261-02025	
3/4		6.3	40	260-02027	262-02027	259-02027	261-02027	
1		10	40	260-02029	262-02029	259-02029	261-02029	

Table Notes:

Part numbers in orange indicate complete assemblies.



Powermite MT Series
Two-Way Globe Valve
& Actuator Assembly.




NO/NC 1/2 to 1"				Spring Return Actuator		Non-Spring Return Actuator
				Floating	0-10 V	0-10 V
						
				SQS85.53U	SQS65.5U	SQS65U
Normally Open Assemblies						
				Brass Trim		
599-02030	1/2	0.4	160	266-02030	265-02030	264-02030
599-02032		0.63	160	266-02032	265-02032	264-02032
599-02034		1	160	266-02034	265-02034	264-02034
599-02036		1.6	160	266-02036	265-02036	264-02036
599-02038		2.5	85	266-02038	265-02038	264-02038
599-02041		4	85	266-02041	265-02041	264-02041
599-02044	3/4	6.3	70	266-02044	265-02044	264-02044
599-02046	1	10	70	266-02046	265-02046	264-02046
				Stainless Steel Trim		
599-02047	1/2	0.4	160	266-02047	265-02047	264-02047
599-02049		0.63	160	266-02049	265-02049	264-02049
599-02051		1	160	266-02051	265-02051	264-02051
599-02053		1.6	160	266-02053	265-02053	264-02053
599-02055		2.5	85	266-02055	265-02055	264-02055
599-02058		4	85	266-02058	265-02058	264-02058
599-02061	3/4	6.3	70	266-02061	265-02061	264-02061
599-02063	1	10	70	266-02063	265-02063	264-02063
Normally Closed Assemblies						
				Brass Trim		
599-02000	1/2	0.4	95	266-02000	265-02000	264-02000
599-02002		0.63	95	266-02002	265-02002	264-02002
599-02004		1	95	266-02004	265-02004	264-02004
599-02006		1.6	95	266-02006	265-02006	264-02006
599-02008		2.5	50	266-02008	265-02008	264-02008
599-02010		4	50	266-02010	265-02010	264-02010
599-02012	3/4	6.3	40	266-02012	265-02012	264-02012
599-02014	1	10	40	266-02014	265-02014	264-02014
				Stainless Steel Trim		
599-02015	1/2	0.4	95	266-02015	265-02015	264-02015
599-02017		0.63	95	266-02017	265-02017	264-02017
599-02019		1	95	266-02019	265-02019	264-02019
599-02021		1.6	95	266-02021	265-02021	264-02021
599-02023		2.5	50	266-02023	265-02023	264-02023
599-02025		4	50	266-02025	265-02025	264-02025
599-02027	3/4	6.3	40	266-02027	265-02027	264-02027
599-02029	1	10	40	266-02029	265-02029	264-02029

Table Notes:
Part numbers in orange indicate complete assemblies.

Three-Way MT Series Globe Valve Assemblies

1/2 to 1", ANSI Class 250

Electronic, Spring Return or Non-Spring Return Actuators



Powermite MT Series
Three-Way Mixing Globe Valve
& Actuator Assembly.

Water Mixing 1/2 to 1"				Spring Return Actuator				Non-Spring Return Actuator			
				Floating		0-10 V		Floating	0-10 V		
3-Way Valve Body Part No.	Valve Size in.	Flow Rate Cv	Close Off psi	SSC81.5U	SQS85.53U	SSC61.5U	SQS65.5U	SSC81U	SSC61U	SQS65U	
Mixing Assemblies				Brass Trim							
	1/2	0.4	95	260-02064	266-02064	262-02064	265-02064	259-02064	261-02064	264-02064	
		0.63	95	260-02065	266-02065	262-02065	265-02065	259-02065	261-02065	264-02065	
		1	95	260-02066	266-02066	262-02066	265-02066	259-02066	261-02066	264-02066	
		1.6	95	260-02067	266-02067	262-02067	265-02067	259-02067	261-02067	264-02067	
		2.5	50	260-02068	266-02068	262-02068	265-02068	259-02068	261-02068	264-02068	
		4	50	260-02069	266-02069	262-02069	265-02069	259-02069	261-02069	264-02069	
	3/4	6.3	40	260-02070	266-02070	262-02070	265-02070	259-02070	261-02070	264-02070	
	1	10	40	260-02071	266-02071	262-02071	265-02071	259-02071	261-02071	264-02071	
					Stainless Steel Trim						
		1/2	0.4	95	260-02072	266-02072	262-02072	265-02072	259-02072	261-02072	264-02072
0.63			95	260-02073	266-02073	262-02073	265-02073	259-02073	261-02073	264-02073	
1			95	260-02074	266-02074	262-02074	265-02074	259-02074	261-02074	264-02074	
1.6			95	260-02075	266-02075	262-02075	265-02075	259-02075	261-02075	264-02075	
2.5			50	260-02076	266-02076	262-02076	265-02076	259-02076	261-02076	264-02076	
4			50	260-02077	266-02077	262-02077	265-02077	259-02077	261-02077	264-02077	
3/4		6.3	40	260-02078	266-02078	262-02078	265-02078	259-02078	261-02078	264-02078	
1		10	40	260-02079	266-02079	262-02079	265-02079	259-02079	261-02079	264-02079	

Table Notes:

Part numbers in orange indicate complete assemblies.

Values are for the NC upper port. For NO lower port values, refer to the Reference section.

Flowrite Globe Valves

Over 50 years of legendary performance

Since 1934, Flowrite has been recognized as the best globe valve in the HVAC control market. Compatible with piping line sizes ranging from 1/2 to 6-inch (Cv range 1.0 to 400), it is an excellent choice for small to large air handling units and for central plant applications.

Simply specify the valve and electronic or pneumatic valve actuator configuration that meets your specific requirements. You can also select how you would like the components shipped — separately or factory-assembled and tagged at no additional cost.

Flowrite valves bodies and actuators feature a direct-coupled connection, enabling an ease of installation and flexibility that saves on time and labor. There is no linkage to assemble or adjust — simply snap on the actuator and twist with a hex wrench.



Flowrite Features

- Unique hole-plug design improves controllability and reduces noise
- Highest close off pressures in the industry — up to 250 psi
- Low leakage 0.01% (ANSI Class IV)
- Greater than 100:1 rangeability
- Industry leading simplicity in serviceability

Two-Way Globe Valves

1/2 to 2", Equal Percentage or Linear Flow

Normally Open or Normally Closed

ANSI Class 250

Description

Designed to work with either a pneumatic or electronic actuator with a 3/4-inch (20 mm) stroke, the Flowrite Two-way Globe Valves are available in ANSI Class 250 for Normally Closed or Normally Open action.

Features

- Direct-coupled bonnet
- Equal percentage or linear flow characteristics
- Brass or stainless steel trim
- Standard- or high-temperature packing
- Close-off up to 250 psi
- Fully serviceable
- Greater than 100:1 rangeability
- Accepts any 3/4-inch stroke Flowrite pneumatic or electronic actuator
- ANSI Leakage Class IV (0.01% of Cv)
- Cartridge-type packing for easy service
- Multiple end connections available
- Orderable as a valve only or as a complete valve/actuator assembly

Applications

The Flowrite Two-way Globe Valves are recommended for water, low and high pressure steam, and glycol solutions up to 50 percent.

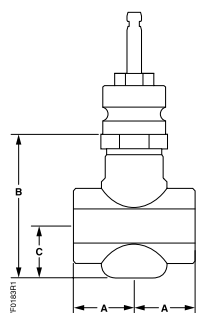
Specifications

Valve Size	1/2 to 2" (15 to 50 mm)
Body Style	Globe-style Control Valve with Four Connection Options
Seat Style	Single Seat, Metal to Metal
Action	Normally Closed (NC), Normally Open (NO)
Stem Travel (Stroke)	3/4" (20 mm)
Valve Body	ANSI Class 250
Materials	
Body	UNS CA 844 Bronze
Trim	Brass or Stainless Steel
Stem	Stainless Steel ASTM A582 Type 303
Packing	
Normal Duty	EPDM O-rings
Steam	PTFE V-rings and EPDM O-ring
Operating	
Controlled Medium	Saturated Steam, Water, Glycol Solutions up to 50%
Medium Temperature Range	
Normal Duty Packing	20 to 250°F (-7 to 120°C)
Steam Packing	337°F (170°C) Max.
Max. Recommended Differential Pressure for Modulating Service	
Brass Trim	
Liquid	25 psi (173 kPa)
Steam	15 psi (103 kPa)
Stainless Steel Trim	
Liquid	50 psi (345 kPa)
Steam	50 psi (345 kPa)
Max. Inlet Pressure	
Water	Refer to Reference Section
Steam	100 psig (690 kPa)
Rangeability	>100:1
Close-off Ratings	According to ANSI/FCI 70-2
Leakage Rate	Class IV (0.01% of Cv)
Flow Characteristics	Equal Percentage or Linear

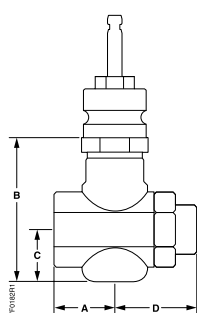


Flowrite Two-Way
Globe Valve.

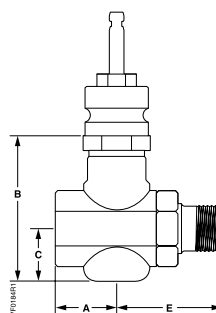
Two-Way Valve Dimensions



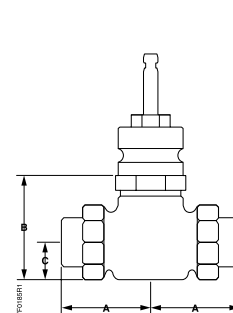
Female NPT
by Female NPT (FxF)



Female NPT
by Union Female (FxF)



Female NPT
by Union Male (FxF)



Union Female
by Union Female (UFxF)

Valve Size in.	Dimensions						Weight			
	A	B	C	D	E	F	FxF	FxF	FxF	UFxF
Normally Open										
1/2" (15 mm)	1-1/6" (36 mm)	—	2-15/16" (74 mm)	1-1/4" (31 mm)	2-5/16" (59 mm)	2-7/8" (73 mm)	3 lb. (1.4 kg)	3 lb. (1.4 kg)	3 lb. (1.4 kg)	—
3/4" (20 mm)	1-11/16" (43 mm)	—	3-15/16" (99 mm)	1-7/16" (36 mm)	2-5/8" (67 mm)	3-3/16" (81 mm)	4 lb. (1.8 kg)	4 lb. (1.8 kg)	5 lb. (2.3 kg)	—
1" (25 mm)	2" (50 mm)	—	3-3/4" (96 mm)	1-1/4" (32 mm)	3" (76 mm)	3-1/2" (89 mm)	5 lb. (2.3 kg)	6 lb. (2.7 kg)	6 lb. (2.7 kg)	—
1-1/4" (32 mm)	2-1/2" (62 mm)	3-3/4" (95 mm)	4-1/8" ¹ (104 mm)	1-5/8" ¹ (40 mm)	—	4-3/8" (111 mm)	7 lb. (3.2 kg)	—	—	9 lb. (4.1 kg)
1-1/2" (40 mm)	2-9/16" (65 mm)	3-15/16" (99 mm)	4-1/4" ¹ (109 mm) ¹	1-3/4" ¹ (44 mm) ¹	—	—	9 lb. (4.1 kg)	—	—	11 lb. (5 kg)
2" (50 mm)	3-1/8" (79 mm)	4-9/16" (115 mm)	4-9/16" ¹ (115 mm) ¹	2" ¹ (51 mm) ¹	—	—	13 lb. (5.9 kg)	—	—	16 lb. (7.3 kg)
Normally Closed										
1/2" (15 mm)	1-7/16" (36 mm)	—	3-13/16" (97 mm)	2-13/16" (55 mm)	2-5/16" (59 mm)	2-7/8" (73 mm)	3 lb. (1.4 kg)	4 lb. (1.8 kg)	4 lb. (1.8 kg)	—
3/4" (20 mm)	1-11/16" (43 mm)	—	3-13/16" (97 mm)	2-3/16" (55 mm)	2-5/8" (67 mm)	3-3/16" (81 mm)	4 lb. (1.8 kg)	4 lb. (1.8 kg)	5 lb. (2.3 kg)	—
1" (25 mm)	2" (50 mm)	—	3-13/16" (97 mm)	2-3/16" (55 mm)	3" (76 mm)	3-1/2" (89 mm)	5 lb. (2.3 kg)	5 lb. (2.3 kg)	5 lb. (2.3 kg)	—
1-1/4" (32 mm)	2-1/2" (62 mm)	3-3/4" (95 mm)	3-13/16" (97 mm)	2-3/16" (55 mm)	—	—	7 lb. (3.2 kg)	—	—	9 lb. (4.1 kg)
1-1/2" (40 mm)	2-9/16" (65 mm)	3-15/16" (99 mm)	3-7/8" (99 mm)	2-1/4" (58 mm)	—	—	8 lb. (3.6 kg)	—	—	11 lb. (5 kg)
2" (50 mm)	3-1/8" (79 mm)	4-9/16" (115 mm)	4-3/16" (106 mm)	2-9/16" (65 mm)	—	—	16 lb. (7.3 kg)	—	—	16 lb. (7.3 kg)

Table Note:

1. This dimension is determined by the union nut.

Three-Way Globe Valves

1/2 to 2"

Mixing

ANSI Class 250

Description

Designed to work with either pneumatic or electronic actuators with a 3/4-inch (20 mm) stroke, the Flowrite Three-way Globe Valves are available in ANSI Class 250.

Features

- Direct-coupled, universal bonnet
- Equal percentage (NC port) or linear flow (NO port) characteristics
- Brass or stainless steel trim
- Accepts any 3/4-inch Flowrite pneumatic or electronic actuator
- Greater than 100:1 rangeability
- ANSI Leakage Class IV (0.01% of Cv)
- Cartridge-type packing for easy service
- FxF or UFXUF end connections available
- Orderable as a valve only or as a complete valve/actuator assembly

Applications

Flowrite Three-way Globe Valves are recommended for mixing applications. The upper port is closed in the normal stem up, failed position. The lower port is open in the stem up position.

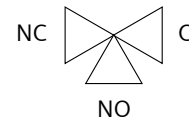
This valve can also be used for throttling or bypass coil control application. However, a pump is recommended on the coil circuit to improve the heat transfer characteristic of the coil and for freeze protection.

To use this valve as a diverting valve, contact your local representative for more information.

Specifications

Valve Size	1/2 to 2" (15 to 50 mm)
Body Style	Globe-style Control Valve with Two Connection Options
Seat Style	Metal to Metal
Action	Three-way Mixing
Stem Travel (Stroke)	3/4" (20 mm)
Valve Body Rating	ANSI Class 250
Material	
Body	UNS CA 844 Bronze
Trim	Brass or Stainless Steel
Stem	Stainless Steel ASTM A582 Type 303
Packing	EPDM O-rings
Operating	
Controlled Medium	Water, Glycol Solutions up to 50%
Medium Temperature Range.....	20 to 250°F (-7 to 120°C)
Max. Recommended Differential Pressure for Modulating Service	
Brass Trim	25 psi (173 kPa)
Stainless Steel Trim	50 psi (345 kPa)
Max. Inlet Pressure	Refer to the Reference Section
Rangeability	>100:1
Close-off Ratings	According to ANSI/FCI 70-2
Leakage Rate	Class IV (0.01% of Cv)

Flow Characteristics

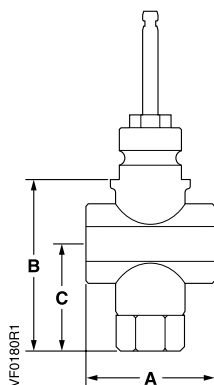


Equal percentage for NC/Linear for NO

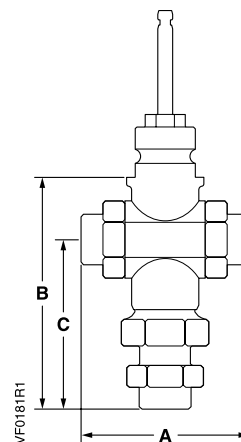


Flowrite Three-Way
Globe Valve.

Three-Way Valve Dimensions



Female NPT x Female NPT x Female NPT
(FxFxF)



Union Female x Union Female x Union Female
(UFxUFxUF)

Valve Size in.	Dimensions						Weight	
	A	B	C	A	B	C	FxFxF	UFxUFxUF
	FxFxF			UFxUFxUF				
1/2" (15 mm)	2-7/8" (72 mm)	4-5/16" (110 mm)	2-11/16" (68 mm)	4-11/16" (119 mm)	6-1/4" (159 mm)	4-5/8" (117 mm)	3.0 lb. (1.4 kg)	4.0 lb. (1.8 kg)
3/4" (20 mm)	3-3/8" (85 mm)	4-5/16" (110 mm)	2-3/4" (69 mm)	6-3/8" (163 mm)	6-15/16" (176 mm)	5-1/4" (134 mm)	4.0 lb. (1.8 kg)	6.0 lb. (2.7 kg)
1" (25 mm)	3-15/16" (100 mm)	4-1/2" (114 mm)	2-7/8" (72 mm)	7-1/16" (180 mm)	7" (178 mm)	5-3/8" (136 mm)	5.0 lb. (2.3 kg)	7.0 lb. (3.2 kg)
1-1/4" (32 mm)	4-15/16" (125 mm)	4-5/8" (116 mm)	2-15/16" (74 mm)	7-1/2" (190 mm)	6-3/4" (170 mm)	5-1/16" (129 mm)	7.0 lb. (3.2 kg)	11.0 lb. (5 kg)
1-1/2" (40 mm)	5-1/8" (130 mm)	4-5/8" (117 mm)	3" (76 mm)	7-13/16" (199 mm)	6-15/16" (176 mm)	5-5/16" (135 mm)	9.0 lb. (4.1 kg)	13.0 lb. (5.9 kg)
2" (50 mm)	6-1/4" (158 mm)	5-1/8" (130 mm)	3-3/16" (81 mm)	9-1/16" (231 mm)	7-3/16" (182 mm)	5-9/16" (141 mm)	13.0 lb. (5.9 kg)	19.0 lb. (8.6 kg)

Two-Way Globe Valves

1/2 to 2", Equal Percentage or Linear Flow

Normally Open or Normally Closed

ANSI Class 250

Equal Percentage, Two-Way Globe Valve Body Product Ordering

Brass and Stainless Steel Trim



Connection	Valve Size in. (mm)		Flow Rate Cv (Kvs)		Stroke (in.)	Standard-Temperature Packing 20 to 250°F (-7 to 120°C)		Standard-Temperature Packing 20 to 250°F (-7 to 120°C)	
						Normally Open Part No.	Normally Closed Part No.	Normally Open Part No.	Normally Closed Part No.
						Brass Trim		Stainless Steel Trim	
Female x Female	1/2	(15)	1	(0.9)	3/4	599-03162	599-03180	599-03108	599-03126
	1/2	(15)	1.6	(1.4)	3/4	599-03163	599-03181	599-03109	599-03127
	1/2	(15)	2.5	(2.2)	3/4	599-03164	599-03182	599-03110	599-03128
	1/2	(15)	4	(3.4)	3/4	599-03165	599-03183	599-03111	599-03129
	3/4	(20)	6.3	(5.4)	3/4	599-03166	599-03184	599-03112	599-03130
	1	(25)	10	(8.6)	3/4	599-03167	599-03185	599-03113	599-03131
	1-1/4	(32)	16	(14)	3/4	599-03168	599-03186	599-03114	599-03132
	1-1/2	(40)	25	(22)	3/4	599-03169	599-03187	599-03115	599-03133
	2	(50)	40	(34)	3/4	599-03170	599-03188	599-03116	599-03134
Female x Union Female	1/2	(15)	1	(0.9)	3/4	599-03171	599-03189	599-03117	599-03135
	1/2	(15)	1.6	(1.4)	3/4	599-03172	599-03190	599-03118	599-03136
	1/2	(15)	2.5	(2.2)	3/4	599-03173	599-03191	599-03119	599-03137
	1/2	(15)	4	(3.4)	3/4	599-03174	599-03192	599-03120	599-03138
	3/4	(20)	6.3	(5.4)	3/4	599-03175	599-03193	599-03121	599-03139
	1	(25)	10	(8.6)	3/4	599-03176	599-03194	599-03122	599-03140
Female x Union Male	1/2	(15)	1	(0.9)	3/4	599-03270	599-03279	599-03252	599-03261
	1/2	(15)	1.6	(1.4)	3/4	599-03271	599-03280	599-03253	599-03262
	1/2	(15)	2.5	(2.2)	3/4	599-03272	599-03281	599-03254	599-03263
	1/2	(15)	4	(3.4)	3/4	599-03273	599-03282	599-03255	599-03264
	3/4	(20)	6.3	(5.4)	3/4	599-03274	599-03283	599-03256	599-03265
	1	(25)	10	(8.6)	3/4	599-03275	599-03284	599-03257	599-03266
	1-1/4	(32)	16	(14)	3/4	599-03276	—	—	—
Union Female x Union Female	1-1/4	(32)	16	(14)	3/4	599-03177	599-03195	599-03123	599-03141
	1-1/2	(40)	25	(22)	3/4	599-03178	599-03196	599-03124	599-03142
	2	(50)	40	(34)	3/4	599-03179	599-03197	599-03125	599-03143

Flowrite Two-Way
Globe Valve.

Linear, Two-Way Globe Valve Body Product Ordering Stainless Steel Trim



Connection	Valve Size in. (mm)	Flow Rate Cv (Kvs)	Stroke (in.)	Standard-Temperature Packing 20 to 250°F (-7 to 120°C)		High-Temperature Packing 337°F (-170°C)	
				Normally Open Part No.	Normally Closed Part No.	Normally Open Part No.	Normally Closed Part No.
Female x Female	1/2 (15)	1 (0.9)	3/4	599-03000	599-03018	599-03054	599-03072
	1/2 (15)	1.6 (1.4)	3/4	599-03001	599-03019	599-03055	599-03073
	1/2 (15)	2.5 (2.2)	3/4	599-03002	599-03020	599-03056	599-03074
	1/2 (15)	4 (3.4)	3/4	599-03003	599-03021	599-03057	599-03075
	3/4 (20)	6.3 (5.4)	3/4	599-03004	599-03022	599-03058	599-03076
	1 (25)	10 (8.6)	3/4	599-03005	599-03023	599-03059	599-03077
	1-1/4 (32)	16 (14)	3/4	599-03006	599-03024	599-03060	599-03078
	1-1/2 (40)	25 (22)	3/4	599-03007	599-03025	599-03061	599-03079
Female x Union Female	2 (50)	40 (34)	3/4	599-03008	599-03026	599-03062	599-03080
	1/2 (15)	1 (0.9)	3/4	599-03009	599-03027	599-03063	599-03081
	1/2 (15)	1.6 (1.4)	3/4	599-03010	599-03028	599-03064	599-03082
	1/2 (15)	2.5 (2.2)	3/4	599-03011	599-03029	599-03065	599-03083
	1/2 (15)	4 (3.4)	3/4	599-03012	599-03030	599-03066	599-03084
	3/4 (20)	6.3 (5.4)	3/4	599-03013	599-03031	599-03067	599-03085
Female x Union Male	1 (25)	10 (8.6)	3/4	599-03014	599-03032	599-03068	599-03086
	1/2 (15)	1 (0.9)	3/4	599-03216	599-03225	599-03234	599-03243
	1/2 (15)	1.6 (1.4)	3/4	599-03217	599-03226	599-03235	599-03244
	1/2 (15)	2.5 (2.2)	3/4	599-03218	599-03227	599-03236	599-03245
	1/2 (15)	4 (3.4)	3/4	599-03219	599-03228	599-03237	599-03246
	3/4 (20)	6.3 (5.4)	3/4	599-03220	599-03229	599-03238	599-03247
Union Female x Union Female	1 (25)	10 (8.6)	3/4	599-03221	599-03230	599-03239	599-03248
	1-1/4 (32)	16 (14)	3/4	599-03015	599-03033	599-03069	599-03087
	1-1/2 (40)	25 (22)	3/4	599-03016	599-03034	599-03070	599-03088
	2 (50)	40 (34)	3/4	599-03017	599-03035	599-03071	599-03089

Order separately or as a complete assembly.
See pages 54 thru 57 for assembly ordering part numbers.

Three-Way Globe Valves & Flowrite Valve Actuators

1/2 to 2"

Mixing

Pneumatic & Electronic Actuators

Three-Way Globe Valve Body Product Ordering

Brass and Stainless Steel Trim



Connection	Valve Size		Flow Rate		Stroke	Brass Trim	Stainless Steel Trim
	in.	(mm)	Cv	(Kvs)	(in.)	Part No.	Part No.
Standard-Temperature Packing — 20 to 250°F (-7 to 120°C)							
Female x Female	1/2	(15)	1	(0.9)	3/4	599-03198	599-03144
	1/2	(15)	1.6	(1.4)	3/4	599-03199	599-03145
	1/2	(15)	2.5	(2.2)	3/4	599-03200	599-03146
	1/2	(15)	4	(3.4)	3/4	599-03201	599-03147
	3/4	(20)	6.3	(5.4)	3/4	599-03202	599-03148
	1	(25)	10	(8.6)	3/4	599-03203	599-03149
	1-1/4	(32)	16	(14)	3/4	599-03204	599-03150
	1-1/2	(40)	25	(22)	3/4	599-03205	599-03151
Union Female x Union Female	2	(50)	40	(34)	3/4	599-03206	599-03152
	1/2	(15)	1	(0.9)	3/4	599-03207	599-03153
	1/2	(15)	1.6	(1.4)	3/4	599-03208	599-03154
	1/2	(15)	2.5	(2.2)	3/4	599-03209	599-03155
	1/2	(15)	4	(3.4)	3/4	599-03210	599-03156
	3/4	(20)	6.3	(5.4)	3/4	599-03211	599-03157
	1	(25)	10	(8.6)	3/4	599-03212	599-03158
	1-1/4	(32)	16	(14)	3/4	599-03213	599-03159
	1-1/2	(40)	25	(22)	3/4	599-03214	599-03160
2	(50)	40	(34)	3/4	599-03215	599-03161	







Flowrite Three-Way
Globe Valve.



Flowrite Electro-Mechanical
Non-spring Return Actuator

Flowrite Globe Valve Actuators Product Ordering

Spring Return and Non-Spring Return

Description		Part No.	Actuator Prefix Code
 4" Pneumatic	3-8 psi (21-55 kPa)	599-01081	268
	5-10 psi (34-69 kPa)	599-01082	269
	10-15 psi (69 -103 kPa)	599-01083	270
 8" Pneumatic and Pneumatic w/Positioner	Normal Temp.	599-01050	277
	High-Temp.	599-01051	278
	Normal Temp. w/Positioner	599-01050 + 599-00426	283
	High-Temp. w/Positioner	599-01051 + 599-00426	284
 Electro-Mechanical	24 V, 2P, Spring Return, Rack & Pinion	599-03611	299
	24 V, Floating 3P, Non-Spring Return, SAX	SAX81.03U	373
	24 V, 0-10 V, Spring Return, Rack & Pinion	599-03609	298
	24 V, 0-10 V, 4-20 mA, Non-Spring Return, SAX	SAX61.03U	371
 Electro-Hydraulic	24 V, Floating 3P, Spring Return	SKD82.51U	276
	24 V, Floating 3P, Non-Spring Return	SKD82.50U	275
	24 V, 0-10 V, 4-20 mA, Spring Return	SKD62U	274
	24 V, 0-10 V, 4-20 mA, Spring Return	SKB62U	291

Order separately or as a complete assembly.
See pages 52 thru 60 for assembly ordering part numbers.

Two-Way Globe Valve Assemblies

ANSI Class 250

Pneumatic Spring Return Actuators



Flowrite Two-way Globe Valve & Pneumatic Actuator Assembly

NO/NC Equal Percentage 1/2 to 2"			Spring Return Actuator					
			NO 4" 3-8 psi NC 4" 10-15 psi		8"		8" with Positioner	
2-way Valve Body Part No.	Valve Size in.	Flow Rate Cv						
			599-01081 – NO 599-01083 – NC		599-01050		599-01050 + 599-00426	
Normally Open Assemblies								
Close-off psi — Brass Trim								
	1/2	1	142	268-03162	250	277-03162	250	283-03162
		1.6	142	268-03163	250	277-03163	250	283-03163
		2.5	142	268-03164	250	277-03164	250	283-03164
		4	142	268-03165	250	277-03165	250	283-03165
	3/4	6.3	80	268-03166	231	277-03166	231	283-03166
	1	10	52	268-03167	150	277-03167	150	283-03167
	1-1/4	16	32	268-03168	93	277-03168	93	283-03168
	1-1/2	25	20	268-03169	60	277-03169	60	283-03169
	2	40	12	268-03170	37	277-03170	37	283-03170
	Close-off psi — Stainless Steel Trim							
	1/2	1	142	268-03108	250	277-03108	250	283-03108
		1.6	142	268-03109	250	277-03109	250	283-03109
		2.5	142	268-03110	250	277-03110	250	283-03110
		4	142	268-03111	250	277-03111	250	283-03111
	3/4	6.3	80	268-03112	231	277-03112	231	283-03112
	1	10	52	268-03113	150	277-03113	150	283-03113
	1-1/4	16	32	268-03114	93	277-03114	93	283-03114
	1-1/2	25	20	268-03115	60	277-03115	60	283-03115
	2	40	12	268-03116	37	277-03116	37	283-03116
	Normally Closed Assemblies							
Close-off psi — Brass Trim								
	1/2	1	236	270-03180	250	277-03180	250	283-03180
		1.6	236	270-03181	250	277-03181	250	283-03181
		2.5	236	270-03182	250	277-03182	250	283-03182
		4	236	270-03183	250	277-03183	250	283-03183
	3/4	6.3	155	270-03184	250	277-03184	250	283-03184
	1	10	91	270-03185	250	277-03185	250	283-03185
	1-1/4	16	52	270-03186	148	277-03186	148	283-03186
	1-1/2	25	32	270-03187	92	277-03187	92	283-03187
	2	40	20	270-03188	55	277-03188	55	283-03188
	Close-off psi — Stainless Steel Trim							
	1/2	1	236	270-03126	250	277-03126	250	283-03126
		1.6	236	270-03127	250	277-03127	250	283-03127
		2.5	236	270-03128	250	277-03128	250	283-03128
		4	236	270-03129	250	277-03129	250	283-03129
	3/4	6.3	155	270-03130	250	277-03130	250	283-03130
	1	10	91	270-03131	250	277-03131	250	283-03131
	1-1/4	16	52	270-03132	148	277-03132	148	283-03132
	1-1/2	25	32	270-03133	92	277-03133	92	283-03133
	2	40	20	270-03134	55	277-03134	55	283-03134

Table Notes:

Part numbers in green indicate complete assemblies.
Black numbers indicate close-off psi.

Close-off values are for 15 psi signal for Normally Open and 0 psi signal for Normally Closed.

Close-off values for Normally Open valves with positioner may be substantially higher based on line supply pressure.

Two-Way Globe Valve Assemblies

ANSI Class 250

Electronic Spring Return Actuators



Flowrite Two-way Globe Valve & Spring Return Actuator Assembly










NO/NC Equal Percentage 1/2 to 2"			Spring Return Actuator									
			2P		Floating 3P		0-10 Vdc		0-10 Vdc 4-20 mA		0-10 Vdc 4-20 mA	
2-way Valve Body Part No.	Valve Size in.	Flow Rate Cv	 599-03611		 SKD82.51U		 599-03609		 SKD62U		 SKB62U	
Normally Open Assemblies			Close-off psi — Brass Trim									
	1/2	1	250	299-03162	250	276-03162	250	298-03162	250	274-03162	—	
		1.6	250	299-03163	250	276-03163	250	298-03163	250	274-03163	—	
		2.5	250	299-03164	250	276-03164	250	298-03164	250	274-03164	—	
		4	250	299-03165	250	276-03165	250	298-03165	250	274-03165	—	
	3/4	6.3	211	299-03166	250	276-03166	211	298-03166	250	274-03166	—	
	1	10	137	299-03167	201	276-03167	137	298-03167	201	274-03167	250	291-03167
	1-1/4	16	85	299-03168	124	276-03168	85	298-03168	124	274-03168	250	291-03168
	1-1/2	25	55	299-03169	80	276-03169	55	298-03169	80	274-03169	250	291-03169
	2	40	34	299-03170	49	276-03170	34	298-03170	49	274-03170	201	291-03170
	Normally Closed Assemblies			Close-off psi — Stainless Steel Trim								
	1/2	1	250	299-03108	250	276-03108	250	298-03108	250	274-03108	—	
		1.6	250	299-03109	250	276-03109	250	298-03109	250	274-03109	—	
		2.5	250	299-03110	250	276-03110	250	298-03110	250	274-03110	—	
		4	250	299-03111	250	276-03111	250	298-03111	250	274-03111	—	
	3/4	6.3	211	299-03112	250	276-03112	211	298-03112	250	274-03112	—	
	1	10	137	299-03113	201	276-03113	137	298-03113	201	274-03113	250	291-03113
	1-1/4	16	85	299-03114	124	276-03114	85	298-03114	124	274-03114	250	291-03114
	1-1/2	25	55	299-03115	80	276-03115	55	298-03115	80	274-03115	250	291-03115
	2	40	34	299-03116	49	276-03116	34	298-03116	49	274-03116	201	291-03116
	Normally Closed Assemblies			Close-off psi — Brass Trim								
	1/2	1	250	299-03180	250	276-03180	250	298-03180	250	274-03180	—	
		1.6	250	299-03181	250	276-03181	250	298-03181	250	274-03181	—	
		2.5	250	299-03182	250	276-03182	250	298-03182	250	274-03182	—	
		4	250	299-03183	250	276-03183	250	298-03183	250	274-03183	—	
	3/4	6.3	250	299-03184	250	276-03184	250	298-03184	250	274-03184	—	
	1	10	159	299-03185	203	276-03185	159	298-03185	203	274-03185	250	291-03185
	1-1/4	16	92	299-03186	117	276-03186	92	298-03186	117	274-03186	250	291-03186
	1-1/2	25	57	299-03187	73	276-03187	57	298-03187	73	274-03187	208	291-03187
	2	40	35	299-03188	44	276-03188	35	298-03188	44	274-03188	126	291-03188
	Normally Closed Assemblies			Close-off psi — Stainless Steel Trim								
	1/2	1	250	299-03126	250	276-03126	250	298-03126	250	274-03126	—	
		1.6	250	299-03127	250	276-03127	250	298-03127	250	274-03127	—	
		2.5	250	299-03128	250	276-03128	250	298-03128	250	274-03128	—	
		4	250	299-03129	250	276-03129	250	298-03129	250	274-03129	—	
	3/4	6.3	250	299-03130	250	276-03130	250	298-03130	250	274-03130	—	
	1	10	159	299-03131	203	276-03131	159	298-03131	203	274-03131	250	291-03131
	1-1/4	16	92	299-03132	117	276-03132	92	298-03132	117	274-03132	250	291-03132
	1-1/2	25	57	299-03133	73	276-03133	57	298-03133	73	274-03133	208	291-03133
	2	40	35	299-03134	44	276-03134	35	298-03134	44	274-03134	126	291-03134

Table Notes:

Part numbers in green indicate complete assemblies. Black numbers indicate close-off psi.

Two-Way Globe Valve Assemblies

ANSI Class 250

Electronic Non-Spring Return Actuators



Flowrite Two-way Globe Valve & Non-Spring Return Actuator Assembly






NO/NC Equal Percentage 1/2 to 2"			Non-Spring Return Actuator					
			Floating 3P		Floating 3P		0-10 Vdc 4-20 mA	
2-way Valve Body Part No.	Valve Size in.	Flow Rate Cv	 SAX81.03U		 SKD82.50U		 SAX61.03U	
Normally Open Assemblies								
Close-off psi — Brass Trim								
	1/2	1	250	373-03162	250	275-03162	250	371-03162
599-03163		1.6	250	373-03163	250	275-03163	250	371-03163
599-03164		2.5	250	373-03164	250	275-03164	250	371-03164
599-03165		4	250	373-03165	250	275-03165	250	371-03165
599-03166	3/4	6.3	211	373-03166	250	275-03166	211	371-03166
599-03167	1	10	137	373-03167	201	275-03167	137	371-03167
599-03168	1-1/4	16	85	373-03168	124	275-03168	85	371-03168
599-03169	1-1/2	25	55	373-03169	80	275-03169	55	371-03169
599-03170	2	40	34	373-03170	49	275-03170	34	371-03170
Close-off psi — Stainless Steel Trim								
599-03108	1/2	1	250	373-03108	250	275-03108	250	371-03108
599-03109		1.6	250	373-03109	250	275-03109	250	371-03109
599-03110		2.5	250	373-03110	250	275-03110	250	371-03110
599-03111		4	250	373-03111	250	275-03111	250	371-03111
599-03112	3/4	6.3	211	373-03112	250	275-03112	211	371-03112
599-03113	1	10	137	373-03113	201	275-03113	137	371-03113
599-03114	1-1/4	16	85	373-03114	124	275-03114	85	371-03114
599-03115	1-1/2	25	55	373-03115	80	275-03115	55	371-03115
599-03116	2	40	34	373-03116	49	275-03116	34	371-03116
Normally Closed Assemblies								
Close-off psi — Brass Trim								
	1/2	1	250	373-03180	250	275-03180	250	371-03180
599-03181		1.6	250	373-03181	250	275-03181	250	371-03181
599-03182		2.5	250	373-03182	250	275-03182	250	371-03182
599-03183		4	250	373-03183	250	275-03183	250	371-03183
599-03184	3/4	6.3	250	373-03184	250	275-03184	250	371-03184
599-03185	1	10	159	373-03185	203	275-03185	159	371-03185
599-03186	1-1/4	16	92	373-03186	117	275-03186	92	371-03186
599-03187	1-1/2	25	57	373-03187	73	275-03187	57	371-03187
599-03188	2	40	35	373-03188	44	275-03188	35	371-03188
Close-off psi — Stainless Steel Trim								
599-03126	1/2	1	250	373-03126	250	275-03126	250	371-03126
599-03127		1.6	250	373-03127	250	275-03127	250	371-03127
599-03128		2.5	250	373-03128	250	275-03128	250	371-03128
599-03129		4	250	373-03129	250	275-03129	250	371-03129
599-03130	3/4	6.3	250	373-03130	250	275-03130	250	371-03130
599-03131	1	10	159	373-03131	203	275-03131	159	371-03131
599-03132	1-1/4	16	92	373-03132	117	275-03132	92	371-03132
599-03133	1-1/2	25	57	373-03133	73	275-03133	57	371-03133
599-03134	2	40	35	373-03134	44	275-03134	35	371-03134

Table Notes:
Part numbers in green indicate complete assemblies.
Black numbers indicate close-off psi.

Two-Way Globe Valve Assemblies

1/2 to 2", ANSI Class 250

Pneumatic Actuators

Flowrite Two-way Globe Valve & Pneumatic Actuator Assembly



NO/NC Linear 1/2 to 2"			Spring Return Actuator							
			NO 4" 3-8 psi NC 4" 10-15 psi	8"	8" High Temp.	8" with Positioner	8" High Temp. with Positioner			
2-way Valve Body Part No.	Valve Size in.	Flow Rate Cv								
			599-01081 – NO 599-01083 – NC	599-01050	599-01051	599-01050 + 599-00426	599-01051 + 599-00426			
Normally Open Assemblies										
Close-off psi — Stainless Steel Trim/Standard-Temperature Packing										
	1/2	1	142	268-03000	250	277-03000	—	250	283-03000	—
		1.6	142	268-03001	250	277-03001	—	250	283-03001	—
		2.5	142	268-03002	250	277-03002	—	250	283-03002	—
		4	142	268-03003	250	277-03003	—	250	283-03003	—
	3/4	6.3	80	268-03004	231	277-03004	—	231	283-03004	—
	1	10	52	268-03005	150	277-03005	—	150	283-03005	—
	1-1/4	16	32	268-03006	93	277-03006	—	93	283-03006	—
	1-1/2	25	20	268-03007	60	277-03007	—	60	283-03007	—
2	40	12	268-03008	37	277-03008	—	37	283-03008	—	
Close-off psi — Stainless Steel Trim/High-Temperature Packing										
	1/2	1	142	268-03054	250	277-03054	250	278-03054	250	284-03054
		1.6	142	268-03055	250	277-03055	250	278-03055	250	284-03055
		2.5	142	268-03056	250	277-03056	250	278-03056	250	284-03056
		4	142	268-03057	250	277-03057	250	278-03057	250	284-03057
	3/4	6.3	80	268-03058	231	277-03058	231	278-03058	231	284-03058
	1	10	52	268-03059	150	277-03059	150	278-03059	150	284-03059
	1-1/4	16	32	268-03060	93	277-03060	93	278-03060	93	284-03060
	1-1/2	25	20	268-03061	60	277-03061	60	278-03061	60	284-03061
2	40	12	268-03062	37	277-03062	37	278-03062	37	284-03062	
Normally Closed Assemblies										
Close-off psi — Stainless Steel Trim/Standard-Temperature Packing										
	1/2	1	236	270-03018	250	277-03018	—	250	283-03018	—
		1.6	236	270-03019	250	277-03019	—	250	283-03019	—
		2.5	236	270-03020	250	277-03020	—	250	283-03020	—
		4	236	270-03021	250	277-03021	—	250	283-03021	—
	3/4	6.3	155	270-03022	250	277-03022	—	250	283-03022	—
	1	10	91	270-03023	250	277-03023	—	250	283-03023	—
	1-1/4	16	52	270-03024	148	277-03024	—	148	283-03024	—
	1-1/2	25	32	270-03025	92	277-03025	—	92	283-03025	—
2	40	20	270-03026	55	277-03026	—	55	283-03026	—	
Close-off psi — Stainless Steel Trim/High-Temperature Packing										
	1/2	1	236	270-03072	250	277-03072	250	278-03072	250	284-03072
		1.6	236	270-03073	250	277-03073	250	278-03073	250	284-03073
		2.5	236	270-03074	250	277-03074	250	278-03074	250	284-03074
		4	236	270-03075	250	277-03075	250	278-03075	250	284-03075
	3/4	6.3	155	270-03076	250	277-03076	250	278-03076	250	284-03076
	1	10	91	270-03077	250	277-03077	250	278-03077	250	284-03077
	1-1/4	16	52	270-03078	148	277-03078	148	278-03078	148	284-03078
	1-1/2	25	32	270-03079	92	277-03079	92	278-03079	92	284-03079
2	40	20	270-03080	55	277-03080	55	278-03080	55	284-03080	

Table Notes:

Close-off values are for 15 psi signal for Normally Open and 0 psi signal for Normally Closed.

Close-off values for Normally Open valves with positioner may be substantially higher based on line supply pressure.

Two-Way Globe Valve Assemblies

1/2 to 2", ANSI Class 250

Electronic, Spring Return Actuators



Flowrite Two-way Globe Valve & Spring Return Actuator Assembly










NO/NC Linear 1/2 to 2"			Spring Return Actuator									
			2P		Floating 3P		0-10 Vdc		0-10 Vdc 4-20 mA		0-10 Vdc 4-20 mA	
2-way Valve Body Part No.	Valve Size in.	Flow Rate Cv	 599-03611		 SKD82.51U		 599-03609		 SKD62U		 SKB62U	
Normally Open Assemblies			Close-off psi — Stainless Steel Trim/Standard-Temperature Packing									
	1/2	1	250	299-03000	250	276-03000	250	298-03000	250	274-03000	—	
		1.6	250	299-03001	250	276-03001	250	298-03001	250	274-03001	—	
		2.5	250	299-03002	250	276-03002	250	298-03002	250	274-03002	—	
		4	250	299-03003	250	276-03003	250	298-03003	250	274-03003	—	
	3/4	6.3	211	299-03004	250	276-03004	211	298-03004	250	274-03004	—	
	1	10	137	299-03005	201	276-03005	137	298-03005	201	274-03005	250	291-03005
	1-1/4	16	85	299-03006	124	276-03006	85	298-03006	124	274-03006	250	291-03006
	1-1/2	25	55	299-03007	80	276-03007	55	298-03007	80	274-03007	250	291-03007
	2	40	34	299-03008	49	276-03008	34	298-03008	49	274-03008	201	291-03008
				Close-off psi — Stainless Steel Trim/High-Temperature Packing								
	1/2	1	—	250	276-03054	—	250	274-03054	—			
		1.6	—	250	276-03055	—	250	274-03055	—			
		2.5	—	250	276-03056	—	250	274-03056	—			
		4	—	250	276-03057	—	250	274-03057	—			
	3/4	6.3	—	250	276-03058	—	250	274-03058	—			
	1	10	—	201	276-03059	—	201	274-03059	250	291-03059	—	
	1-1/4	16	—	124	276-03060	—	124	274-03060	250	291-03060	—	
	1-1/2	25	—	80	276-03061	—	80	274-03061	250	291-03061	—	
2	40	—	49	276-03062	—	49	274-03062	201	291-03062	—		
Normally Closed Assemblies			Close-off psi — Stainless Steel Trim/Standard-Temperature Packing									
	1/2	1	250	299-03018	250	276-03018	250	298-03018	250	274-03018	—	
		1.6	250	299-03019	250	276-03019	250	298-03019	250	274-03019	—	
		2.5	250	299-03020	250	276-03020	250	298-03020	250	274-03020	—	
		4	250	299-03021	250	276-03021	250	298-03021	250	274-03021	—	
	3/4	6.3	250	299-03022	250	276-03022	234	298-03022	250	274-03022	—	
	1	10	159	299-03023	203	276-03023	159	298-03023	203	274-03023	250	291-03023
	1-1/4	16	92	299-03024	117	276-03024	92	298-03024	117	274-03024	250	291-03024
	1-1/2	25	57	299-03025	73	276-03025	57	298-03025	73	274-03025	208	291-03025
	2	40	35	299-03026	44	276-03026	35	298-03026	44	274-03026	126	291-03026
				Close-off psi — Stainless Steel Trim/High-Temperature Packing								
	1/2	1	—	250	276-03072	—	250	274-03072	—			
		1.6	—	250	276-03073	—	250	274-03073	—			
		2.5	—	250	276-03074	—	250	274-03074	—			
		4	—	250	276-03075	—	250	274-03075	—			
	3/4	6.3	—	250	276-03076	—	250	274-03076	—			
	1	10	—	203	276-03077	—	203	274-03077	250	291-03077	—	
	1-1/4	16	—	117	276-03078	—	117	274-03078	250	291-03078	—	
	1-1/2	25	—	73	276-03079	—	73	274-03079	208	291-03079	—	
2	40	—	44	276-03080	—	44	274-03080	126	291-03080	—		

Table Notes: Part numbers in green indicate complete assemblies. Black numbers indicate close-off psi.

Two-Way Globe Valve Assemblies

1/2 to 2", ANSI Class 250

Electronic, Non-Spring Return Actuators



Flowrite Two-way Globe Valve & Non-Spring Return Actuator Assembly








NO/NC Linear 1/2 to 2"			Non-Spring Return Actuator					
			Floating 3P		Floating 3P		0-10 Vdc 4-20 mA	
								
			SAX81.03U		SKD82.50U		SAX61.03U	
Normally Open Assemblies			Close-off psi — Stainless Steel Trim/Standard-Temperature Packing					
	1/2	1	250	373-03000	250	275-03000	250	371-03000
		1.6	250	373-03001	250	275-03001	250	371-03001
		2.5	250	373-03002	250	275-03002	250	371-03002
		4	250	373-03003	250	275-03003	250	371-03003
	3/4	6.3	211	373-03004	250	275-03004	211	371-03004
	1	10	137	373-03005	201	275-03005	137	371-03005
	1-1/4	16	85	373-03006	124	275-03006	85	371-03006
	1-1/2	25	55	373-03007	80	275-03007	55	371-03007
	2	40	34	373-03008	49	275-03008	34	371-03008
				Close-off psi — Stainless Steel Trim/High-Temperature Packing				
	1/2	1	250	373-03054	250	275-03054	250	371-03054
		1.6	250	373-03055	250	275-03055	250	371-03055
		2.5	250	373-03056	250	275-03056	250	371-03056
		4	250	373-03057	250	275-03057	250	371-03057
	3/4	6.3	211	373-03058	250	275-03058	211	371-03058
	1	10	137	373-03059	201	275-03059	137	371-03059
	1-1/4	16	85	373-03060	124	275-03060	85	371-03060
	1-1/2	25	55	373-03061	80	275-03061	55	371-03061
	2	40	34	373-03062	49	275-03062	34	371-03062
	Normally Closed Assemblies			Close-off psi — Stainless Steel Trim/Standard-Temperature Packing				
	1/2	1	250	373-03018	250	275-03018	250	371-03018
		1.6	250	373-03019	250	275-03019	250	371-03019
		2.5	250	373-03020	250	275-03020	250	371-03020
		4	250	373-03021	250	275-03021	250	371-03021
	3/4	6.3	250	373-03022	250	275-03022	250	371-03022
	1	10	159	373-03023	203	275-03023	159	371-03023
	1-1/4	16	92	373-03024	117	275-03024	92	371-03024
	1-1/2	25	57	373-03025	73	275-03025	57	371-03025
	2	40	35	373-03026	44	275-03026	35	371-03026
				Close-off psi — Stainless Steel Trim/High-Temperature Packing				
	1/2	1	250	373-03072	250	275-03072	250	371-03072
		1.6	250	373-03073	250	275-03073	250	371-03073
		2.5	250	373-03074	250	275-03074	250	371-03074
		4	250	373-03075	250	275-03075	250	371-03075
	3/4	6.3	250	373-03076	250	275-03076	250	371-03076
	1	10	159	373-03077	203	275-03077	159	371-03077
	1-1/4	16	92	373-03078	117	275-03078	92	371-03078
	1-1/2	25	57	373-03079	73	275-03079	57	371-03079
	2	40	35	373-03080	44	275-03080	35	371-03080

Table Notes:
 Part numbers in green indicate complete assemblies.
 Black numbers indicate close-off psi.

Three-Way Globe Valve Assemblies

1/2 to 2", ANSI Class 250

Pneumatic Spring Return Actuators



Flowrite Three-way Globe Valve & Spring Return Actuator Assembly






Mixing 1/2 to 2"			Spring Return Actuator									
			4" 3-8 psi		4" 5-10 psi		4" 10-15 psi		8"		8" with Positioner	
3-way Valve Body Part No.	Valve Size in.	Flow Rate Cv	 599-01081		 599-01082		 599-01083		 599-01050		 599-01050 + 599-00426	
			Mixing Assemblies									
Close-off psi — Brass Trim												
599-03198	1/2	1	236	268-03198	236	269-03198	236	270-03198	250	277-03198	250	283-03198
599-03199		1.6	236	268-03199	236	269-03199	236	270-03199	250	277-03199	250	283-03199
599-03200		2.5	236	268-03200	236	269-03200	236	270-03200	250	277-03200	250	283-03200
599-03201		4	236	268-03201	236	269-03201	236	270-03201	250	277-03201	250	283-03201
599-03202	3/4	6.3	155	268-03202	155	269-03202	155	270-03202	250	277-03202	250	283-03202
599-03203	1	10	91	268-03203	91	269-03203	91	270-03203	250	277-03203	250	283-03203
599-03204	1-1/4	16	52	268-03204	52	269-03204	52	270-03204	148	277-03204	148	283-03204
599-03205	1-1/2	25	32	268-03205	32	269-03205	32	270-03205	92	277-03205	92	283-03205
599-03206	2	40	20	268-03206	20	269-03206	20	270-03206	55	277-03206	55	283-03206
Close-off psi — Stainless Steel Trim												
599-03144	1/2	1	236	268-03144	236	269-03144	236	270-03144	250	277-03144	250	283-03144
599-03145		1.6	236	268-03145	236	269-03145	236	270-03145	250	277-03145	250	283-03145
599-03146		2.5	236	268-03146	236	269-03146	236	270-03146	250	277-03146	250	283-03146
599-03147		4	236	268-03147	236	269-03147	236	270-03147	250	277-03147	250	283-03147
599-03148	3/4	6.3	155	268-03148	155	269-03148	155	270-03148	250	277-03148	250	283-03148
599-03149	1	10	91	268-03149	91	269-03149	91	270-03149	250	277-03149	250	283-03149
599-03150	1-1/4	16	52	268-03150	52	269-03150	52	270-03150	148	277-03150	148	283-03150
599-03151	1-1/2	25	32	268-03151	32	269-03151	32	270-03151	92	277-03151	92	283-03151
599-03152	2	40	20	268-03152	20	269-03152	20	270-03152	55	277-03152	55	283-03152

Table Notes:

Part numbers in green indicate complete assemblies. Black numbers indicate close-off psi.

Values in chart are for 0 psi supplied to the actuator. Values are for the NC upper port. For NO lower port values, refer to the Reference section.

Close-off values for Normally Open valves with positioner may be substantially higher based on line supply pressure.

Three-Way Globe Valve Assemblies

1/2 to 2", ANSI Class 250

Electronic Spring Return Actuators



Flowrite Three-way Globe Valve & Non-Spring Return Actuator Assembly






Mixing 1/2 to 2"			Spring Return Actuator									
			2P	Floating 3P		0-10 Vdc		0-10 Vdc 4-20 mA		0-10 Vdc 4-20 mA		
3-way Valve Body Part No.	Valve Size in.	Flow Rate Cv										
			599-03611	SKD82.51U	599-03609	SKD62U	SKB62U					
Mixing Assemblies			Close-off psi — Brass Trim									
599-03198	1/2	1	250	299-03198	250	276-03198	250	298-03198	250	274-03198	—	
599-03199		1.6	250	299-03199	250	276-03199	250	298-03199	250	274-03199	—	
599-03200		2.5	250	299-03200	250	276-03200	250	298-03200	250	274-03200	—	
599-03201		4	250	299-03201	250	276-03201	250	298-03201	250	274-03201	—	
599-03202	3/4	6.3	211	299-03202	250	276-03202	211	298-03202	250	274-03202	—	
599-03203	1	10	137	299-03203	203	276-03203	137	298-03203	203	274-03203	250	291-03203
599-03204	1-1/4	16	85	299-03204	117	276-03204	85	298-03204	117	274-03204	250	291-03204
599-03205	1-1/2	25	55	299-03205	73	276-03205	55	298-03205	73	274-03205	208	291-03205
599-03206	2	40	34	299-03206	44	276-03206	34	298-03206	44	274-03206	126	291-03206
			Close-off psi — Stainless Steel Trim									
599-03144	1/2	1	250	299-03144	250	276-03144	250	298-03144	250	274-03144	—	
599-03145		1.6	250	299-03145	250	276-03145	250	298-03145	250	274-03145	—	
599-03146		2.5	250	299-03146	250	276-03146	250	298-03146	250	274-03146	—	
599-03147		4	250	299-03147	250	276-03147	250	298-03147	250	274-03147	—	
599-03148	3/4	6.3	250	299-03148	250	276-03148	250	298-03148	250	274-03148	—	
599-03149	1	10	159	299-03149	203	276-03149	159	298-03149	203	274-03149	250	291-03149
599-03150	1-1/4	16	92	299-03150	117	276-03150	92	298-03150	117	274-03150	250	291-03150
599-03151	1-1/2	25	57	299-03151	73	276-03151	57	298-03151	73	274-03151	208	291-03151
599-03152	2	40	35	299-03152	44	276-03152	35	298-03152	44	274-03152	126	291-03152

Table Notes:

Part numbers in green indicate complete assemblies. Black numbers indicate close-off psi. Values are for the NC upper port. For NO lower port values, refer to the Reference section.

Three-Way Globe Valve Assemblies

1/2 to 2", ANSI Class 250

Electronic, Non-Spring Return Actuators






Mixing 1/2 to 2" 			Non-Spring Return Actuator								
			Floating 3P		Floating 3P		0-10 Vdc 4-20 mA				
3-way Valve Body Part No.	Valve Size in.	Flow Rate Cv	 SAX81.03U		 SKD82.50U		 SAX61.03U				
			Mixing Assemblies								
			Close-off psi — Brass Trim								
			599-03198	1	250	373-03198	250	275-03198	250	371-03198	
			599-03199	1/2	1.6	250	373-03199	250	275-03199	250	371-03199
			599-03200	2.5	250	373-03200	250	275-03200	250	371-03200	
			599-03201	4	250	373-03201	250	275-03201	250	371-03201	
			599-03202	3/4	6.3	250	373-03202	250	275-03202	250	371-03202
			599-03203	1	10	159	373-03203	203	275-03203	159	371-03203
			599-03204	1-1/4	16	92	373-03204	117	275-03204	92	371-03204
599-03205	1-1/2	25	57	373-03205	73	275-03205	57	371-03205			
599-03206	2	40	35	373-03206	44	275-03206	35	371-03206			

Table Notes:

Part numbers in green indicate complete assemblies. Black numbers indicate close-off psi. Values are for the NC upper port. For NO lower port values, refer to the Reference section.



Flowrite Three-way Globe Valve & Non-Spring Return Actuator Assembly





Mixing 1/2 to 2"			Non-Spring Return Actuator					
			Floating 3P		Floating 3P		0-10 Vdc 4-20 mA	
3-way Valve Body Part No.	Valve Size in.	Flow Rate Cv						
			SAX81.03U		SKD82.50U		SAX61.03U	
Mixing Assemblies			Close-off psi — Stainless Steel Trim					
	1/2	1	250	373-03144	250	275-03144	250	371-03144
		1.6	250	373-03145	250	275-03145	250	371-03145
		2.5	250	373-03146	250	275-03146	250	371-03146
		4	250	373-03147	250	275-03147	250	371-03147
	3/4	6.3	250	373-03148	250	275-03148	250	371-03148
		10	159	373-03149	203	275-03149	159	371-03149
	1-1/4	16	92	373-03150	117	275-03150	92	371-03150
	1-1/2	25	57	373-03151	73	275-03151	57	371-03151
2	40	35	373-03152	44	275-03152	35	371-03152	

Table Notes:

Part numbers in green indicate complete assemblies. Black numbers indicate close-off psi. Values are for the NC upper port. For NO lower port values, refer to the Reference section.

Two-Way Flanged Iron Globe Valves

2-1/2 to 6", Equal Percentage or Linear Flow

Normally Open or Normally Closed

ANSI Class 125 or 250

Description

Designed to work with either pneumatic or electronic actuators, the Flowrite Two-way Valves are available in both ANSI Class 125 and 250 for normally closed or normally open action.

Features

- Valve flange face-to-face dimensions meet ISA 75.03 standards
- Direct-coupled, universal bonnet
- Bronze or stainless steel trim
- Standard- or high-temperature packing
- Close-off up to 250 psi
- Fully serviceable
- Greater than 100:1 rangeability
- Equal percentage or linear flow characteristics
- 2-1/2 and 3-inch sizes available with 3/4-inch stroke only
- 4-, 5-, 6-inch are available with a 1-1/2-inch stroke
- ANSI Leakage Class IV (0.01% of Cv)
- Cartridge-type packing for easy service
- Orderable as a valve only or as a complete valve/actuator assembly

Applications

The Flowrite Two-way valves are recommended for water, steam, and glycol solutions up to 50 percent. Additional specifications include the following:

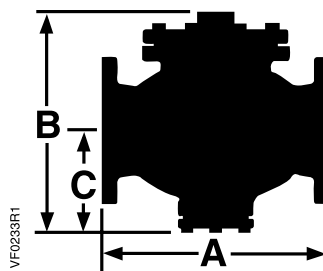
- Water inlet pressures up to ANSI 125 and ANSI 250 cast iron body rating
- Water modulating differential pressure up to 25 psi (172 kPa) for bronze trim and 50 psi (345 kPa) for stainless steel trim
- Steam inlet to 100 psig with modulating differential pressure up to 50 psi (345 kPa)

Specifications

Valve Size	2-1/2 to 6" (65 to 150 mm)
Body Style	Flanged
Seat Style	Single Seat
Action	Normally Closed (NC); Normally Open (NO)
Valve Body Rating	ANSI Class 125 or 250
Stem Travel (Stroke)	
2-1/2 and 3"	3/4" (20 mm)
4, 5 and 6"	1-1/2" (40 mm)
Materials	
Body	Cast Iron ASTM A126 Class B
Trim	Bronze or Stainless Steel
Stem	Stainless Steel ASTM A582 Type 303
Packing	
Normal Duty Packing	EPDM O-rings
Steam Packing	PTFE V-rings and EPDM O-ring
Operating	
Controlled Medium	Saturated Steam, Water, Glycol Solutions up to 50%
Medium Temperature Range	
Normal Duty Packing	20 to 250°F (-7 to 120°C)
Steam Packing	337°F (170°C) max.
Max. Inlet Pressure	
Water	Refer to Reference Section
Steam	100 psig (690 kPa)
Max. Recommended Differential Pressure for Modulating Service	
Bronze Trim	
Liquid	25 psi (173 kPa)
Steam	15 psi (103 kPa)
Stainless Steel Trim	
Liquid	50 psi (345 kPa)
Steam	50 psi (345 kPa)
Rangeability	>100:1
Close-off Ratings	According to ANSI/FCI 70-2
Close-off Pressure	Refer to the Reference Section
Leakage Rate	Class IV (0.01% of Cv)
Flow Characteristics	Equal Percentage or Linear
Dimensions	
Face-to-face	ANSI/ISA 75.03

Flowrite Two-Way
Flanged Iron Globe Valve.

Dimensions



Valve Size in.	ANSI Class 125				ANSI Class 250			
	Dimensions			Weight	Dimensions			Weight
	A	B	C		A	B	C	
Normally Open								
2-1/2" (65 mm)	10-7/8" (276 mm)	11" (281 mm)	4-7/8" (123 mm)	60 lb. (27 kg)	11-1/2" (292 mm)	11" (281 mm)	4-7/8" (123 mm)	76 lb. (34 kg)
3" (80 mm)	11-3/4" (299 mm)	12-1/4" (312 mm)	5-5/16" (135 mm)	76 lb. (34 kg)	12-1/2" (318 mm)	12-1/4" (312 mm)	5-5/16" (135 mm)	99 lb. (45 kg)
4" (100 mm)	13-7/8" (352 mm)	13-9/16" (345 mm)	6-5/16" (160 mm)	124 lb. (56 kg)	14-1/2" (368 mm)	13-5/8" (344.7 mm)	6-5/16" (160 mm)	160 lb. (73 kg)
5" (125 mm)	15-3/4" (400 mm)	15-3/16" (385 mm)	7" (177 mm)	155 lb. (70 kg)	16-5/8" (422 mm)	15-3/16" (385 mm)	7" (177 mm)	208 lb. (94 kg)
6" (150 mm)	17-3/4" (451 mm)	16-3/4" (426 mm)	7-7/8" (200 mm)	212 lb. (96 kg)	18-5/8" (473 mm)	16-3/4" (426 mm)	7-7/8" (200 mm)	302 lb. (137 kg)
Normally Closed								
2-1/2" (65 mm)	10-7/8" (276 mm)	10-5/8" (269 mm)	4-7/8" (125 mm)	58 lb. (26 kg)	11-1/2" (292 mm)	11" (279 mm)	5-3/8" (135 mm)	74 lb. (34 kg)
3" (80 mm)	11-3/4" (299 mm)	11-15/16" (303 mm)	5-5/8" (142 mm)	75 lb. (34 kg)	12-1/2" (318 mm)	12-7/16" (315 mm)	6" (154 mm)	98 lb. (44 kg)
4" (100 mm)	13-7/8" (352 mm)	13-15/16" (354 mm)	6-5/8" (168 mm)	123 lb. (56 kg)	14-1/2" (368 mm)	14-3/8" (364 mm)	7" (178 mm)	159 lb. (72 kg)
5" (125 mm)	15-3/4" (400 mm)	15-1/4" (338 mm)	7-1/2" (185 mm)	153 lb. (69 kg)	16-5/8" (422 mm)	15-3/4" (399 mm)	7-3/4" (196 mm)	207 lb. (94 kg)
6" (150 mm)	17-3/4" (451 mm)	17-1/16" (433 mm)	8-3/16" (207 mm)	209 lb. (95 kg)	18-5/8" (473 mm)	17-1/2" (444 mm)	8-5/8" (218 mm)	299 lb. (136 kg)

Three-Way Flanged Iron Globe Valves

2-1/2 to 6"

Mixing

ANSI Class 125 or 250

Description

Designed to work with either a pneumatic or electronic Flowrite actuator, the Flowrite Three-way Globe Valves are available in both ANSI Class 125 and 250.

Features

- Valve flange face-to-face dimensions meet ISA 75.03 standards
- Direct-coupled, universal bonnet
- Equal percentage (NC port) and linear (NO port) flow characteristics
- Bronze or stainless steel trim
- Greater than 100:1 rangeability
- 2-1/2 to 3-inch are available with a 3/4-inch stroke
- 4-, 5-, and 6-inch are available with a 1-1/2-inch stroke
- ANSI Leakage Class IV (0.01% of Cv)
- Cartridge-type packing for easy service

Option

- Service flange for easy removal of stem and plug through bottom port

Applications

The Flowrite Three-way Globe Valves are recommended for water and glycol solutions up to 50 percent. Additional specifications include the following:

- Water inlet pressures up to ANSI 125 and ANSI 250 cast-iron body rating
- Water modulating differential pressure up to 25 psi (172 kPa) for bronze trim and 50 psi (345 kPa) for stainless steel trim

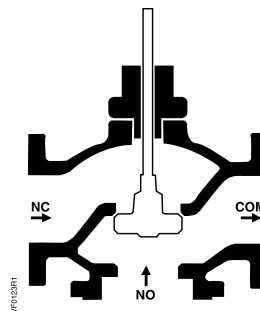
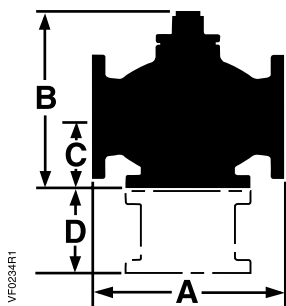
Specifications

Valve Size	2-1/2 to 6"
Body Style	Flanged
Action	Three-way Water Mix
Stem Travel	
2-1/2 and 3"	3/4" (20 mm)
4, 5 and 6"	1-1/2" (40 mm)
Valve Body Rating	ANSI Class 125 or 250
Materials	
Body	Cast Iron, ASTM A 126 Class B
Trim	Bronze or Stainless Steel
Stem	Stainless Steel, ASTM A582 Type 303
Packing	
Liquid Service to 250°F (120°C)	EPDM O-rings
Operating	
Controlled Medium	Water, Glycol Solutions up to 50%
Medium Temperature Range.....	20 to 250°F (-7 to 120°C)
Max. Recommended Differential Pressure for Modulating Service	
Bronze Trim	25 psig (173 kPa)
Stainless Steel Trim.....	50 psig (345 kPa)
Flow Characteristics	
Upper Port	Equal Percentage
Lower Port	Linear
Rangeability	>100:1



Flowrite Three-Way Flanged Iron Globe Valve.

Dimensions



Valve Size in.	Dimensions					Weight	
	A		B	C	D	ANSI Class 125	ANSI Class 250
	ANSI Class 125	ANSI Class 250			Service Flange		
2-1/2" (65 mm)	10-7/8" (276.4 mm)	11-1/2" (292 mm)	9-3/8" (239.2 mm)	3-3/4" (95 mm)	6.5" (165 mm)	50 lb. (23 kg)	63 lb. (29 kg)
3" (80 mm)	11-3/4" (298.5 mm)	12-1/2" (318 mm)	10-3/4" (272 mm)	4-3/8" (111 mm)	7" (178 mm)	65 lb. (30 kg)	82 lb. (37 kg)
4" (100 mm)	13-7/8" (352.4 mm)	14-1/2" (368 mm)	12-1/2" (317.8 mm)	5-1/8" (131.6 mm)	7.5" (191 mm)	110 lb. (50 kg)	134 lb. (61 kg)
5" (125 mm)	15-3/4" (400 mm)	16-5/8" (422 mm)	13-3/4" (349.2 mm)	5-3/4" (146.2 mm)	8.5" (216 mm)	136 lb. (62 kg)	176 lb. (80 kg)
6" (150 mm)	17-3/4" (451 mm)	18-5/8" (473 mm)	15-1/2" (393 mm)	6-5/8" (167 mm)	9.5" (241 mm)	141 lb. (64 kg)	258 lb. (117 kg)

Two- and Three-Way Flanged Iron Globe Valves

2-1/2 to 6", Equal Percentage or Linear Flow

Normally Open, Normally Closed, Mixing

ANSI Class 125 or 250

Equal Percentage, Two-Way Flanged Iron Globe Valve Body Product Ordering



Bronze or Stainless Steel Trim

Valve Size in.	Flow Rate Cv (Kvs)	Stroke (in.)	ANSI Class 125		ANSI Class 250		
			Normally Open Part No.	Normally Closed Part No.	Normally Open Part No.	Normally Closed Part No.	
Standard-Temperature Packing — 20 to 250°F (-7 to 120°C)							
Bronze							
2-1/2	(65)	63 (54)	3/4	599-05980	599-05990	599-05940	599-05950
3	(80)	100 (86)	3/4	599-05981	599-05991	599-05941	599-05951
4	(100)	160 (140)	1-1/2	599-05982	599-05992	599-05942	599-05952
5	(125)	250 (215)	1-1/2	599-05983	599-05993	599-05943	599-05953
6	(150)	400 (340)	1-1/2	599-05984	599-05994	599-05944	599-05954
Stainless Steel							
2-1/2	(65)	63 (54)	3/4	599-05960	599-05970	599-05920	599-05930
3	(80)	100 (86)	3/4	599-05961	599-05971	599-05921	599-05931
4	(100)	160 (140)	1-1/2	599-05962	599-05972	599-05922	599-05932
5	(125)	250 (215)	1-1/2	599-05963	599-05973	599-05923	599-05933
6	(150)	400 (340)	1-1/2	599-05964	599-05974	599-05924	599-05934

Linear, Two-Way Flanged Iron Globe Valve Body Product Ordering



Stainless Steel Trim

Valve Size in.	Flow Rate Cv (Kvs)	Stroke (in.)	ANSI Class 125		ANSI Class 250		
			Normally Open Part No.	Normally Closed Part No.	Normally Open Part No.	Normally Closed Part No.	
Standard-Temperature Packing — 20 to 250°F (-7 to 120°C)							
2-1/2	(65)	63 (54)	3/4	599-06060	599-06070	599-06140	599-06150
3	(80)	100 (86)	3/4	599-06061	599-06071	599-06141	599-06151
4	(100)	160 (140)	1-1/2	599-06062	599-06072	599-06142	599-06152
5	(125)	250 (215)	1-1/2	599-06063	599-06073	599-06143	599-06153
6	(150)	400 (340)	1-1/2	599-06064	599-06074	599-06144	599-06154
High-Temperature Packing — 337°F (-170°C)							
2-1/2	(65)	63 (54)	3/4	599-06040	599-06050	599-06120	599-06130
3	(80)	100 (86)	3/4	599-06041	599-06051	599-06121	599-06131
4	(100)	160 (140)	1-1/2	599-06042	599-06052	599-06122	599-06132
5	(125)	250 (215)	1-1/2	599-06043	599-06053	599-06123	599-06133
6	(150)	400 (340)	1-1/2	599-06044	599-06054	599-06124	599-06134

Flowrite Two-Way
Flanged Iron Globe Valve.Flowrite Three-Way
Flanged Iron Globe Valve.

Three-Way Mixing Flanged Iron Globe Valve Body Product Ordering

Bronze Trim



Valve Size in. (mm)	Flow Rate Cv (Kvs)	Stroke (in.)	Valve Body		Service Flange		
			ANSI Class 125	ANSI Class 250	ANSI Class 125	ANSI Class 250	
Standard-Temperature Packing — 20 to 250°F (-7 to 120°C)							
2-1/2 (65)	63 (54)	3/4	599-06160	599-06170	599-05011	599-05016	
3 (80)	100 (86)	3/4	599-06161	599-06171	599-05012	599-05017	
4 (100)	160 (140)	1-1/2	599-06162	599-06172	599-05013	599-05018	
5 (125)	250 (215)	1-1/2	599-06163	599-06173	599-05014	599-05019	
6 (150)	400 (340)	1-1/2	599-06164	599-06174	599-05015	599-05020	

Ordering Note:

Service Flange is sold separately.

Three-Way Mixing Flanged Iron Globe Valve Body Product Ordering

Stainless Steel Trim



Valve Size in. (mm)	Flow Rate Cv (Kvs)	Stroke (in.)	Valve Body		Service Flange		
			ANSI Class 125	ANSI Class 250	ANSI Class 125	ANSI Class 250	
Standard-Temperature Packing — 20 to 250°F (-7 to 120°C)							
2-1/2 (65)	63 (54)	3/4	599-06165	599-06175	599-05011	599-05016	
3 (80)	100 (86)	3/4	599-06166	599-06176	599-05012	599-05017	
4 (100)	160 (140)	1-1/2	599-06167	599-06177	599-05013	599-05018	
5 (125)	250 (215)	1-1/2	599-06168	599-06178	599-05014	599-05019	
6 (150)	400 (340)	1-1/2	599-06169	599-06179	599-05015	599-05020	

Ordering Note:




Service Flange is sold separately.

Order separately or as a complete assembly.
See pages 75 & 76 for assembly ordering part numbers.

Flowrite Valve Actuator Product Ordering

Pneumatic and Electronic
Spring Return and Non-Spring Return

Flowrite Valve Actuator Product Ordering

		Part No.	Actuator Prefix Code
 8" & 12" Pneumatic	8" 20 mm Stroke	599-01050	277
	8" 20 mm Stroke/Hi-Temp.	599-01051	278
	12" 20 mm Stroke	599-01010	279
	12" 40 mm Stroke	599-01000	281
 8" & 12" Pneumatic w/Positioner	8" 20 mm Stroke	599-01050 + 599-00426	283
	8" 20 mm Stroke/Hi-Temp.	599-01051 + 599-00426	284
	12" 20 mm Stroke	599-01010 + 599-00423	285
	12" 40 mm Stroke	599-01000 + 599-00423	287
 Electro-Hydraulic	24 V, Floating 3P, Spring Return	SKD82.51U	276
	24 V, Floating 3P, Non-Spring Return	SKD82.50U	275
	24 V, 0-10 V, 4-20 mA, Spring Return	SKD62U	274
	24 V, Floating 3P, Spring Return	SKB82.51U	289
	24 V, Floating 3P, Non-Spring Return	SKB82.50U	290
	24 V, 0-10 V, 4-20 mA, Spring Return	SKB62U	291
	24 V, Floating 3P, Spring Return	SKC82.61U	292
	24 V, Floating 3P, Non-Spring Return	SKC82.60U	293
	24 V, 0-10 V, 4-20 mA, Spring Return	SKC62U	294

Order separately or as a complete assembly.
See pages 69 thru 76 for assembly ordering part numbers.

Two-Way Flanged Iron Globe Valve Assemblies

2-1/2 to 6", ANSI Class 125

Pneumatic, Spring Return Actuators

Flowrite Two-way Flanged Iron Globe Valve & Pneumatic Actuator Assembly













NO/NC Equal Percentage Flanged 2-1/2 to 6"			Spring Return Actuator					
			8" 20 mm Stroke	12" 20 mm Stroke	12" 40 mm Stroke	8" w/Positioner 20 mm Stroke	12" w/Positioner 20 mm Stroke	12" w/Positioner 40 mm Stroke
2-way Valve Body Part No.	Valve Size in.	Flow Rate Cv						
			599-01050	599-01010	599-01000	599-01050 + 599-00426	599-01010 + 599-00423	599-01000 + 599-00423
Normally Open Assemblies			Close-off psi — Brass Trim					
			31 277-05980	95 279-05980	—	31 283-05980	95 285-05980	—
	2-1/2	63	20 277-05981	63 279-05981	—	20 283-05981	63 285-05981	—
	3	100	—	—	40 281-05982	—	—	40 287-05982
	4	160	—	—	26 281-05983	—	—	26 287-05983
	5	250	—	—	18 281-05984	—	—	18 287-05984
	6	400	—	—	—	—	—	—
Normally Closed Assemblies			Close-off psi — Stainless Steel Trim					
			31 277-05960	95 279-05960	—	31 283-05960	95 285-05960	—
	2-1/2	63	20 277-05961	63 279-05961	—	20 283-05961	63 285-05961	—
	3	100	—	—	40 281-05962	—	—	40 287-05962
	4	160	—	—	26 281-05963	—	—	26 287-05963
	5	250	—	—	18 281-05964	—	—	18 287-05964
	6	400	—	—	—	—	—	—
Normally Closed Assemblies			Close-off psi — Bronze Trim					
			36 277-05990	114 279-05990	—	36 283-05990	114 285-05990	—
	2-1/2	63	23 277-05991	74 279-05991	—	23 283-05991	74 285-05991	—
	3	100	—	—	46 281-05992	—	—	46 287-05992
	4	160	—	—	29 281-05993	—	—	29 287-05993
	5	250	—	—	20 281-05994	—	—	20 287-05994
	6	400	—	—	—	—	—	—
Normally Closed Assemblies			Close-off psi — Stainless Steel Trim					
			36 277-05970	114 279-05970	—	36 283-05970	114 285-05970	—
	2-1/2	63	23 277-05971	74 279-05971	—	23 283-05971	74 285-05971	—
	3	100	—	—	46 281-05972	—	—	46 287-05972
	4	160	—	—	29 281-05973	—	—	29 287-05973
	5	250	—	—	20 281-05974	—	—	20 287-05974
	6	400	—	—	—	—	—	—

Table Notes:

Part numbers in green indicate complete assemblies. Black numbers indicate close-off psi.

Close-off values are for 15 psi signal for Normally Open and 0 psi signal for Normally Closed.

Close-off values for Normally Open valves with positioner may be substantially higher based on line supply pressure.

Two-Way Flanged Iron Globe Valve Assemblies

2-1/2 to 6", ANSI Class 125

Electronic, Spring Return Actuators



Flowrite Two-way Flanged Iron Globe Valve & Spring Return Actuator Assembly









NO/NC Equal Percentage Flanged 2-1/2 to 6"			Spring Return Actuator						
			Floating 3P	Floating 3P	Floating 3P	0-10 Vdc 4-20 mA	0-10 Vdc 4-20 mA	0-10 Vdc 4-20 mA	
2-way Valve Body Part No.	Valve Size in.	Flow Rate Cv							
			SKD82.51U	SKB82.51U	SKC82.61U	SKD62U	SKB62U	SKC62U	
Normally Open Assemblies			Close-off psi — Brass Trim						
	599-05980	2-1/2	63	38 276-05980	153 289-05980	—	38 274-05980	153 291-05980	—
	599-05981	3	100	25 276-05981	101 289-05981	—	25 274-05981	101 291-05981	—
	599-05982	4	160	—	—	65 292-05982	—	—	65 294-05982
	599-05983	5	250	—	—	42 292-05983	—	—	42 294-05983
	599-05984	6	400	—	—	29 292-05984	—	—	29 294-05984
	Close-off psi — Stainless Steel Trim								
599-05960	2-1/2	63	38 276-05960	153 289-05960	—	38 274-05960	153 291-05960	—	
599-05961	3	100	25 276-05961	101 289-05961	—	25 274-05961	101 291-05961	—	
599-05962	4	160	—	—	65 292-05962	—	—	65 294-05962	
599-05963	5	250	—	—	42 292-05963	—	—	42 294-05963	
599-05964	6	400	—	—	29 292-05964	—	—	29 294-05964	
Normally Closed Assemblies			Close-off psi — Bronze Trim						
	599-05990	2-1/2	63	34 276-05990	97 289-05990	—	34 274-05990	97 291-05990	—
	599-05991	3	100	22 276-05991	63 289-05991	—	22 274-05991	63 291-05991	—
	599-05992	4	160	—	—	39 292-05992	—	—	39 294-05992
	599-05993	5	250	—	—	25 292-05993	—	—	25 294-05993
	599-05994	6	400	—	—	17 292-05994	—	—	17 294-05994
	Close-off psi — Stainless Steel Trim								
599-05970	2-1/2	63	34 276-05970	97 289-05970	—	34 274-05970	97 291-05970	—	
599-05971	3	100	22 276-05971	63 289-05971	—	22 274-05971	63 291-05971	—	
599-05972	4	160	—	—	39 292-05972	—	—	39 294-05972	
599-05973	5	250	—	—	25 292-05973	—	—	25 294-05973	
599-05974	6	400	—	—	17 292-05974	—	—	17 294-05974	

Table Notes:

Part numbers in green indicate complete assemblies. Black numbers indicate close-off psi.

Two-Way Flanged Iron Globe Valve Assemblies

2-1/2 to 6", ANSI Class 125

Electronic, Non-Spring Return Actuators



Flowrite Two-way Flanged Iron Globe Valve & Non-Spring Return Actuator Assembly

NO/NC Equal Percentage <i>Flanged 2-1/2 to 6"</i>			Non-Spring Return Actuator						
			Floating 3P		Floating 3P		Floating 3P		
2-way Valve Body Part No.	Valve Size in.	Flow Rate Cv	 SKD82.50U		 SKB82.50U		 SKC82.60U		
			Normally Open Assemblies						
			Close-off psi — Brass Trim						
	599-05980	2-1/2	63	38	275-05980	153	290-05980	—	
	599-05981	3	100	25	275-05981	101	290-05981	—	
	599-05982	4	160	—		—		65	293-05982
	599-05983	5	250	—		—		42	293-05983
	599-05984	6	400	—		—		29	293-05984
				Close-off psi — Stainless Steel Trim					
599-05960	2-1/2	63	38	275-05960	153	290-05960	—		
599-05961	3	100	25	275-05961	101	290-05961	—		
599-05962	4	160	—		—		65	293-05962	
599-05963	5	250	—		—		42	293-05963	
599-05964	6	400	—		—		29	293-05964	
Normally Closed Assemblies									
			Close-off psi — Bronze Trim						
	599-05990	2-1/2	63	34	275-05990	97	290-05990	—	
	599-05991	3	100	22	275-05991	63	290-05991	—	
	599-05992	4	160	—		—		39	293-05992
	599-05993	5	250	—		—		25	293-05993
	599-05994	6	400	—		—		17	293-05994
				Close-off psi — Stainless Steel Trim					
599-05970	2-1/2	63	34	275-05970	97	290-05970	—		
599-05971	3	100	22	275-05971	63	290-05971	—		
599-05972	4	160	—		—		39	293-05972	
599-05973	5	250	—		—		25	293-05973	
599-05974	6	400	—		—		17	293-05974	

Table Notes:

Part numbers in green indicate complete assemblies. Black numbers indicate close-off psi.

Two-Way Flanged Iron Globe Valve Assemblies

2-1/2 to 6", ANSI Class 125

Pneumatic, Spring Return Actuators



Flowrite Two-way Flanged Iron Globe Valve & Pneumatic Actuator Assembly











NO/NC Linear Flanged 2-1/2 to 6"			Spring Return Actuator							
			8" 20 mm Stroke	8" High-Temp. 20 mm Stroke	12" 20 mm Stroke	12" 40 mm Stroke	8" w/Positioner 20 mm Stroke	8" High-Temp. w/Positioner 20 mm Stroke	12" w/Positioner 20 mm Stroke	12" w/Positioner 40 mm Stroke
2-way Valve Body Part No.	Valve Size in.	Flow Rate Cv								
			599-01050	599-01051	599-01010	599-01000	599-01050 + 599-00426	599-01051 + 599-00426	599-01010 + 599-00423	599-01000 + 599-00423
Normally Open Assemblies										
			Close-off psi — Stainless Steel Trim/Standard-Temperature Packing							
	599-06060	2-1/2 63	31 277-06060	—	95 279-06060	—	31 283-06060	—	95 285-06060	—
	599-06061	3 100	20 277-06061	—	63 279-06061	—	20 283-06061	—	63 285-06061	—
	599-06062	4 160	—	—	—	40 281-06062	—	—	—	40 287-06062
	599-06063	5 250	—	—	—	26 281-06063	—	—	—	26 287-06063
	599-06064	6 400	—	—	—	18 281-06064	—	—	—	18 287-06064
			Close-off psi — Stainless Steel Trim/High-Temperature Packing							
	599-06040	2-1/2 63	31 277-06040	31 278-06040	95 279-06040	—	31 283-06040	31 284-06040	95 285-06040	—
	599-06041	3 100	20 277-06041	20 278-06041	63 279-06041	—	20 283-06041	20 284-06041	63 285-06041	—
	599-06042	4 160	—	—	—	40 281-06042	—	—	—	40 287-06042
	599-06043	5 250	—	—	—	26 281-06043	—	—	—	26 287-06043
	599-06044	6 400	—	—	—	18 281-06044	—	—	—	18 287-06044
Normally Closed Assemblies										
			Close-off psi — Stainless Steel Trim/Standard-Temperature Packing							
	599-06070	2-1/2 63	36 277-06070	—	114 279-06070	—	36 283-06070	—	114 285-06070	—
	599-06071	3 100	23 277-06071	—	74 279-06071	—	23 283-06071	—	74 285-06071	—
	599-06072	4 160	—	—	—	46 281-06072	—	—	—	46 287-06072
	599-06073	5 250	—	—	—	29 281-06073	—	—	—	29 287-06073
	599-06074	6 400	—	—	—	20 281-06074	—	—	—	20 287-06074
			Close-off psi — Stainless Steel Trim/High-Temperature Packing							
	599-06050	2-1/2 63	36 277-06050	36 278-06050	114 279-06050	—	36 283-06050	36 284-06050	114 285-06050	—
	599-06051	3 100	23 277-06051	23 278-06051	74 279-06051	—	23 283-06051	23 284-06051	74 285-06051	—
	599-06052	4 160	—	—	—	46 281-06052	—	—	—	46 287-06052
	599-06053	5 250	—	—	—	29 281-06053	—	—	—	29 287-06053
	599-06054	6 400	—	—	—	20 281-06054	—	—	—	20 287-06054

Table Notes:

Part numbers in green indicate complete assemblies. Black numbers indicate close-off psi.

Close-off values are for 15 psi signal for Normally Open and 0 psi signal for Normally Closed.

Close-off values for Normally Open valves with positioner may be substantially higher based on line supply pressure.

Two-Way Flanged Iron Globe Valve Assemblies

2-1/2 to 6", ANSI Class 125

Electronic, Spring Return Actuators



Flowrite Two-way Flanged Iron Globe Valve & Spring Return Actuator Assembly









NO/NC Linear Flanged 2-1/2 to 6"			Spring Return Actuator						
			Floating 3P	Floating 3P	Floating 3P	0-10 Vdc 4-20 mA	0-10 Vdc 4-20 mA	0-10 Vdc 4-20 mA	
2-way Valve Body Part No.	Valve Size in.	Flow Rate Cv							
			SKD82.51U	SKB82.51U	SKC82.61U	SKD62U	SKB62U	SKC62U	
Normally Open Assemblies			Close-off psi — Stainless Steel Trim/Standard-Temperature Packing						
	599-06060	2-1/2	63	38 276-06060	153 289-06060	—	38 274-06060	153 291-06060	—
	599-06061	3	100	25 276-06061	101 289-06061	—	25 274-06061	101 291-06061	—
	599-06062	4	160	—	—	65 292-06062	—	—	65 294-06062
	599-06063	5	250	—	—	42 292-06063	—	—	42 294-06063
	599-06064	6	400	—	—	29 292-06064	—	—	29 294-06064
	Close-off psi — Stainless Steel Trim/High-Temperature Packing								
599-06040	2-1/2	63	38 276-06040	153 289-06040	—	38 274-06040	153 291-06040	—	
599-06041	3	100	25 276-06041	101 289-06041	—	25 274-06041	101 291-06041	—	
599-06042	4	160	—	—	65 292-06042	—	—	65 294-06042	
599-06043	5	250	—	—	42 292-06043	—	—	42 294-06043	
599-06044	6	400	—	—	29 292-06044	—	—	29 294-06044	
Normally Closed Assemblies			Close-off psi — Stainless Steel Trim/Standard-Temperature Packing						
	599-06070	2-1/2	63	34 276-06070	97 289-06070	—	34 274-06070	97 291-06070	—
	599-06071	3	100	22 276-06071	63 289-06071	—	22 274-06071	63 291-06071	—
	599-06072	4	160	—	—	39 292-06072	—	—	39 294-06072
	599-06073	5	250	—	—	25 292-06073	—	—	25 294-06073
	599-06074	6	400	—	—	17 292-06074	—	—	17 294-06074
	Close-off psi — Stainless Steel Trim/High-Temperature Packing								
599-06050	2-1/2	63	34 276-06050	97 289-06050	—	34 274-06050	97 291-06050	—	
599-06051	3	100	22 276-06051	63 289-06051	—	22 274-06051	63 291-06051	—	
599-06052	4	160	—	—	39 292-06052	—	—	39 294-06052	
599-06053	5	250	—	—	25 292-06053	—	—	25 294-06053	
599-06054	6	400	—	—	17 292-06054	—	—	17 294-06054	

Table Notes:

Part numbers in green indicate complete assemblies. Black numbers indicate close-off psi.

Two-Way Flanged Iron Globe Valve Assemblies

2-1/2 to 6", ANSI Class 125

Electronic, Non-Spring Return Actuators



Flowrite Two-way Flanged Iron Globe Valve & Non-Spring Return Actuator Assembly






NO/NC Linear Flanged 2-1/2 to 6"			Non-Spring Return Actuator				
			Floating 3P		Floating 3P		Floating 3P
2-way Valve Body Part No.	Valve Size in.	Flow Rate Cv	 SKD82.50U	 SKB82.50U	 SKC82.60U		
Normally Open Assemblies			Close-off psi — Stainless Steel Trim/Standard-Temperature Packing				
 599-06060	2-1/2	63	38	275-06060	153	290-06060	—
599-06061	3	100	25	275-06061	101	290-06061	—
599-06062	4	160	—	—	—	65	293-06062
599-06063	5	250	—	—	—	42	293-06063
599-06064	6	400	—	—	—	29	293-06064
			Close-off psi — Stainless Steel Trim/High-Temperature Packing				
599-06040	2-1/2	63	38	275-06040	153	290-06040	—
599-06041	3	100	25	275-06041	101	290-06041	—
599-06042	4	160	—	—	—	65	293-06042
599-06043	5	250	—	—	—	42	293-06043
599-06044	6	400	—	—	—	29	293-06044
Normally Closed Assemblies			Close-off psi — Stainless Steel Trim/Standard-Temperature Packing				
 599-06070	2-1/2	63	34	275-06070	97	290-06070	—
599-06071	3	100	22	275-06071	63	290-06071	—
599-06072	4	160	—	—	—	39	293-06072
599-06073	5	250	—	—	—	25	293-06073
599-06074	6	400	—	—	—	17	293-06074
			Close-off psi — Stainless Steel Trim/High-Temperature Packing				
599-06050	2-1/2	63	34	275-06050	97	290-06050	—
599-06051	3	100	22	275-06051	63	290-06051	—
599-06052	4	160	—	—	—	39	293-06052
599-06053	5	250	—	—	—	25	293-06053
599-06054	6	400	—	—	—	17	293-06054

Table Notes:

Part numbers in green indicate complete assemblies. Black numbers indicate close-off psi.

Three-Way Flanged Iron Globe Valve Assemblies

2-1/2 to 6", ANSI Class 125

Pneumatic, Spring Return Actuators



Flowrite Three-way Flanged Iron Globe Valve & Pneumatic Actuator Assembly

Mixing Flanged 2-1/2 to 6"			Spring Return Actuator						
			8" 20 mm Stroke	12" 20 mm Stroke	12" 40 mm Stroke	8" w/Positioner 20 mm Stroke	12" w/Positioner 20 mm Stroke	12" w/Positioner 40 mm Stroke	
3-way Valve Body Part No.	Valve Size in.	Flow Rate Cv							
			599-01050	599-01010	599-01000	599-01050 + 599-00426	599-01010 + 599-00423	599-01000 + 599-00423	
Mixing Assemblies			Close-off psi — Brass Trim						
	599-06160	2-1/2	63	36 277-06160	114 279-06160	—	36 283-06160	114 285-06160	—
	599-06161	3	100	23 277-06161	74 279-06161	—	23 283-06161	74 285-06161	—
	599-06162	4	160	—	—	46 281-06162	—	—	46 287-06162
	599-06163	5	250	—	—	29 281-06163	—	—	29 287-06163
	599-06164	6	400	—	—	20 281-06164	—	—	20 287-06164
				Close-off psi — Stainless Steel Trim					
599-06165	2-1/2	63	36 277-06165	114 279-06165	—	36 283-06165	114 285-06165	—	
599-06166	3	100	23 277-06166	74 279-06166	—	23 283-06166	74 285-06166	—	
599-06167	4	160	—	—	46 281-06167	—	—	46 287-06167	
599-06168	5	250	—	—	29 281-06168	—	—	29 287-06168	
599-06169	6	400	—	—	20 281-06169	—	—	20 287-06169	

Table Notes:

Part numbers in green indicate complete assemblies. Black numbers indicate close-off psi.
 Close-off values are for 15 psi signal for Normally Open and 0 psi signal for Normally Closed.
 Close-off values for Normally Open valves with positioner may be substantially higher based on line supply pressure.

Three-Way Flanged Iron Globe Valve Assemblies

2-1/2 to 6", ANSI Class 125

Electronic, Spring Return/Non-Spring Return Actuators









Mixing Flanged 2-1/2 to 6" 			Spring Return Actuator											
			Floating 3P	Floating 3P	Floating 3P	0-10 Vdc 4-20 mA	0-10 Vdc 4-20 mA	0-10 Vdc 4-20 mA						
3-way Valve Body Part No.	Valve Size in.	Flow Rate Cv												
			SKD82.51U	SKB82.51U	SKC82.61U	SKD62U	SKB62U	SKC62U						
Mixing Assemblies														
			Close-off psi — Bronze Trim											
	599-06160	2-1/2	63	34	276-06160	97	289-06160	—	34	274-06160	97	291-06160	—	
	599-06161	3	100	22	276-06161	63	289-06161	—	22	274-06161	63	291-06161	—	
	599-06162	4	160	—	—	—	39	292-06162	—	—	—	—	39	294-06162
	599-06163	5	250	—	—	—	25	292-06163	—	—	—	—	25	294-06163
	599-06164	6	400	—	—	—	17	292-06164	—	—	—	—	17	294-06164
			Close-off psi — Stainless Steel Trim											
	599-06165	2-1/2	63	34	276-06165	97	289-06165	—	34	274-06165	97	291-06165	—	
	599-06166	3	100	22	276-06166	63	289-06166	—	22	274-06166	63	291-06166	—	
	599-06167	4	160	—	—	—	39	292-06167	—	—	—	—	39	294-06167
599-06168	5	250	—	—	—	25	292-06168	—	—	—	—	25	294-06168	
599-06169	6	400	—	—	—	17	292-06169	—	—	—	—	17	294-06169	

Table Notes: Part numbers in green indicate complete assemblies. Black numbers indicate close-off psi.



Flowrite Three-way Flanged Iron Globe Valve & Electro-Hydraulic Actuator Assembly

Mixing Flanged 2-1/2 to 6"			Non-Spring Return Actuator					
			Floating 3P		Floating 3P		Floating 3P	
3-way Valve Body Part No.	Valve Size in.	Flow Rate Cv						
			SKD82.50U		SKB82.50U		SKC82.60U	
Mixing Assemblies								
	Close-off psi — Bronze Trim							
	599-06160	2-1/2	63	34	275-06160	97	290-06160	—
	599-06161	3	100	22	275-06161	63	290-06161	—
	599-06162	4	160	—	—	—	39	293-06162
	599-06163	5	250	—	—	—	25	293-06163
	599-06164	6	400	—	—	—	17	293-06164
	Close-off psi — Stainless Steel Trim							
	599-06165	2-1/2	63	34	275-06165	97	290-06165	—
	599-06166	3	100	22	275-06166	63	290-06166	—
	599-06167	4	160	—	—	—	39	293-06167
599-06168	5	250	—	—	—	25	293-06168	
599-06169	6	400	—	—	—	17	293-06169	

Table Notes:

Part numbers in green indicate complete assemblies. Black numbers indicate close-off psi. Values are for the NC upper port. For NO lower port values, refer to the Reference section.

ANSI 250 — 2-1/2 to 6"
 Flowrite Two- & Three-way
 Flanged Iron Globe Valve & Actuator Assemblies
 See pages 100 thru 107.

High Pressure Close-off Two-Way Flanged Iron Globe Valves

2-1/2 to 6", Equal Percentage Flow

Normally Open, Normally Closed

ANSI Class 125 or 250

Description

The Flowrite 599 Series high pressure close-off, two-way flanged iron body globe valves, are designed to work with either pneumatic or electronic actuators with 3/4-inch (20 mm) or 1-1/2-inch (40 mm) stroke. They are available in both ANSI Class 125 and 250 for normally open or normally closed action.

Features

- Universal bonnet, for direct-coupled actuators
- Equal percentage flow characteristic
- Stainless steel trim and stems
- Metal-to-metal seats
- 200 psi close-off for all line sizes
- ANSI Class IV leakage ($\leq 0.01\%$ of Cv)
- Greater than 100:1 rangeability
- EPDM O-ring packing
- Cartridge-type packing for easy service
- Orderable as a valve only or as a complete valve/actuator assembly

Applications

Typical applications include control of hot or chilled water; or water-glycol solutions up to 50%.

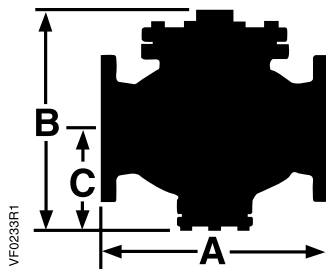
Specifications

Valve Size	2-1/2 to 6" (65 to 150 mm)
Body Style	Cast Iron ASTM A126 Class B
Seat Style	Metal-to-metal
Action	Normally Open (NO) or Normally Closed (NC)
Valve Body Rating	ANSI Class 125 or 250
Stem Travel	
2-1/2 and 3"	3/4" (20 mm) Stroke
4, 5 and 6"	1-1/2" (40 mm) Stroke
Materials	
Body	Cast Iron ASTM A126 Class B
Trim	Stainless Steel
Stem	Stainless Steel ASTM A582 Type 303
Packing	
Normal Duty Packing	EPDM O-ring
Operating	
Controlled Medium	Water, Glycol Solutions to 50%
Medium Temperature Range	20°F to 250°F (-7 to 120°C)
Max. Inlet Pressure	
Water	Refer to Reference Section
Max. Recommended Differential Pressure for Modulating Service	
Stainless Steel Trim	
Liquid	50 psig (345 kPa)
Rangeability	>100:1
Close-off Ratings	According to ANSI/FCI 70-2
Close-off Pressure	200 psig
Leakage Rate	Class IV ($\leq 0.01\%$ of Cv)
Dimensions	
Face-to-face	ANSI/ISA 575.03



Flowrite Two-Way Flanged Iron
High Pressure Close-off.

Dimensions



Valve Size	ANSI Class 125				ANSI Class 250			
	Dimensions			Weight	Dimensions			Weight
	A	B	C		A	B	C	
Normally Open								
2-1/2" (65 mm)	10-7/8" (276 mm)	11" (281 mm)	4-7/8" (123 mm)	62 lb. (28 kg)	11-1/2" (292 mm)	11" (281 mm)	4-7/8" (123 mm)	78 lb. (36 kg)
3" (80 mm)	11-3/4" (299 mm)	12-1/4" (312 mm)	5-5/16" (135 mm)	79 lb. (36 kg)	12-1/2" (318 mm)	12-1/4" (312 mm)	5-5/16" (135 mm)	102 lb. (46 kg)
4" (100 mm)	13-7/8" (352 mm)	13-9/16" (345 mm)	6-5/16" (160 mm)	129 lb. (58 kg)	14-1/2" (368 mm)	13-5/8" (344.7 mm)	6-5/16" (160 mm)	165 lb. (75 kg)
5" (125 mm)	15-3/4" (400 mm)	15-3/16" (385 mm)	7" (177 mm)	172 lb. (73 kg)	16-5/8" (422 mm)	15-3/16" (385 mm)	7" (177 mm)	215 lb. (97 kg)
6" (150 mm)	17-3/4" (451 mm)	16-3/4" (426 mm)	7-7/8" (200 mm)	222 lb. (111 kg)	18-5/8" (473 mm)	16-3/4" (426 mm)	7-7/8" (200 mm)	312 lb. (142 kg)
Normally Closed								
2-1/2" (65 mm)	10-7/8" (276 mm)	10-5/8" (269 mm)	4-7/8" (125 mm)	60 lb. (27 kg)	11-1/2" (292 mm)	11" (279 mm)	5-3/8" (135 mm)	76 lb. (35 kg)
3" (80 mm)	11-3/4" (299 mm)	11-15/16" (303 mm)	5-5/8" (142 mm)	78 lb. (36 kg)	12-1/2" (318 mm)	12-7/16" (315 mm)	6" (154 mm)	101 lb. (46 kg)
4" (100 mm)	13-7/8" (352 mm)	13-15/16" (354 mm)	6-5/8" (168 mm)	128 lb. (58 kg)	14-1/2" (368 mm)	14-3/8" (364 mm)	7" (178 mm)	164 lb. (74 kg)
5" (125 mm)	15-3/4" (400 mm)	15-1/4" (338 mm)	7-1/2" (185 mm)	160 lb. (72 kg)	16-5/8" (422 mm)	15-3/4" (399 mm)	7-3/4" (196 mm)	214 lb. (97 kg)
6" (150 mm)	17-3/4" (451 mm)	17-1/16" (433 mm)	8-3/16" (207 mm)	219 lb. (100 kg)	18-5/8" (473 mm)	17-1/2" (444 mm)	8-5/8" (218 mm)	309 lb. (141 kg)

High Pressure Close-off Two-Way Flanged Iron Globe Valves

2-1/2 to 6", Equal Percentage Flow

ANSI Class 125 or 250

Equal Percentage, High Pressure Close-off, Two-way Flanged Iron Globe Valve Body Product Ordering



Normally Open/Nornally Closed

Valve Size in. (mm)	Flow Rate Cv (Kvs)	Stroke (in.)	ANSI Class 125		ANSI Class 250		
			Normally Open Part No.	Normally Closed Part No.	Normally Open Part No.	Normally Closed Part No.	
Standard-Temperature Packing — 20 to 250°F (-7 to 120°C)							
2-1/2 (65)	63 (54)	3/4	599-06610	599-06615	599-06620	599-06625	
3 (80)	100 (86)	3/4	599-06611	599-06616	599-06621	599-06626	
4 (100)	160 (140)	1-1/2	599-06612	599-06617	599-06622	599-06627	
5 (125)	250 (215)	1-1/2	599-06613	599-06618	599-06623	599-06628	
6 (150)	400 (340)	1-1/2	599-06614	599-06619	599-06624	599-06629	



Flowrite Two-Way Flanged Iron High Pressure Close-off.



Flowrite Electro-Hydraulic Actuator.



Flowrite Valve Actuator Product Ordering

		Description	Part No.	Actuator Prefix Code
	Pneumatic w/Positioner	8" Actuator, 20 mm Stroke	599-01050 + 599-00426	283
		12" Actuator, 40 mm Stroke	599-01000 + 599-00423	287
	Electro-Hydraulic	24 V, 0-10 V, 4-20 mA, 3/4" Stroke, Spring Return	SKB62U	291
		24 V, 0-10 V, 4-20 mA, 1-1/2" Stroke, Spring Return	SKC62U	294

Order separately or as a complete assembly.
See pages 98 & 99 for assembly ordering part numbers.

4" Pneumatic Valve Actuator

For Liquid and Steam

Description

Designed for use with the Flowrite valves, the Flowrite 4-inch Pneumatic Valve Actuator has a 3/4-inch (20 mm) stroke and is available in three spring ranges.

Features

- Three spring ranges
 - 3 to 8 psi
 - 5 to 10 psi
 - 10 to 15 psi
- Visual position indication
- 3/4-inch (20 mm) stroke
- Large diaphragm area for control accuracy
- Easy installation and removal
- Rugged, all-metal housing

Applications

The Flowrite 4-inch Pneumatic Valve Actuator is designed to be used with the Flowrite valves in liquid and steam service applications.

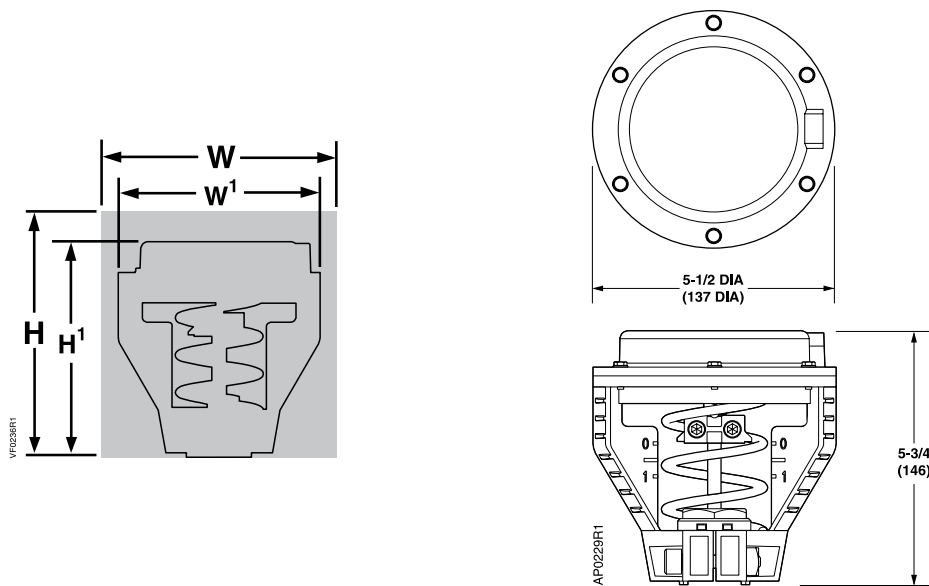
Specifications

Effective Diaphragm Area	11 in. ² (71 cm ²)
Diaphragm Material	Silicone
Nominal Stroke	3/4" (20 mm)
Max. Diaphragm Pressure	35 psig (241 kPa)
Air Connection	1/8" NPT
Ambient Operating and Storage Temperature	0 to 225°F (-18 to 107°C)
Mounting Location	NEMA 1 (Interior Only)



Flowrite 4-inch Pneumatic Valve Actuator.

Dimensions



Dimensions shown in inches (mm).

Actuator	Height of Actuator H'	Service Height H	Width/Diameter of Actuator W'	Service Width W
4" (100 mm)	5-3/4" (146 mm)	14" (350 mm)	5-1/2" (134 mm) Dia.	18" (450 mm)

Table Note:
Service height and width are the recommended dimensions to allow access to the product.

4" Pneumatic Actuator Product Ordering

Nominal Spring Range	Part No.	Actuator Prefix Code
3 to 8 psi (21 to 55 kPa)	599-01081	268
5 to 10 psi (34 to 69 kPa)	599-01082	269
10 to 15 psi (69 to 103 kPa)	599-01083	270

Order separately or as a complete assembly.
See pages 52 thru 58 for assembly ordering part numbers.

8" Pneumatic Valve Actuator

For Liquid and Steam

Description

Designed for use with Flowrite valves, the Flowrite 8-inch Pneumatic Valve Actuator has a 3/4-inch (20 mm) stroke and is available with two diaphragm options for normal duty and high-temperature service.

Features

- Completely enclosed actuator housing protects the diaphragm, spring, and start point adjuster
- A positioning relay is available factory-mounted on valve and actuator assemblies or as an accessory
- Field-adjustable start point for sequencing
- Easy-to-install
- Legendary Flowrite performance

Option

- High-temperature model

Applications

The Flowrite 8-inch Pneumatic Valve Actuator is designed to be used with the Flowrite valves in liquid and steam service applications.

Specifications

Effective Diaphragm Area 28 in.² (180 cm²)

Diaphragm Material

Standard Buna-N
High Temp Silicone

Temperature Range

Normal Duty Service 25 to 300°F (-4 to 149°C)
High-Temperature Service 25 to 366°F (-4 to 186°C)

Nominal Spring Range

Fixed Span Standard 5 psig (34 kPa)
Fixed Span High Temp 10 psig (69 kPa)
Adjustable Start Point 3 to 10 psig (21 to 69 kPa)
Factory Setting Standard 3 to 8 psig (21 to 55 kPa)
Factory Setting High Temp 10 to 20 psig (69 to 138 kPa)

Nominal Stroke 3/4" (20 mm)

Max. Diaphragm Pressure 35 psig (241 kPa)

Air Connection 1/8" NPT

Ambient Operating and

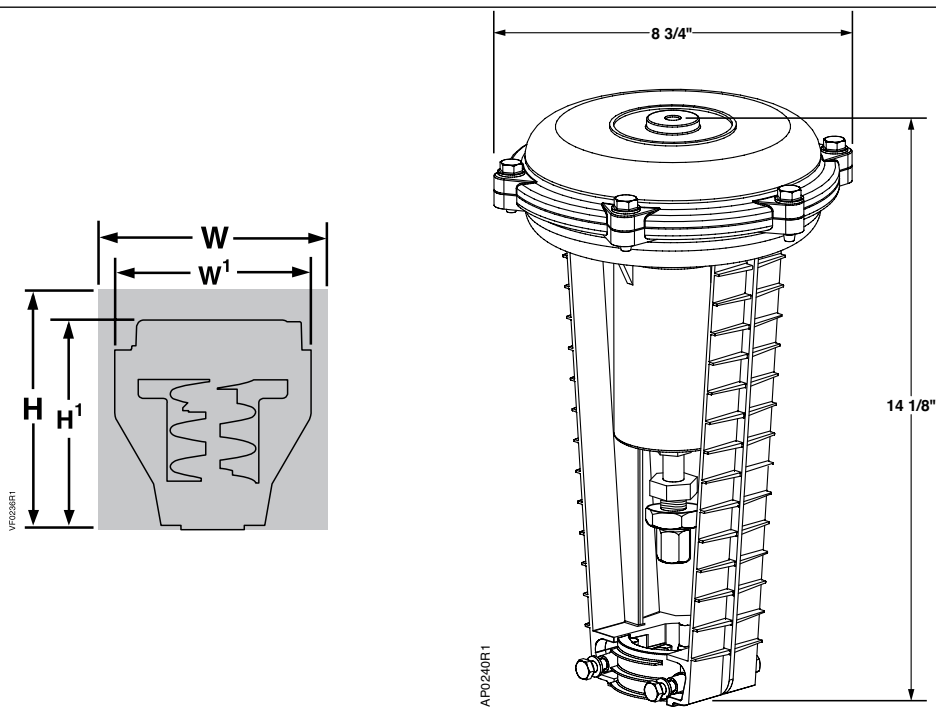
Storage Temperature 35 to 180°F (2 to 85°C)

Mounting Location NEMA 1 (Interior Only)



Flowrite 8-inch
Pneumatic Valve Actuator.

Dimensions



Actuator	Height of Actuator H ¹	Service Height H	Width/Diameter of Actuator W ¹	Service Width W
8" (171 mm)	14-1/8" (359 mm)	26" (660 mm)	8-3/4" (222 mm) Dia.	21" (450 mm)

Table Note:
Service height and width are the recommended dimensions to allow access to the product.

8" Pneumatic Actuator Product Ordering

Description	Span	Part No.	Actuator Prefix Code
Normal Duty			
Actuator	5 psi	599-01050	277
Actuator and positioner		599-01050 + 599-00426	283
High-Temperature			
Actuator	10 psi	599-01051	278
Actuator and positioner		599-01051 + 599-00426	284

Order separately or as a complete assembly. See pages 52 thru 58 and 98 thru 107 for assembly ordering part numbers.

12" Pneumatic Valve Actuator

For Liquid and Steam

Description

Designed for use with Flowrite valves, the Flowrite 12-inch Pneumatic Valve Actuator is available with two stem strokes, 3/4-inch (20 mm) stroke and 1-1/2-inch (40 mm).

Features

- Completely enclosed actuator housing protects the diaphragm, springs, and start point adjuster
- A positioning relay is available factory-mounted on valve and actuator assemblies or as an accessory
- Field-adjustable start point for sequencing
- Easy-to-install

Applications

The Flowrite 12-inch Pneumatic Valve Actuator is designed to be used with Flowrite valves in liquid and steam service applications.

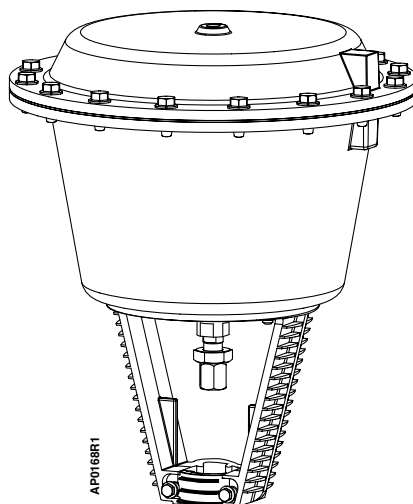
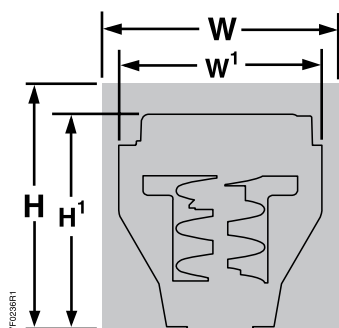
Specifications

Effective Diaphragm Area	90 in. ² (580 cm ²)
Diaphragm Material	Buna-N
Nominal Spring Range	
Fixed Span	5 psig (34 kPa)
Adjustable Start Point	3 to 10 psig (21 to 69 kPa)
Factory Setting	3 to 8 psig (21 to 55 kPa)
Nominal Stroke	3/4 or 1-1/2" (20 or 40 mm)
Max. Diaphragm Pressure	35 psig (241 kPa)
Air Connection	1/4" NPT
Medium Temperature	25 to 366°F (-4 to 186°C)
Ambient Operating and Storage Temperature	35 to 180°F (2 to 85°C)
Mounting Location	NEMA 1 (Interior Only)



Flowrite 12-inch
Pneumatic Valve Actuator.

Dimensions



Actuator	Height of Actuator H'	Service Height H	Width/Diameter of Actuator W'	Service Width W
12" (305 mm)	17-7/8" (454 mm)	30" (762 mm)	15-1/8" (384 mm) Dia.	27" (686 mm)

Table Note:
Service height and width are the recommended dimensions to allow access to the product.

12" Pneumatic Actuator Product Ordering

Description	Part No.	Actuator Prefix Code
3/4" Stroke		
Actuator	599-01010	279
Actuator and positioner	599-01010 + 599-00423	285
1-1/2" Stroke		
Actuator	599-01000	281
Actuator and positioner	599-01000 + 599-00423	287

Order separately or as a complete assembly. See pages 69 thru 75 and 98 thru 107 for assembly ordering part numbers.



SAX Series Electronic Valve Actuators

24 Vac Proportional or Floating 3P Control Non-Spring Return

Description

Designed for use with Flowrite valves with a 3/4-inch (20 mm) stroke, the Flowrite SAX Electronic Actuator requires a 24 Vac supply, and receives a 0 to 10 Vdc or 4 to 20 mA control signal to proportionally control the valve or receives a floating control signal to provide floating control of the valve; available as non-spring return.

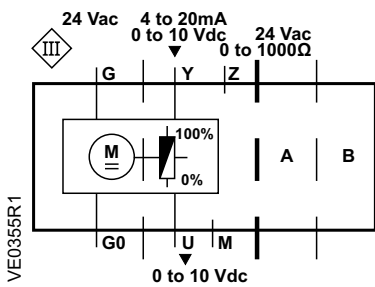
Features

- Direct-coupled installation requires no special tools or adjustments
- Visual and electronic stroke indication
- Manual override
- Non-spring return
- 180 lbf. (800 N) nominal force for non-spring return models
- Automatic calibration
- Electromechanical switches protect components from overload and stall condition
- Maintenance-free
- Orderable as an actuator only or as a complete valve/actuator assembly

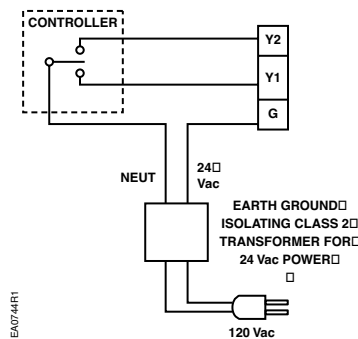
Applications

The Flowrite SAX Electronic Valve Actuator is designed to be used with the Flowrite and other valves in liquid and steam service applications. They are ideal for installations requiring quick response and excellent resolution.

Wiring Diagrams



NSR Proportional



NSR Floating

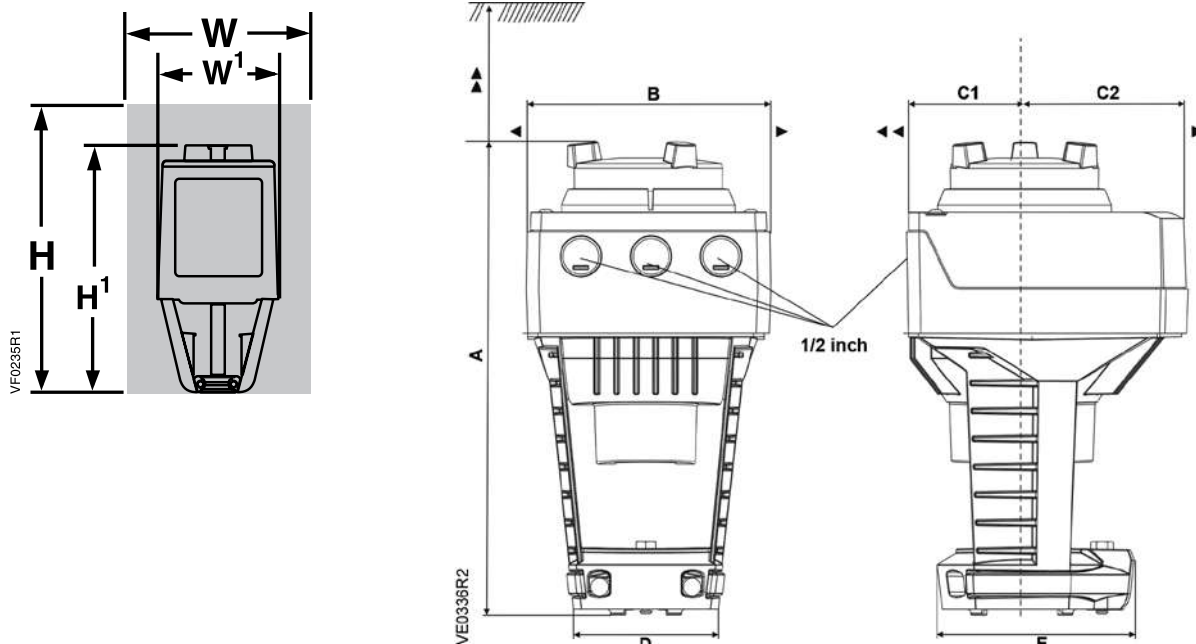
Specifications

Operating Voltage	24 Vac $\pm 20\%$, 24 Vdc $+20\%/-15\%$
Frequency	45-65 Hz
Power Consumption	
SAX61.03U	8 VA
SAX81.03U	5 VA
Control Signals	
Control Input (Y)	
Voltage	0 to 10 Vdc
Current	4-20 mA
Control Input (Z)	
Resistance	0-1000 Ohm
Position Feedback Output (U)	0 to 10 Vdc
Function	
Nominal Stroke	3/4" (20 mm)
Run Time	
SAX61.03U, SAX81.03U	30 sec.
Nominal Force	
SAX61.03U, SAX81.03U	180 lbf. (800 N)
Agency Approvals	UL873, CSA C22.2 No. 24-93
Operating and Storage Temperature	
Operating Temperature	23 to 131°F (-5 to 55°C)
Storage Temperature	5 to 131°F (-15 to 55°C)
Transport Temperature	-13 to 158°F (-25 to 70°C)
Ambient Humidity	5 to 90% RH, Non-condensing
Media Temperature	Up to 300°F (150°C)
Conduit Opening	1/2" NPSM
Mounting Location	NEMA 1 (Interior Only)



Flowrite SAX Series Valve Actuator.

Dimensions



Dimensions shown in inches (mm).

Height of Actuator H'	Service Height H	Width/Diameter of Actuator W'	Service Width W'
9-1/2" (242 mm)	17-1/2" (442 mm)	5-29/32" (150 mm) Width x 4-7/8" (124 mm) Depth	9-27/32 (250) Width x 8-13/16" (224 mm) Depth

Table Note:

Service height and width are the recommended dimensions to allow access to the product.

SAX Series Actuators Product Ordering

Description	Part No.	Actuator Prefix Code
Floating 3P, Non-Spring Return	SAX81.03U	373
24 Vac Proportional, Non-Spring Return	SAX61.03U	371

Order separately or as a complete assembly. See pages 53 thru 60 for assembly ordering part numbers.

SKD Series Electronic Valve Actuators

24 Vac, Proportional Control

Spring Return

Description

Designed for use with the Flowrite and other standard valves with a 3/4" (20 mm) stroke, the Flowrite SKD Electronic Valve Actuator receives a 0 to 10 Vdc or 4 to 20 mA control signal to proportionally control the valve. The actuators are available with standard or advanced functionality.

Features

Standard Features

Part nos. with U suffix have these standard features:

- Direct-coupled installation requires no special tools or adjustments
- Visual and electronic stroke indication
- Die-cast aluminum housing
- 250 lbf. (1150 N) nominal force
- Integral position feedback
- Manual override
- Spring return to fail-safe position
- Maintenance-free

Advanced Features

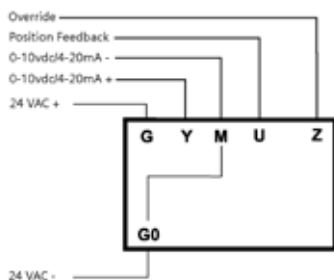
Part nos. with UA suffix have standard features, plus these advanced features:

- Adjustable start and span
- Stroke limit control
- Selectable operation direction (direct or reverse acting)
- Choice of linear or equal percentage flow characteristics
- Designed to be used with other manufacturer's valves with the appropriate Universal Valve Retrofit Kit

Applications

The Flowrite SKD Electronic Valve Actuator requires a 24 Vac supply and is designed to be used with Flowrite and other standard valves in liquid and steam service applications.

Wiring Diagrams



Specifications

Operating Voltage 24 Vac \pm 20%

Frequency 50/60 Hz

Power Consumption

SKD62U/UA 18 VA (12 W)

Control Signals

Control Input (Y)

Voltage 0 to 10 Vdc

Current 4 to 20 mA

Control Input (R)

Resistance 0 to 1000 Ohms

Voltage 0 to 1.6 V

Control Output (U)

Voltage 0 to 10 Vdc

Current 0.5 mA max.

Control Output (U)

Current 4 to 20 mA

Max. Impedance 250 Ohms

Function

Nominal Stroke 3/4" (20 mm)

Run Time with Control Operation (Full Stroke)

Power Stroke, 0 to 100% 30 sec.

Return Stroke, 100 to 0% 15 sec.

Nominal Force

NC and 3-way Upper

Stroke 0%

Force 225 lbs. (1000 N)

NO and 3-way By Pass

Stroke 100%

Force 258 lbs. (1150 N)

Agency Approvals UL873, cUL,

CSA C22.2 No. 24-93,

CE N474

Operating

Ambient Temperature 5 to 130°F (-15 to 55°C)

Media Temperature 14 to 300°F (-10 to 150°C)

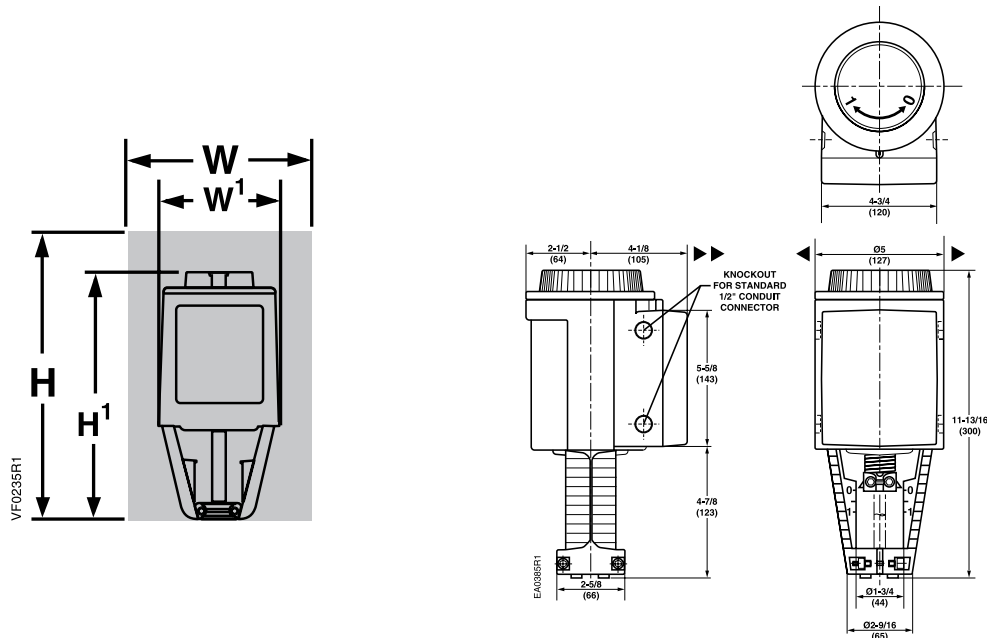
Conduit Opening 1/2" NPSM

Housing NEMA 1 (Interior Only)



Flowrite SKD Series Valve Actuator.

Dimensions



Dimensions shown in inches (mm).

Height of Actuator H ¹	Service Height H	Width/Diameter of Actuator W ¹	Service Width W
11-13/16" (300 mm)	19-3/4" (430 mm)	6-5/8" (170 mm) Width	14-1/2" (360 mm)

Table Note:

Service height and width are the recommended dimensions to allow access to the product.

SKD Series Actuator Product Ordering

Description	Part No.	Actuator Prefix Code
24 Vac, Proportional Control, Spring Return	SKD62U	274
24 Vac, Proportional Control with Advanced Features, Spring Return	SKD62UA	—

Ordering Note:

The SKD62UA can be used with other manufacturer's valves with the appropriate Universal Valve Linkage Kit.

Order separately or as a complete assembly. See pages 53 thru 60, 70 thru 76 and 90 thru 107 for assembly ordering part numbers.

SKD Series Electronic Valve Actuators

24 Vac, Floating 3P

Spring Return or Non-Spring Return

Description

Designed for use with Flowrite and other standard valves with a 3/4-inch (20 mm) stroke, the Flowrite SKD Electronic Valve Actuator requires 24 Vac supply to provide floating control of a valve.

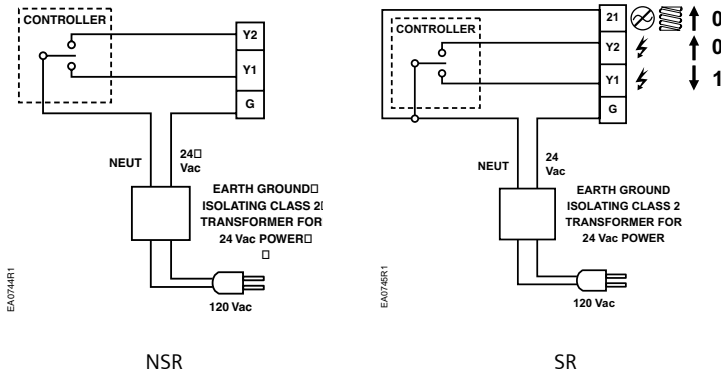
Features

- Direct-coupled installation requires no special tools or adjustments
- Visual and electronic stroke indication
- Die-cast aluminum housing
- 250 lbf. (1150 N) nominal force
- Integral position feedback
- Manual override
- Spring return available for fail-safe position
- Maintenance-free

Applications

The Flowrite SKD Electronic Valve Actuator with 24 Vac, floating control is designed to be used with Flowrite and other standard valves in liquid and steam service applications.

Wiring Diagrams



Specifications

Operating Voltage 24 Vac \pm 20%

Frequency 50/60 Hz

Power Consumption

SKD82.50U 10 VA

SKD82.51U 15 VA

Control Signal 3 Position (Floating)

Function

Nominal Stroke 3/4" (20 mm)

Run Time with Control Operation (Full Stroke)

Power Stroke, 0 to 100% @ 60 Hz 90 sec.

Return Stroke, 100 to 0% @ 60 Hz 90 sec.

Spring Return (SKD 82.51U only) 8 sec.

Nominal Force

NC and 3-way Upper

Stroke 0%

Force 225 lbs. (1000 N)

NO and 3-way By Pass

Stroke 100%

Force 258 lbs. (1150 N)

Agency Approvals UL873,

CSA C22.2 No. 24-93

Operating

Ambient Temperature 5 to 130°F (-15 to 55°C)

Media Temperature 14 to 300°F (-10 to 150°C)

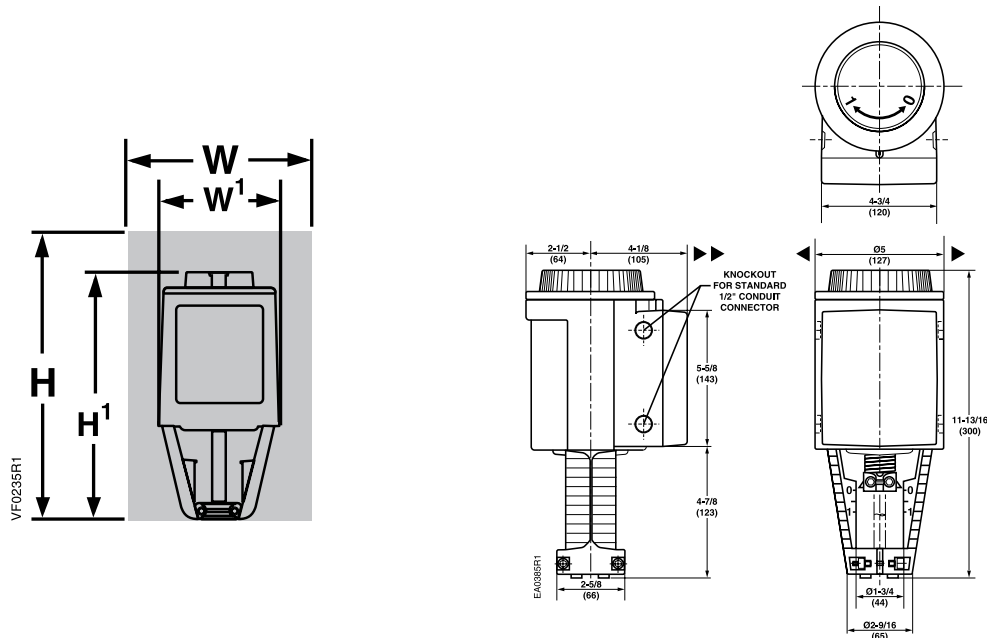
Conduit Opening 1/2" NPSM

Mounting Location NEMA 1 (Interior Only)



Flowrite SKD Series Valve Actuator.

Dimensions



Dimensions shown in inches (mm).

Height of Actuator H ¹	Service Height H	Width/Diameter of Actuator W ¹	Service Width W
11-13/16" (300 mm)	19-3/4" (430 mm)	6-5/8" (170 mm) Width	14-1/2" (360 mm)

Table Note:

Service height and width are the recommended dimensions to allow access to the product

SKD Series Actuator Product Ordering

Description	Part No.	Actuator Prefix Code
24 Vac, Floating 3P, Spring Return	SKD82.51U	276
24 Vac, Floating 3P, Non-Spring Return	SKD82.50U	275

Order separately or as a complete assembly. See pages 53 thru 60, 70 thru 76 and 90 thru 107 for assembly ordering part numbers.

SKB/SKC Series Electronic Valve Actuators

24 Vac, Proportional Control

Spring Return

Description

Designed for use with Flowrite and other standard valves with a 3/4-inch and 1-1/2-inch (20 and 40 mm) strokes, the Flowrite SKB/SKC Electronic Valve Actuator receives a 0 to 10 Vdc or 4 to 20 mA control signal to proportionally control the valve. The actuators are available with standard or advanced functionality.

Features

Standard Features

Part nos. with U suffix have these standard features:

- Direct-coupled installation requires no special tools or adjustments
- Visual and electronic stroke indication
- Die-cast aluminum housing
- Highest close-off in the industry
- 3/4-inch stroke (SKB)
- 1-1/2-inch stroke (SKC)
- 1000 lbf. (4400 N) nominal force
- Manual override
- Spring return to fail safe position
- Maintenance-free

Advanced Features

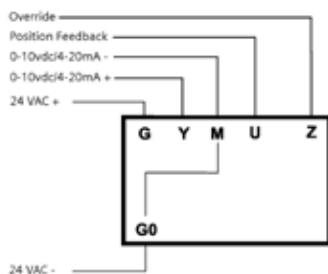
Part nos. with UA suffix have standard features, plus these advanced features:

- Adjustable start and span
- Stroke limit control
- Selectable operation direction (direct or reverse acting)
- Choice of linear or equal percentage flow characteristics
- Designed to be used with other manufacturer's valves with the appropriate Universal Valve Retrofit Kit

Applications

The Flowrite SKD Electronic Valve Actuator requires a 24 Vac supply and is designed to be used with Flowrite and other standard valves in liquid and steam service applications.

Wiring Diagrams



Specifications

Nominal Stroke

SKB62U/UA	3/4" (20 mm)
SKC62U/UA	1-1/2" (40 mm)

Operating Voltage

.....	24 Vac ±20%
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Frequency

.....	50/60 Hz
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Power Consumption

SKB62U/UA	18 VA (12 W)
SKC62U/UA	28 VA (20 W)

Control Signals

Control Input (Y)	0 to 10 Vdc or 4-20 mA
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Max Impedance

0 to 10 Vdc.....	100K Ohm
4 to 20 mA.....	250 Ohm

Control Input (Z)

Resistance	0 to 1000 Ohms
Voltage	0 to 1.6 V

Feedback Output (U)

Signal.....	0 to 10 Vdc or 4 to 20 mA
-------------	---------------------------

Local Impedance

0 to 10 Vdc.....	>500K Ohm
4 to 20 mA.....	<500 Ohm

Run Time with Control Operation (full stroke)

Opening.....	2 min.
Closing with Spring	
SKB62U.....	15 sec.
SKC62U.....	20 sec.

Conduit Opening

.....	1/2" NPSM
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Nominal Force

NC and 3-way Upper

Stroke	0%
Force.....	640 lbs. (2800 N)

NO and 3-way By Pass

Stroke	100%
Force.....	1000 lbf. (4400 N)

Agency Approvals

.....	UL873, cUL, CSA C22.2 No. 24-93, CE N474
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Enclosure

.....	NEMA 1 (Interior Only)
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Operating

Ambient Temperature	5 to 130°F (-15 to 55°C)
Media Temperature	14 to 428°F (-10 to 220°C)

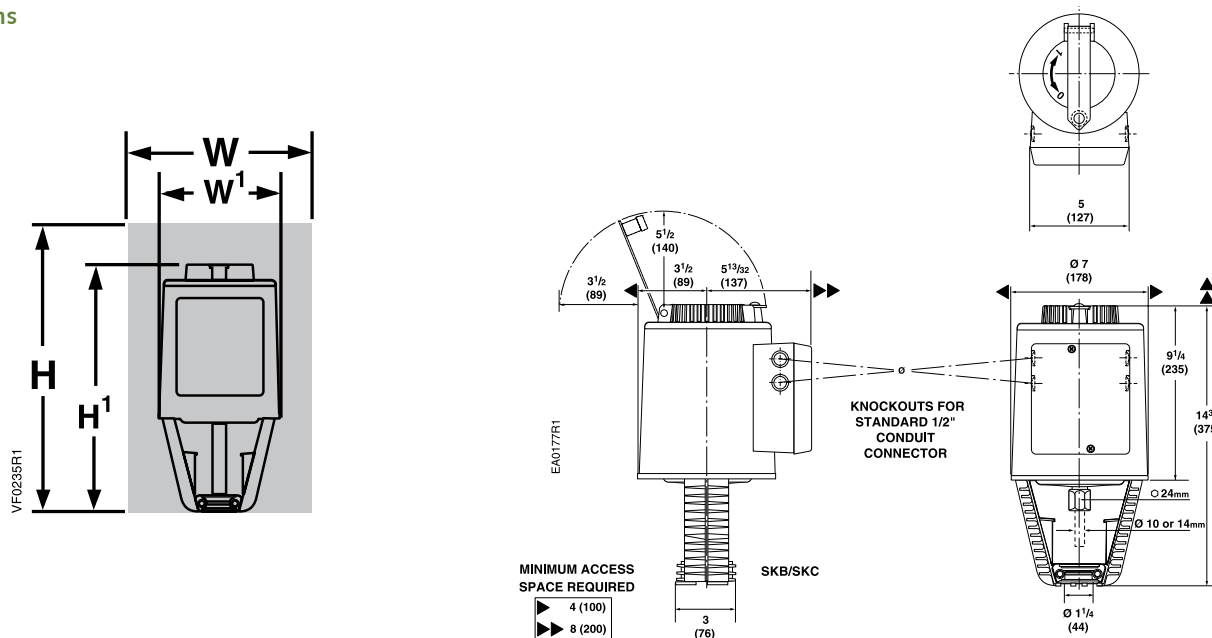
Mounting Location

.....	NEMA 1 (Interior Only)
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Flowrite SKB/SKC Series Valve Actuator.

Dimensions



Dimensions shown in inches (mm).

Height of Actuator H ¹	Service Height H	Width/Diameter of Actuator W ¹	Service Width W
14-3/4" (375 mm)	22-3/4" (578 mm)	7" (178 mm) Width x 8-15/16" (226 mm) Depth	25" (635 mm)

Table Note:

Service height and width are the recommended dimensions to allow access to the product.

SKB/SKC Product Ordering

Description	Part No.	Actuator Prefix Code
3/4" Stroke		
Standard Features	SKB62U	291
Advanced Features	SKB62UA	—
1-1/2" Stroke		
Standard Features	SKC62U	294
Advanced Features	SKC62UA	—

Ordering Note:

The SKB/C UA models can be used with other manufacturer's valves with the appropriate Universal Valve Linkage Kit.

Order separately or as a complete assembly. See pages 53 thru 59, 70 thru 76 and 101 thru 107 for assembly ordering part numbers.

SKB/SKC Series Electronic Valve Actuators

24 Vac, Floating 3P

Spring Return or Non-Spring Return

Description

Designed for use with Flowrite and other standard valves with 3/4-inch and 1-1/2-inch (20 mm and 40 mm) strokes, the Flowrite SKB/C Electronic Valve Actuator requires a 24 Vac supply to control the valve.

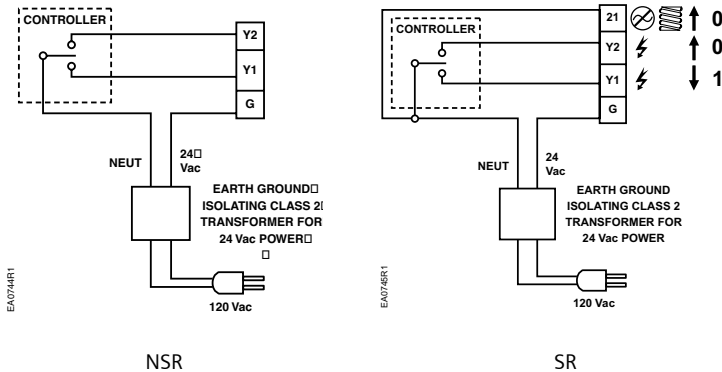
Features

- Direct-coupled installation requires no special tools or adjustments
- Visual and electronic stroke indication
- Die-cast aluminum housing
- Manual override
- Spring return to fail-safe position available
- Maintenance-free
- 1000 lbf. (4400 N) nominal force

Applications

The Flowrite SKB/SKC Electronic Valve Actuator with floating control is to be used with Flowrite and other standard valves with a 3/4-inch and 1-1/2-inch (20 mm and 40 mm) strokes in liquid and steam service applications.

Wiring Diagrams



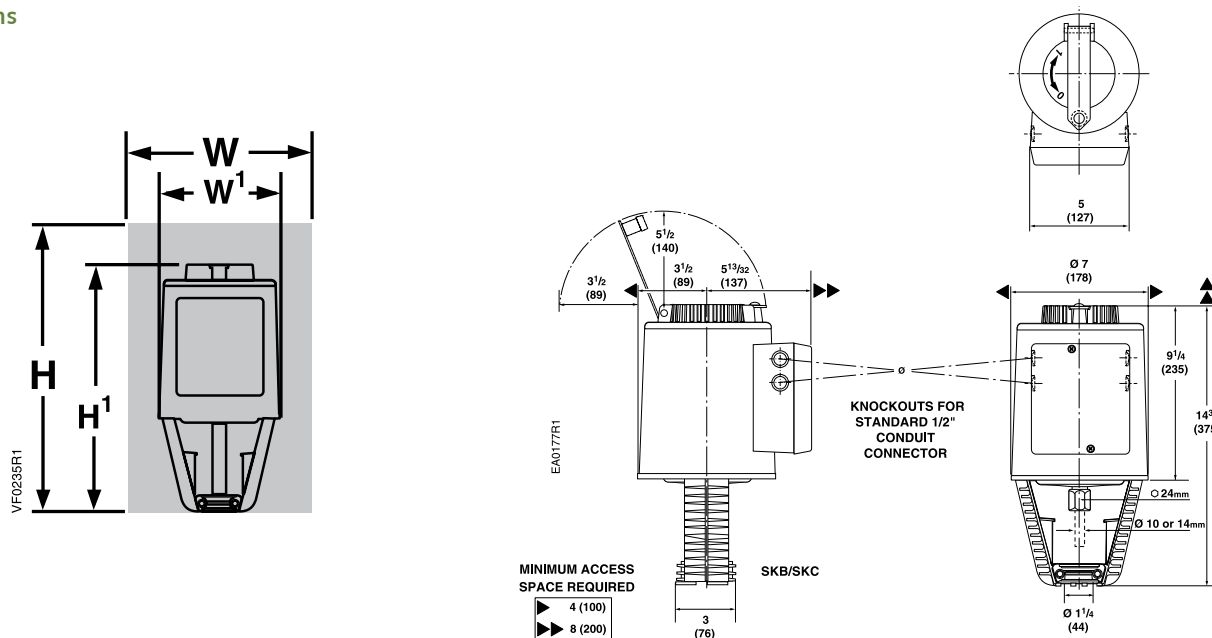
Specifications

Operating Voltage	24 Vac \pm 20%
Frequency	50/60 Hz
Power Consumption	
SKB82.50U.....	10 VA
SKB82.51U.....	15 VA
SKC82.60U.....	19 VA
SKC82.61U.....	20 VA
Control Signal	Floating
Nominal Stroke	
SKB	3/4" (20 mm)
SKC	1-1/2" (40 mm)
Run Time with Control	
Operation (full stroke)	90 sec. Opening and Closing
Spring Return Time (on power failure)	
SKB82.51U.....	10 sec.
SKB82.61U.....	18 sec.
Nominal Force	
NC and 3-way Upper	
Stroke	0%
Force.....	610 lbs. (2684 N)
NO and 3-way By Pass	
Stroke	100%
Force.....	1000 lbf. (4400 N)
Agency Approvals	UL873, CSA C22.2 No. 24-93
Enclosure	NEMA 1 (Interior Only)
Operating	
Ambient Temperature	5 to 130°F (-15 to 55°C)
Media Temperature	14 to 300°F (-10 to 150°C)
Mounting Location	NEMA 1 (Interior Only)



Flowrite SKB/SKC Series Valve Actuator.

Dimensions



Dimensions shown in inches (mm).

Height of Actuator H ¹	Service Height H	Width/Diameter of Actuator W ¹	Service Width W
14-3/4" (375 mm)	22-3/4" (578 mm)	7" (178 mm) Width x 8-15/16" (226 mm) Depth	25" (635 mm)

Table Note:
Service height and width are the recommended dimensions to allow access to the product.

SKB/SKC Series Product Ordering

Stroke	Part No.	Actuator Prefix Code
Spring Return		
3/4" (20 mm)	SKB82.51U	289
1-1/2" (40 mm)	SKC82.61U	292
Non-Spring Return		
3/4" (20 mm)	SKB82.50U	290
1-1/2" (40 mm)	SKC82.60U	293

Order separately or as a complete assembly. See pages 70 thru 76 and 102 thru 107 for assembly ordering part numbers.

High Pressure Close-off Globe Valve Assemblies

2-1/2 to 6", ANSI Class 125

Pneumatic and Electro-Hydraulic, Spring Return Actuators

200 psi Close-off



High Pressure Close-off Two-way Globe Valve & Electro-Hydraulic Actuator Assembly








NO/NC Equal Percentage <i>Flanged 2-1/2 to 6"</i>				Spring Return Actuator				
				8" w/Positioner 20 mm Stroke	12" w/Positioner 40 mm Stroke	0-10 Vdc 4-20 mA	0-10 Vdc 4-20 mA	
	Valve Size in.	Flow Rate Cv	Close Off psi	 599-01050 + 599-00426	 599-01000 + 599-00423	 SKD62U	 SKC62U	
Normally Open Assemblies				Stainless Steel Trim				
	599-06610	2-1/2	63	200	283-06610	—	274-06610	—
	599-06611	3	100	200	283-06611	—	274-06611	—
	599-06612	4	160	200	—	287-06612	—	294-06612
	599-06613	5	250	200	—	287-06613	—	294-06613
	599-06614	6	400	200	—	287-06614	—	294-06614
Normally Closed Assemblies				Stainless Steel Trim				
	599-06615	2-1/2	63	200	283-06615	—	274-06615	—
	599-06616	3	100	200	283-06616	—	274-06616	—
	599-06617	4	160	200	—	287-06617	—	294-06617
	599-06618	5	250	200	—	287-06618	—	294-06618
	599-06619	6	400	200	—	287-06619	—	294-06619

Table Notes:

Part numbers in green indicate complete assemblies. Black numbers indicate close-off psi.

High Pressure Close-off Globe Valve Assemblies

2-1/2 to 6", ANSI Class 250

Pneumatic and Electro-Hydraulic, Spring Return Actuators

200 psi Close-off



High Pressure Close-off Two-way Globe Valve & Electro-Hydraulic Actuator Assembly

NO/NC Equal Percentage <i>Flanged 2-1/2 to 6"</i>				Spring Return Actuator				
				8" w/Positioner 20 mm Stroke	12" w/Positioner 40 mm Stroke	0-10 Vdc 4-20 mA	0-10 Vdc 4-20 mA	
				599-01050 + 599-00426	599-01000 + 599-00423	SKD62U	SKC62U	
Normally Open Assemblies				Stainless Steel Trim				
	599-06620	2-1/2	63	200	283-06620	—	274-06620	—
	599-06621	3	100	200	283-06621	—	274-06621	—
	599-06622	4	160	200	—	287-06622	—	294-06622
	599-06623	5	250	200	—	287-06623	—	294-06623
	599-06624	6	400	200	—	287-06624	—	294-06624
Normally Closed Assemblies				Stainless Steel Trim				
	599-06625	2-1/2	63	200	283-06625	—	274-06625	—
	599-06626	3	100	200	283-06626	—	274-06626	—
	599-06627	4	160	200	—	287-06627	—	294-06627
	599-06628	5	250	200	—	287-06628	—	294-06628
	599-06629	6	400	200	—	287-06629	—	294-06629

Table Notes:

Part numbers in green indicate complete assemblies. Black numbers indicate close-off psi.

Two-Way Flanged Iron Globe Valve Assemblies

2-1/2 to 6", ANSI Class 250

Pneumatic, Spring Return Actuators



Two-way Flanged Iron Globe Valve & Pneumatic Actuator Assembly

NO/NC Equal Percentage Flanged 2-1/2 to 6"			Spring Return Actuator						
			8" 20 mm Stroke	12" 20 mm Stroke	12" 40 mm Stroke	8" w/Positioner 20 mm Stroke	12" w/Positioner 20 mm Stroke	12" w/Positioner 40 mm Stroke	
2-way Valve Body Part No.	Valve Size in.	Flow Rate Cv							
			599-01050	599-01010	599-01000	599-01050 + 599-00426	599-01010 + 599-00423	599-01000 + 599-00423	
Normally Open Assemblies			Close-off psi — Bronze Trim						
	599-05940	2-1/2	63	31 277-05940	95 279-05940	—	31 283-05940	95 285-05940	—
	599-05941	3	100	20 277-05941	63 279-05941	—	20 283-05941	63 285-05941	—
	599-05942	4	160	—	—	40 281-05942	—	—	40 287-05942
	599-05943	5	250	—	—	26 281-05943	—	—	26 287-05943
	599-05944	6	400	—	—	18 281-05944	—	—	18 287-05944
	Close-off psi — Stainless Steel Trim								
599-05920	2-1/2	63	31 277-05920	95 279-05920	—	31 283-05920	95 285-05920	—	
599-05921	3	100	20 277-05921	63 279-05921	—	20 283-05921	63 285-05921	—	
599-05922	4	160	—	—	40 281-05922	—	—	40 287-05922	
599-05923	5	250	—	—	26 281-05923	—	—	26 287-05923	
599-05924	6	400	—	—	18 281-05924	—	—	18 287-05924	
Normally Closed Assemblies			Close-off psi — Bronze Trim						
	599-05950	2-1/2	63	36 277-05950	114 279-05950	—	36 283-05950	114 285-05950	—
	599-05951	3	100	23 277-05951	74 279-05951	—	23 283-05951	74 285-05951	—
	599-05952	4	160	—	—	46 281-05952	—	—	46 287-05952
	599-05953	5	250	—	—	29 281-05953	—	—	29 287-05953
	599-05954	6	400	—	—	20 281-05954	—	—	20 287-05954
	Close-off psi — Stainless Steel Trim								
599-05930	2-1/2	63	36 277-05930	114 279-05930	—	36 283-05930	114 285-05930	—	
599-05931	3	100	23 277-05931	74 279-05931	—	23 283-05931	74 285-05931	—	
599-05932	4	160	—	—	46 281-05932	—	—	46 287-05932	
599-05933	5	250	—	—	29 281-05933	—	—	29 287-05933	
599-05934	6	400	—	—	20 281-05934	—	—	20 287-05934	

Table Notes:

Part numbers in green indicate complete assemblies. Black numbers indicate close-off psi.

Close-off values are for 15 psi signal for Normally Open and 0 psi signal for Normally Closed.

Close-off values for Normally Open valves with positioner may be substantially higher based on line supply pressure.

Two-Way Flanged Iron Globe Valve Assemblies

2-1/2 to 6", ANSI Class 250

Electronic, Spring Return Actuators



Two-way Flanged Iron Globe Valve & Electro-Hydraulic Spring Return Actuator Assembly

NO/NC Equal Percentage Flanged 2-1/2 to 6"			Spring Return Actuator						
			Floating 3P	Floating 3P	Floating 3P	0-10 Vdc 4-20 mA	0-10 Vdc 4-20 mA	0-10 Vdc 4-20 mA	
2-way Valve Body Part No.	Valve Size in.	Flow Rate Cv	 SKD82.51U	 SKB82.51U	 SKC82.61U	 SKD62U	 SKB62U	 SKC62U	
Normally Open Assemblies			Close-off psi — Bronze Trim						
	599-05940	2-1/2	63	38 276-05940	153 289-05940	—	38 274-05940	153 291-05940	—
	599-05941	3	100	25 276-05941	101 289-05941	—	25 274-05941	101 291-05941	—
	599-05942	4	160	—	—	65 292-05942	—	—	65 294-05942
	599-05943	5	250	—	—	42 292-05943	—	—	42 294-05943
	599-05944	6	400	—	—	29 292-05944	—	—	29 294-05944
Normally Closed Assemblies			Close-off psi — Stainless Steel Trim						
	599-05920	2-1/2	63	38 276-05920	153 289-05920	—	38 274-05920	153 291-05920	—
	599-05921	3	100	25 276-05921	101 289-05921	—	25 274-05921	101 291-05921	—
	599-05922	4	160	—	—	65 292-05922	—	—	65 294-05922
	599-05923	5	250	—	—	42 292-05923	—	—	42 294-05923
	599-05924	6	400	—	—	29 292-05924	—	—	29 294-05924
Normally Closed Assemblies			Close-off psi — Bronze Trim						
	599-05950	2-1/2	63	34 276-05950	97 289-05950	—	34 274-05950	97 291-05950	—
	599-05951	3	100	22 276-05951	63 289-05951	—	22 274-05951	63 291-05951	—
	599-05952	4	160	—	—	39 292-05952	—	—	39 294-05952
	599-05953	5	250	—	—	25 292-05953	—	—	25 294-05953
	599-05954	6	400	—	—	17 292-05954	—	—	17 294-05954
Normally Closed Assemblies			Close-off psi — Stainless Steel Trim						
	599-05930	2-1/2	63	34 276-05930	97 289-05930	—	34 274-05930	97 291-05930	—
	599-05931	3	100	22 276-05931	63 289-05931	—	22 274-05931	63 291-05931	—
	599-05932	4	160	—	—	39 292-05932	—	—	39 294-05932
	599-05933	5	250	—	—	25 292-05933	—	—	25 294-05933
	599-05934	6	400	—	—	17 292-05934	—	—	17 294-05934

Table Notes:

Part numbers in green indicate complete assemblies. Black numbers indicate close-off psi.

Two-Way Flanged Iron Globe Valve Assemblies

2-1/2 to 6", ANSI Class 250

Electronic, Non-Spring Return Actuators



Two-way Flanged Iron Globe Valve & Non-spring Return Actuator Assembly






NO/NC Equal Percentage <i>Flanged 2-1/2 to 6"</i>			Non-Spring Return Actuator					
			Floating 3P		Floating 3P		Floating 3P	
2-way Valve Body Part No.	Valve Size in.	Flow Rate Cv						
			SKD82.50U	SKB82.50U	SKC82.60U			
Normally Open Assemblies								
Close-off psi — Bronze Trim								
	599-05940	2-1/2	63	38	275-05940	153	290-05940	—
	599-05941	3	100	25	275-05941	101	290-05941	—
	599-05942	4	160	—	—	—	65	293-05942
	599-05943	5	250	—	—	—	42	293-05943
	599-05944	6	400	—	—	—	29	293-05944
Close-off psi — Stainless Steel Trim								
	599-05920	2-1/2	63	38	275-05920	153	290-05920	—
	599-05921	3	100	25	275-05921	101	290-05921	—
	599-05922	4	160	—	—	—	65	293-05922
	599-05923	5	250	—	—	—	42	293-05923
	599-05924	6	400	—	—	—	29	293-05924
Normally Closed Assemblies								
Close-off psi — Bronze Trim								
	599-05950	2-1/2	63	34	275-05950	97	290-05950	—
	599-05951	3	100	22	275-05951	63	290-05951	—
	599-05952	4	160	—	—	—	39	293-05952
	599-05953	5	250	—	—	—	25	293-05953
	599-05954	6	400	—	—	—	17	293-05954
Close-off psi — Stainless Steel Trim								
	599-05930	2-1/2	63	34	275-05930	97	290-05930	—
	599-05931	3	100	22	275-05931	63	290-05931	—
	599-05932	4	160	—	—	—	39	293-05932
	599-05933	5	250	—	—	—	25	293-05933
	599-05934	6	400	—	—	—	17	293-05934

Table Notes:

Part numbers in green indicate complete assemblies. Black numbers indicate close-off psi.

Two-Way Flanged Iron Globe Valve Assemblies

2-1/2 to 6", ANSI Class 250

Pneumatic Spring Return Actuators

Two-way Flanged Iron Globe Valve & Pneumatic Actuator Assembly



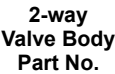










NO/NC Linear Flanged 2-1/2 to 6"			Spring Return Actuator							
			8" 20 mm Stroke	8" High-Temp. 20 mm Stroke	12" 20 mm Stroke	12" 40 mm Stroke	8" w/Positioner 20 mm Stroke	8" High-Temp. w/Positioner 20 mm Stroke	12" w/Positioner 20 mm Stroke	12" w/Positioner 40 mm Stroke
	Valve Size in.	Flow Rate Cv								
			599-01050	599-01051	599-01010	599-01000	599-01050 + 599-00426	599-01051 + 599-00426	599-01010 + 599-00423	599-01000 + 599-00423
Normally Open Assemblies			Close-off psi — Stainless Steel Trim/Standard-Temperature Packing							
	599-06140	2-1/2 63	31 277-06140	—	95 279-06140	—	31 283-06140	—	95 285-06140	—
	599-06141	3 100	20 277-06141	—	63 279-06141	—	20 283-06141	—	63 285-06141	—
	599-06142	4 160	—	—	—	40 281-06142	—	—	—	40 287-06142
	599-06143	5 250	—	—	—	26 281-06143	—	—	—	26 287-06143
	599-06144	6 400	—	—	—	18 281-06144	—	—	—	18 287-06144
			Close-off psi — Stainless Steel Trim/High-Temperature Packing							
	599-06120	2-1/2 63	31 277-06120	31 278-06120	95 279-06120	—	31 283-06120	31 284-06120	95 285-06120	—
	599-06121	3 100	20 277-06121	20 278-06121	63 279-06121	—	20 283-06121	20 284-06121	63 285-06121	—
	599-06122	4 160	—	—	—	40 281-06122	—	—	—	40 287-06122
	599-06123	5 250	—	—	—	26 281-06123	—	—	—	26 287-06123
	599-06124	6 400	—	—	—	18 281-06124	—	—	—	18 287-06124
Normally Closed Assemblies			Close-off psi — Stainless Steel Trim/Standard-Temperature Packing							
	599-06150	2-1/2 63	36 277-06150	—	114 279-06150	—	36 283-06150	—	114 285-06150	—
	599-06151	3 100	23 277-06151	—	74 279-06151	—	23 283-06151	—	74 285-06151	—
	599-06152	4 160	—	—	—	46 281-06152	—	—	—	46 287-06152
	599-06153	5 250	—	—	—	29 281-06153	—	—	—	29 287-06153
	599-06154	6 400	—	—	—	20 281-06154	—	—	—	20 287-06154
			Close-off psi — Stainless Steel Trim/High-Temperature Packing							
	599-06130	2-1/2 63	36 277-06130	36 278-06130	114 279-06130	—	36 283-06130	36 284-06130	114 285-06130	—
	599-06131	3 100	23 277-06131	23 278-06131	74 279-06131	—	23 283-06131	23 284-06131	74 285-06131	—
	599-06132	4 160	—	—	—	46 281-06132	—	—	—	46 287-06132
	599-06133	5 250	—	—	—	29 281-06133	—	—	—	29 287-06133
	599-06134	6 400	—	—	—	20 281-06134	—	—	—	20 287-06134

Table Notes:

Part numbers in green indicate complete assemblies. Black numbers indicate close-off psi.

Close-off values are for 15 psi signal for Normally Open and 0 psi signal for Normally Closed.

Close-off values for Normally Open valves with positioner may be substantially higher based on line supply pressure.

Two-Way Flanged Iron Globe Valve Assemblies

2-1/2 to 6", ANSI Class 250

Electronic, Spring Return Actuators



Two-way Flanged Iron Globe Valve & Spring Return Actuator Assembly











NO/NC Linear Flanged 2-1/2 to 6"			Spring Return Actuator					
			Floating 3P	Floating 3P	Floating 3P	0-10 Vdc 4-20 mA	0-10 Vdc 4-20 mA	0-10 Vdc 4-20 mA
2-way Valve Body Part No.	Valve Size in.	Flow Rate Cv						
			SKD82.51U	SKB82.51U	SKC82.61U	SKD62U	SKB62U	SKC62U
Normally Open Assemblies			Close-off psi — Stainless Steel Trim/Standard-Temperature Packing					
	599-06140	2-1/2 63	38 276-06140	153 289-06140	—	38 274-06140	153 291-06140	—
	599-06141	3 100	25 276-06141	101 289-06141	—	25 274-06141	101 291-06141	—
	599-06142	4 160	—	—	65 292-06142	—	—	65 294-06142
	599-06143	5 250	—	—	42 292-06143	—	—	42 294-06143
	599-06144	6 400	—	—	29 292-06144	—	—	29 294-06144
Normally Closed Assemblies			Close-off psi — Stainless Steel Trim/High-Temperature Packing					
	599-06120	2-1/2 63	38 276-06120	153 289-06120	—	38 274-06120	153 291-06120	—
	599-06121	3 100	25 276-06121	101 289-06121	—	25 274-06121	101 291-06121	—
	599-06122	4 160	—	—	65 292-06122	—	—	65 294-06122
	599-06123	5 250	—	—	42 292-06123	—	—	42 294-06123
	599-06124	6 400	—	—	29 292-06124	—	—	29 294-06124
Normally Closed Assemblies			Close-off psi — Stainless Steel Trim/Standard-Temperature Packing					
	599-06150	2-1/2 63	34 276-06150	97 289-06150	—	34 274-06150	97 291-06150	—
	599-06151	3 100	22 276-06151	63 289-06151	—	22 274-06151	63 291-06151	—
	599-06152	4 160	—	—	39 292-06152	—	—	39 294-06152
	599-06153	5 250	—	—	25 292-06153	—	—	25 294-06153
	599-06154	6 400	—	—	17 292-06154	—	—	17 294-06154
Normally Closed Assemblies			Close-off psi — Stainless Steel Trim/High-Temperature Packing					
	599-06130	2-1/2 63	34 276-06130	97 289-06130	—	34 274-06130	97 291-06130	—
	599-06131	3 100	22 276-06131	63 289-06131	—	22 274-06131	63 291-06131	—
	599-06132	4 160	—	—	39 292-06132	—	—	39 294-06132
	599-06133	5 250	—	—	25 292-06133	—	—	25 294-06133
	599-06134	6 400	—	—	17 292-06134	—	—	17 294-06134

Table Notes:

Part numbers in green indicate complete assemblies. Black numbers indicate close-off psi.

Two-Way Flanged Iron Globe Valve Assemblies

2-1/2 to 6", ANSI Class 250

Electronic, Non-Spring Return Actuators



Two-way Flanged Iron Globe Valve & Non-spring Return Actuator Assembly





NO/NC Linear Flanged 2-1/2 to 6"			Non-Spring Return Actuator					
			Floating 3P		Floating 3P		Floating 3P	
 2-way Valve Body Part No.	Valve Size in.	Flow Rate Cv	 SKD82.50U		 SKB82.50U		 SKC82.60U	
			Normally Open Assemblies					
			Close-off psi — Stainless Steel Trim/Standard-Temperature Packing					
599-06140	2-1/2	63	38	275-06140	153	290-06140	—	
599-06141	3	100	25	275-06141	101	290-06141	—	
599-06142	4	160	—		—		65	293-06142
599-06143	5	250	—		—		42	293-06143
599-06144	6	400	—		—		29	293-06144
			Close-off psi — Stainless Steel Trim/High-Temperature Packing					
599-06120	2-1/2	63	38	275-06120	153	290-06120	—	
599-06121	3	100	25	275-06121	101	290-06121	—	
599-06122	4	160	—		—		65	293-06122
599-06123	5	250	—		—		42	293-06123
599-06124	6	400	—		—		29	293-06124
			Normally Closed Assemblies					
			Close-off psi — Stainless Steel Trim/Standard-Temperature Packing					
599-06150	2-1/2	63	34	275-06150	97	290-06150	—	
599-06151	3	100	22	275-06151	63	290-06151	—	
599-06152	4	160	—		—		39	293-06152
599-06153	5	250	—		—		25	293-06153
599-06154	6	400	—		—		17	293-06154
			Close-off psi — Stainless Steel Trim/High-Temperature Packing					
599-06130	2-1/2	63	34	275-06130	97	290-06130	—	
599-06131	3	100	22	275-06131	63	290-06131	—	
599-06132	4	160	—		—		39	293-06132
599-06133	5	250	—		—		25	293-06133
599-06134	6	400	—		—		17	293-06134

Table Notes:

Part numbers in green indicate complete assemblies. Black numbers indicate close-off psi.

Three-Way Flanged Iron Globe Valve Assemblies

2-1/2 to 6", ANSI Class 250

Pneumatic, Spring Return Actuators



Three-way Flanged Iron Globe Valve & Pneumatic Actuator Assembly









Mixing Flanged 2-1/2 to 6" 			Spring Return Actuator										
			8" 20 mm Stroke	12" 20 mm Stroke	12" 40 mm Stroke	8" w/Positioner 20 mm Stroke	12" w/Positioner 20 mm Stroke	12" w/Positioner 40 mm Stroke					
3-way Valve Body Part No.	Valve Size in.	Flow Rate Cv											
			599-01050	599-01010	599-01000	599-01050 + 599-00426	599-01010 + 599-00423	599-01000 + 599-00423					
Mixing Assemblies													
			Close-off psi — Bronze Trim										
	599-06170	2-1/2	63	36	277-06170	114	279-06170	—	36	283-06170	114	285-06170	—
	599-06171	3	100	23	277-06171	74	279-06171	—	23	283-06171	74	285-06171	—
	599-06172	4	160	—	—	46	281-06172	—	—	—	—	46	287-06172
	599-06173	5	250	—	—	29	281-06173	—	—	—	—	29	287-06173
	599-06174	6	400	—	—	20	281-06174	—	—	—	—	20	287-06174
				Close-off psi — Stainless Steel Trim									
	599-06175	2-1/2	63	36	277-06175	114	279-06175	—	36	283-06175	114	285-06175	—
	599-06176	3	100	23	277-06176	74	279-06176	—	23	283-06176	74	285-06176	—
	599-06177	4	160	—	—	46	281-06177	—	—	—	—	46	287-06177
599-06178	5	250	—	—	29	281-06178	—	—	—	—	29	287-06178	
599-06179	6	400	—	—	20	281-06179	—	—	—	—	20	287-06179	

Table Notes:

Part numbers in green indicate complete assemblies. Black numbers indicate close-off psi.

Close-off valves are for 0 psi signal.

Values are for the NC upper port. For NO lower port values, refer to the Reference section.

Three-Way Flanged Iron Globe Valve Assemblies

2-1/2 to 6", ANSI Class 250

Electronic, Spring Return



Three-way Flanged Iron Globe Valve & Electro-Hydraulic Actuator Assembly

Mixing Flanged 2-1/2 to 6"			Spring Return Actuator					
			Floating 3P	Floating 3P	Floating 3P	0-10 Vdc 4-20 mA	0-10 Vdc 4-20 mA	0-10 Vdc 4-20 mA
3-way Valve Body Part No.	Valve Size in.	Flow Rate Cv						
			SKD82.51U	SKB82.51U	SKC82.61U	SKD62U	SKB62U	SKC62U
Mixing Assemblies			Close-off psi — Bronze Trim					
	599-06170	2-1/2 63	34 276-06170	97 289-06170	—	34 274-06170	97 291-06170	—
	599-06171	3 100	22 276-06171	63 289-06171	—	22 274-06171	63 291-06171	—
	599-06172	4 160	—	—	39 292-06172	—	—	39 294-06172
	599-06173	5 250	—	—	25 292-06173	—	—	25 294-06173
	599-06174	6 400	—	—	17 292-06174	—	—	17 294-06174
			Close-off psi — Stainless Steel Trim					
	599-06175	2-1/2 63	34 276-06175	97 289-06175	—	34 274-06175	97 291-06175	—
	599-06176	3 100	22 276-06176	63 289-06176	—	22 274-06176	63 291-06176	—
	599-06177	4 160	—	—	39 292-06177	—	—	39 294-06177
	599-06178	5 250	—	—	25 292-06178	—	—	25 294-06178
	599-06179	6 400	—	—	17 292-06179	—	—	17 294-06179

Table Notes: **Part numbers in green** indicate complete assemblies. **Black numbers** indicate close-off psi.

Mixing Flanged 2-1/2 to 6"			Non-Spring Return Actuator		
			Floating 3P	Floating 3P	Floating 3P
3-way Valve Body Part No.	Valve Size in.	Flow Rate Cv			
			SKD82.50U	SKB82.50U	SKC82.60U
Mixing Assemblies			Close-off psi — Bronze Trim		
	599-06170	2-1/2 63	34 275-06170	97 290-06170	—
	599-06171	3 100	22 275-06171	63 290-06171	—
	599-06172	4 160	—	—	39 293-06172
	599-06173	5 250	—	—	25 293-06173
	599-06174	6 400	—	—	17 293-06174
			Close-off psi — Stainless Steel Trim		
	599-06175	2-1/2 63	34 275-06175	97 290-06175	—
	599-06176	3 100	22 275-06176	63 290-06176	—
	599-06177	4 160	—	—	39 293-06177
	599-06178	5 250	—	—	25 293-06178
	599-06179	6 400	—	—	17 293-06179

Table Notes: **Part numbers in green** indicate complete assemblies. **Black numbers** indicate close-off psi. Values are for the NC upper port. For NO lower port values, refer to the Reference section.

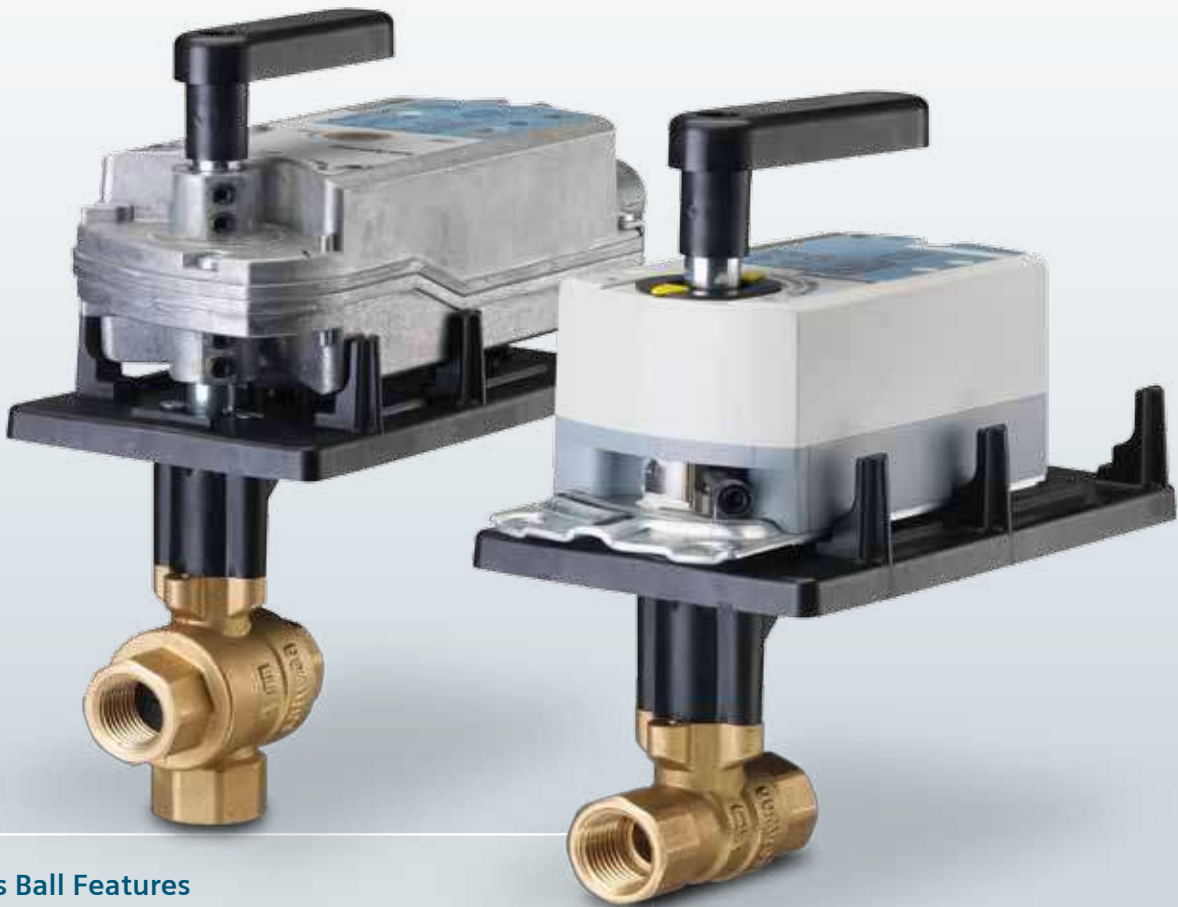
599 Series Ball Valves

Stainless Steel or Chrome Trim Meets Specifications for More Applications!

With better sizing, superior long-life reliability, and economical pricing, our complete range of ball valves with chrome or stainless steel trim choices are designed to provide excellent equal percentage flow control and so much more.

They couple with OpenAir™ electronic actuators that offer spring return, non-spring return, 2-position, floating, and proportional control to suit a wide variety of control specifications and strategies. A universal actuator mounting bracket with standoffs provides a thermal barrier between the actuator and the mounting plate.

No special programming or tools are required for installing, saving time and money. All valves and valve actuators are factory assembled and tagged to jobsite specifications at no additional charge.



599 Series Ball Features

- 0.4 to 160 Cv range enables better sizing of valves to the job requirements
- 200 psi close-off for all line sizes and actuators
- Low ANSI Class IV leakage (0.01% of Cv) at rated close-off pressure reduces energy consumption
- 600 WOG/ANSI 250 pressure rating meets the specifications of more applications
- Blow-out proof stem withstands high pressure
- Double o-ring stem packing prevents leaking and ensures long-lasting performance

Two- and Three-Way Ball Valves

1/2 to 2", Equal Percentage Flow
 Normally Open or Normally Closed
 600 WOG/ANSI Class 250

Description

Designed to provide excellent equal percentage flow control, Ball Valves are available in 1/2 to 2-inch line sizes and are 1/4-turn rotary control valves. These ball valves are designed to couple with an OpenAir actuator.

Features

- Universal mounting plate accommodates different actuator sizes
- Variety of ball sizes and flow coefficients minimizes the need for downsizing pipes and accurately controls fluid through coils
- Industry leading close-off
- Actuator and plate can be rotated to facilitate installation and wiring
- Standoffs and mounting plate provide a thermal barrier between the actuator and valve
- Plastic mounting plate, extensions, and handle do not condensate in chilled or hot water applications
- Operating handle can manually operate valve in the event of a power failure
- Available as on/off (2P), floating (3P), or proportional

Applications

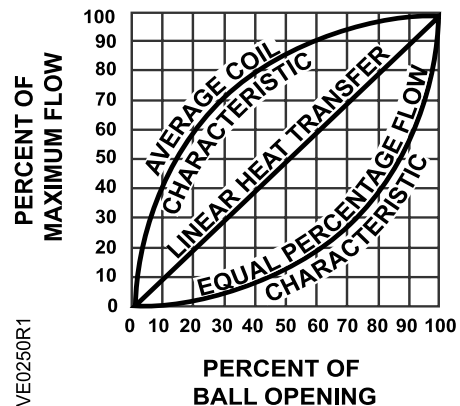
Ball Valves can control hot or chilled water and up to 50% glycol solution in convectors, fan coil units, unit conditioners, radiation, and reheat coils.

Specifications

Static Pressure/Temp.	.....360 psig/250°F (600 WOG)
Controlled Medium	.....Water, Glycol Solutions up to 50%
Media Temperature	.....35 to 250°F (2 to 121°C)
Materials	
Body	Brass ASTM B283, C37700
Ball	Chrome-plated Brass or Stainless Steel
Ball Seals.....	Glass-filled PTFE with EPDM O-Rings
Flow Optimizer.....	Glass-filled PTFE
Stem.....	Brass or Stainless Steel
Stem Seals	EDPM O-rings
End Connections	..... NPT Female
Angle of Rotation	.....0 to 90 Degrees

Application Drawings

The parabolic shape of the flow optimizer orifice allows a slow opening valve. Equal movements of the valve stem at any point of the flow range changes the existing flow an equal percentage regardless of the existing flow. The ball valve equal percentage flow characteristic mirrors the flow characteristic of a coil, resulting in linear heat transfer.



Ball Valve Equal Percentage Flow Control.

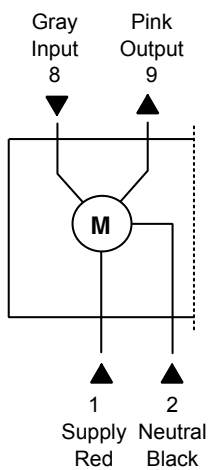


2-Way Ball Valve and Actuator.

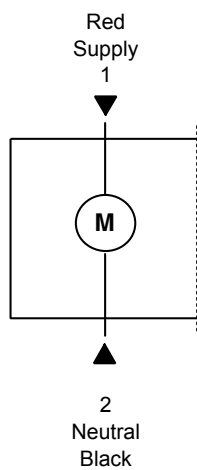


3-Way Ball Valve and Actuator.

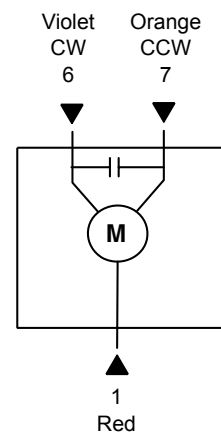
Wiring Diagrams



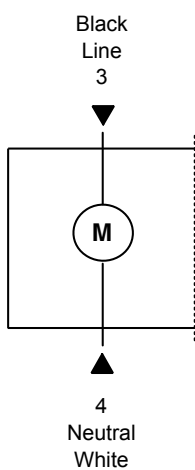
Modulating (0 to 10 Vdc), 24 Vac
(Applies to all)



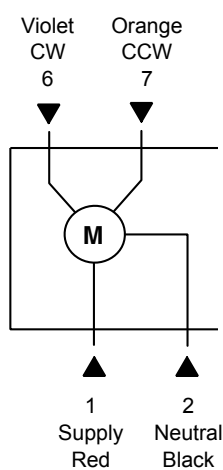
2-position, 24 Vac
(GMA, GQD 2-position)



3-position, 24 Vac-NSR
(GDE/GLB)



2-position, 120 Vac
(GMA, GQD)

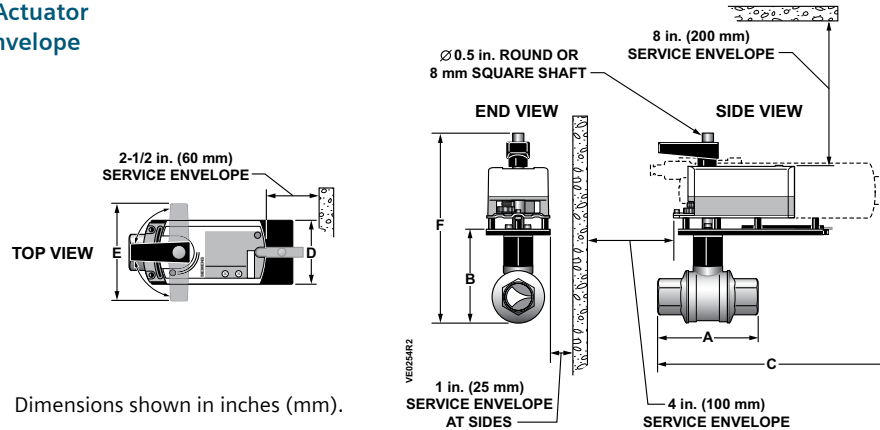


3-position, 24 Vac-SR
(GMA, GQD)

Two- and Three-Way Ball Valves

1/2 to 2", Equal Percentage Flow
 Normally Open or Normally Closed
 600 WOG/ANSI Class 250

Two-Way Ball Valves with Actuator Dimensions and Service Envelope



Part No.	Valve Size (mm)	Flow Rate Cv Range	A	C	C	C	F	Weight (kg)
			Length	Length* Actuator Codes 171A-D, 173A-D GDE/GLB	Length* Actuator Codes 171H-K GQD	Length* Actuator Codes 171E-F, 172E-F Fail Safe GMA	Height	
599-10300(S) to 599-10307(S)	1/2 (15)	0.4 - 10.0	2-7/16 (61)	6-11/16 (170)	6 (153)	—	7-5/8 (193)	.50 (.23)
599-10308(S) to 599-10311(S)	3/4 (20)	6.3 - 25	2-3/4 (70)	6-11/16 (170)	6 (153)	—	8 (204)	.78 (.35)
599-10312(S) to 599-10316(S)	1 (25)	10	3 (77)	6-11/16 (170)	—	8-3/8 (213)	8 (204)	.97 (.44)
		16	3-1/4 (82)	6-11/16 (170)	—	8-3/8 (213)	8-5/16 (212)	1.75 (79)
		40, 63	3-1/4 (82)	6-11/16 (170)	—	8-3/8 (213)	8-5/15 (212)	1.19 (54)
		25	3-7/8 (98)	7 (178)	—	8-11/16 (221)	8-13/16 (213)	1.19 (.54)
599-10317(S) to 599-10321(S)	1-1/4 (30)	16	3-3/8 (86)	6-11/16 (170)	—	8-7/16 (214)	8-3/8 (213)	1.41 (.64)
		25 - 100	3-11/16 (94)	6-15/16 (176)	—	8-11/16 (221)	8-13/16 (213)	1.81 (.82)
599-10322(S) to 599-10326(S)	1-1/2 (40)	25, 63	3-5/8 (92)	6-15/16 (176)	—	8-7/16 (214)	8-13/16 (223)	1.19 (.54)
		40, 100, 160	3-15/16 (100)	7-1/16 (180)	—	8-3/4 (223)	9-1/4 (235)	2.50 (1.13)
599-10327(S) to 599-10330(S)	2 (50)	40, 100	4 (102)	7-1/16 (180)	—	8-3/4 (223)	9-3/8 (238)	2.53 (1.14)
		63	4-5/8 (118)	7-1/2 (190)	—	9-1/8 (223)	10-1/16 (255)	4.66 (2.11)
		160	4-5/8 (118)	7-1/2 (190)	—	9-1/8 (223)	10-1/16 (255)	4.60 (2.13)

Table Notes:

- *Dimension "C" is maximum length, measured from the actuator, end fitting, or mounting plate, whichever extends the furthest.
- 1. All dimensions are in inches (mm) and weights are in pounds (kg).
- 2. Dimension "D", Depth, is 3.7 inches (94.5 mm).
- 3. Dimension "E", Handle, is 5.3 inches (136 mm):

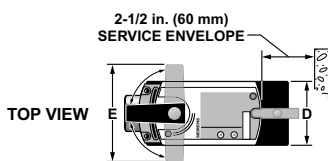


2-Way Ball Valve and Actuator.

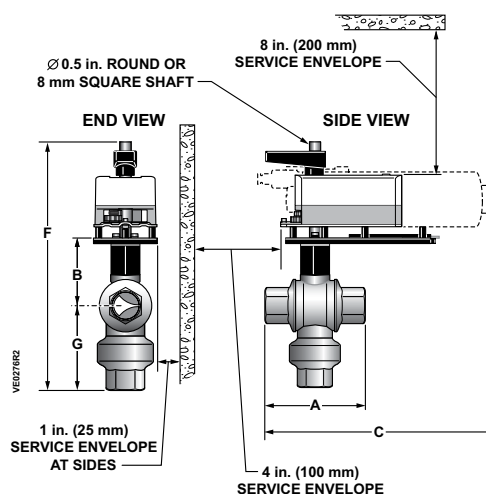


3-Way Ball Valve and Actuator.

Three-Way Ball Valves with Actuator Dimensions and Service Envelope



Dimensions shown in inches (mm).



Part No.	Valve Size	Ball Size	A	C	C	B	G	F	Weight
			Length	Length* Codes 171A-D	Length* Codes 171E-G	Height	Height	Depth	
599-10250 to 599-10255	1/2" (15 mm)	3/4" (20 mm)	3-1/2" (89 mm)	7" (178 mm)	7-5/8" (194 mm)	3-1/4" (83 mm)	2-3/8" (60 mm)	9-3/8" (238 mm)	1.60 lb. (0.73 kg)
599-10256	3/4" (20 mm)	3/4" (20 mm)	2-3/4" (70 mm)	6-1/2" (165 mm)	7-1/8" (181 mm)	3-1/4" (83 mm)	2" (51 mm)	8-3/4" (222 mm)	1.64 lb. (0.74 kg)
599-10257	1" (25 mm)	1" (25 mm)	3" (76 mm)	6-3/4" (171 mm)	7-3/8" (187 mm)	3-3/4" (95 mm)	2-1/2" (64 mm)	9-3/4" (248 mm)	2.26 lb. (1.03 kg)
599-10258 and 599-10259		1-1/4" (30 mm)	4-1/2" (114 mm)	7-3/4" (197 mm)	8-3/8" (213 mm)	4" (102 mm)	3-1/4" (83 mm)	10-3/4" (273 mm)	3.56 lb. (1.61 kg)
599-10260 and 599-10261	1-1/4" (30 mm)	1-1/4" (30 mm)	3-5/8" (91 mm)	7-1/4" (184 mm)	7-7/8" (200 mm)	4" (102 mm)	2-3/4" (70 mm)	10-1/4" (260 mm)	3.50 lb. (1.59 kg)
599-10262	1-1/2" (40 mm)	1-1/4" (30 mm)	4-1/2" (114 mm)	7-3/4" (197 mm)	8-3/8" (213 mm)	4" (102 mm)	3-1/4" (83 mm)	10-3/4" (273 mm)	3.56 lb. (1.61 kg)
599-10263 and 599-10264		1-1/2" (40 mm)	4" (102 mm)	7-1/4" (184 mm)	7-7/8" (200 mm)	4-1/2" (114 mm)	3-1/4" (83 mm)	11" (279 mm)	5.16 lb. (2.34 kg)
599-10265	2" (50 mm)	1-1/2" (40 mm)	4" (102 mm)	7-1/4" (184 mm)	7-7/8" (200 mm)	4-1/2" (114 mm)	3-1/4" (83 mm)	11" (279 mm)	5.16 lb. (2.34 kg)
599-10266 and 599-10267		2" (50 mm)	5" (127 mm)	7-3/4" (197 mm)	8-3/8" (213 mm)	5-3/4" (146 mm)	3-3/4" (95 mm)	12-1/4" (311 mm)	8.50 lb. (3.86 kg)

Table Notes:

*Dimension "C" is maximum length, measured from the actuator, end fitting, or mounting plate, whichever extends the furthest.

1. All dimensions are in inches (mm) and weights are in pounds (kg).
2. Dimension "D", Depth, is 3 inches (76 mm).
3. Dimension "E", Handle, is 4 inches (102 mm).

Two-Way Ball Valve Assemblies

1/2 to 3/4", Equal Percentage Flow

Chrome-Plated Brass Ball and Brass Stem or Stainless Steel Ball and Stem

Electronic Spring Return Actuator, GQD Series



Two-way Ball Valve & Spring Return Actuator Assembly

NO/NC 1/2 to 3/4"				Spring Return Actuator							
				Normally Open			Normally Closed				
				2P	Floating	2-10 Vdc	2P	Floating	2-10 Vdc		
2-way Valve Body Part No.	Valve Size in.	Flow Rate Cv	Close Off psi								
				GQD121.1P	GQD131.1P	GQD151.1P	GQD121.1P	GQD131.1P	GQD151.1P		
Chrome-Plated Brass Ball and Brass Stem											
	1/2	0.4	200	171H-10300	171J-10300	171K-10300	172H-10300	172J-10300	172K-10300		
		0.63	200	171H-10301	171J-10301	171K-10301	172H-10301	172J-10301	172K-10301		
		1.0	200	171H-10302	171J-10302	171K-10302	172H-10302	172J-10302	172K-10302		
		1.6	200	171H-10303	171J-10303	171K-10303	172H-10303	172J-10303	172K-10303		
		2.5	200	171H-10304	171J-10304	171K-10304	172H-10304	172J-10304	172K-10304		
		4.0	200	171H-10305	171J-10305	171K-10305	172H-10305	172J-10305	172K-10305		
		6.3	200	171H-10306	171J-10306	171K-10306	172H-10306	172J-10306	172K-10306		
		10	200	171H-10307*	171J-10307*	171K-10307*	172H-10307*	172J-10307*	172K-10307*		
	3/4	6.3	200	171H-10308	171J-10308	171K-10308	172H-10308	172J-10308	172K-10308		
		10	200	171H-10309	171J-10309	171K-10309	172H-10309	172J-10309	172K-10309		
		16	200	171H-10310	171J-10310	171K-10310	172H-10310	172J-10310	172K-10310		
		25	200	171H-10311*	171J-10311*	171K-10311*	172H-10311*	172J-10311*	172K-10311*		
		Stainless Steel Ball and Stem									
			1/2	0.4	200	171H-10300S	171J-10300S	171K-10300S	172H-10300S	172J-10300S	172K-10300S
0.63	200			171H-10301S	171J-10301S	171K-10301S	172H-10301S	172J-10301S	172K-10301S		
1.0	200			171H-10302S	171J-10302S	171K-10302S	172H-10302S	172J-10302S	172K-10302S		
1.6	200			171H-10303S	171J-10303S	171K-10303S	172H-10303S	172J-10303S	172K-10303S		
2.5	200			171H-10304S	171J-10304S	171K-10304S	172H-10304S	172J-10304S	172K-10304S		
4.0	200			171H-10305S	171J-10305S	171K-10305S	172H-10305S	172J-10305S	172K-10305S		
6.3	200			171H-10306S	171J-10306S	171K-10306S	172H-10306S	172J-10306S	172K-10306S		
10	200			171H-10307S*	171J-10307S*	171K-10307S*	172H-10307S*	172J-10307S*	172K-10307S*		
3/4	6.3		200	171H-10308S	171J-10308S	171K-10308S	172H-10308S	172J-10308S	172K-10308S		
	10		200	171H-10309S	171J-10309S	171K-10309S	172H-10309S	172J-10309S	172K-10309S		
	16		200	171H-10310S	171J-10310S	171K-10310S	172H-10310S	172J-10310S	172K-10310S		
	25		200	171H-10311S*	171J-10311S*	171K-10311S*	172H-10311S*	172J-10311S*	172K-10311S*		

Table Notes:

Part numbers in blue indicate complete assemblies.

*Denotes a full-port valve with no flow optimizer insert.

Two-Way Ball Valve Assemblies

1 to 2", Equal Percentage Flow
 Chrome-Plated Brass Ball and Brass Stem or Stainless Steel Ball and Stem
 Electronic Spring Return Actuator, GMA Series



Two-way Ball Valve & Spring Return Actuator Assembly

NO/NC 1 to 2"				Spring Return Actuator					
				Normally Open			Normally Closed		
				2P	Floating	0-10 Vdc	2P	Floating	0-10 Vdc
2-way Valve Body Part No.	Valve Size in.	Flow Rate Cv	Close Off psi						
				GMA121.1P	GMA131.1P	GMA161.1P	GMA121.1P	GMA131.1P	GMA161.1P
Chrome-Plated Brass Ball and Brass Stem									
599-10312	1	10	200	171E-10312	171F-10312	171G-10312	172E-10312	172F-10312	172G-10312
599-10313		16	200	171E-10313	171F-10313	171G-10313	172E-10313	172F-10313	172G-10313
599-10314		25	200	171E-10314	171F-10314	171G-10314	172E-10314	172F-10314	172G-10314
599-10315		40	200	171E-10315	171F-10315	171G-10315	172E-10315	172F-10315	172G-10315
599-10316*		63	200	171E-10316*	171F-10316*	171G-10316*	172E-10316*	172F-10316*	172G-10316*
599-10317	1-1/4	16	200	171E-10317	171F-10317	171G-10317	172E-10317	172F-10317	172G-10317
599-10318		25	200	171E-10318	171F-10318	171G-10318	172E-10318	172F-10318	172G-10318
599-10319		40	200	171E-10319	171F-10319	171G-10319	172E-10319	172F-10319	172G-10319
599-10320		63	200	171E-10320	171F-10320	171G-10320	172E-10320	172F-10320	172G-10320
599-10321*		100	200	171E-10321*	171F-10321*	171G-10321*	172E-10321*	172F-10321*	172G-10321*
599-10322	1-1/2	25	200	171E-10322	171F-10322	171G-10322	172E-10322	172F-10322	172G-10322
599-10323		40	200	171E-10323	171F-10323	171G-10323	172E-10323	172F-10323	172G-10323
599-10324		63	200	171E-10324	171F-10324	171G-10324	172E-10324	172F-10324	172G-10324
599-10325		100	200	171E-10325	171F-10325	171G-10325	172E-10325	172F-10325	172G-10325
599-10326*		160	200	171E-10326*	171F-10326*	171G-10326*	172E-10326*	172F-10326*	172G-10326*
599-10327	2	40	200	171E-10327	171F-10327	171G-10327	172E-10327	172F-10327	172G-10327
599-10328		63	200	171E-10328	171F-10328	171G-10328	172E-10328	172F-10328	172G-10328
599-10329*		100	200	171E-10329*	171F-10329*	171G-10329*	172E-10329*	172F-10329*	172G-10329*
599-10330		160	200	171E-10330	171F-10330	171G-10330	172E-10330	172F-10330	172G-10330
Stainless Steel Ball and Stem									
599-10312S	1	10	200	171E-10312S	171F-10312S	171G-10312S	172E-10312S	172F-10312S	172G-10312S
599-10313S		16	200	171E-10313S	171F-10313S	171G-10313S	172E-10313S	172F-10313S	172G-10313S
599-10314S		25	200	171E-10314S	171F-10314S	171G-10314S	172E-10314S	172F-10314S	172G-10314S
599-10315S		40	200	171E-10315S	171F-10315S	171G-10315S	172E-10315S	172F-10315S	172G-10315S
599-10316S*		63	200	171E-10316S*	171F-10316S*	171G-10316S*	172E-10316S*	172F-10316S*	172G-10316S*
599-10317S	1-1/4	16	200	171E-10317S	171F-10317S	171G-10317S	172E-10317S	172F-10317S	172G-10317S
599-10318S		25	200	171E-10318S	171F-10318S	171G-10318S	172E-10318S	172F-10318S	172G-10318S
599-10319S		40	200	171E-10319S	171F-10319S	171G-10319S	172E-10319S	172F-10319S	172G-10319S
599-10320S		63	200	171E-10320S	171F-10320S	171G-10320S	172E-10320S	172F-10320S	172G-10320S
599-10321S*		100	200	171E-10321S*	171F-10321S*	171G-10321S*	172E-10321S*	172F-10321S*	172G-10321S*
599-10322S	1-1/2	25	200	171E-10322S	171F-10322S	171G-10322S	172E-10322S	172F-10322S	172G-10322S
599-10323S		40	200	171E-10323S	171F-10323S	171G-10323S	172E-10323S	172F-10323S	172G-10323S
599-10324S		63	200	171E-10324S	171F-10324S	171G-10324S	172E-10324S	172F-10324S	172G-10324S
599-10325S		100	200	171E-10325S	171F-10325S	171G-10325S	172E-10325S	172F-10325S	172G-10325S
599-10326S*		160	200	171E-10326S*	171F-10326S*	171G-10326S*	172E-10326S*	172F-10326S*	172G-10326S*
599-10327S	2	40	200	171E-10327S	171F-10327S	171G-10327S	172E-10327S	172F-10327S	172G-10327S
599-10328S		63	200	171E-10328S	171F-10328S	171G-10328S	172E-10328S	172F-10328S	172G-10328S
599-10329S*		100	200	171E-10329S*	171F-10329S*	171G-10329S*	172E-10329S*	172F-10329S*	172G-10329S*
599-10330S		160	200	171E-10330S	171F-10330S	171G-10330S	172E-10330S	172F-10330S	172G-10330S

Table Notes:
 Part numbers in blue indicate complete assemblies.
 *Denotes a full-port valve with no flow optimizer insert.

Two-Way Ball Valve Assemblies

Chrome-Plated Brass Ball and Brass Stem
Electronic Non-Spring Return Actuator, GDE Series



Two-way Ball Valve & Non-spring Return Actuator Assembly





NO 1/2 to 1-1/4"				Non-Spring Return Actuator			
				Normally Open			
				Floating		0-10 Vdc	
2-way Valve Body Part No.	Valve Size in.	Flow Rate Cv	Close Off psi	 GDE131.1P 3-foot (.9m) Wires	 GDE131.1Q Conduit Adapter & 6-foot (1.8m) Wires	 GDE161.1P 3-foot (.9m) Wires	 GDE161.1Q Conduit Adapter & 6-foot (1.8m) Wires
Chrome-Plated Brass Ball and Brass Stem							
599-10300	1/2	0.4	200	171A-10300	173A-10300	171C-10300	173C-10300
599-10301		0.63	200	171A-10301	173A-10301	171C-10301	173C-10301
599-10302		1.0	200	171A-10302	173A-10302	171C-10302	173C-10302
599-10303		1.6	200	171A-10303	173A-10303	171C-10303	173C-10303
599-10304		2.5	200	171A-10304	173A-10304	171C-10304	173C-10304
599-10305		4.0	200	171A-10305	173A-10305	171C-10305	173C-10305
599-10306		6.3	200	171A-10306	173A-10306	171C-10306	173C-10306
599-10307*	10	200	171A-10307*	173A-10307*	171C-10307*	173C-10307*	
599-10308	3/4	6.3	200	171A-10308	173A-10308	171C-10308	173C-10308
599-10309		10	200	171A-10309	173A-10309	171C-10309	173C-10309
599-10310		16	200	171A-10310	173A-10310	171C-10310	173C-10310
599-10311*		25	200	171A-10311*	173A-10311*	171C-10311*	173C-10311*
599-10312	1	10	200	171A-10312	173A-10312	171C-10312	173C-10312
599-10313		16	200	171A-10313	173A-10313	171C-10313	173C-10313
599-10314		25	200	171A-10314	173A-10314	171C-10314	173C-10314
599-10315		40	200	171A-10315	173A-10315	171C-10315	173C-10315
599-10316*		63	200	171A-10316*	173A-10316*	171C-10316*	173C-10316*
599-10317	1-1/4	16	200	171A-10317	173A-10317	171C-10317	173C-10317
599-10318		25	200	171A-10318	173A-10318	171C-10318	173C-10318
599-10319		40	200	171A-10319	173A-10319	171C-10319	173C-10319
599-10320		63	200	171A-10320	173A-10320	171C-10320	173C-10320
599-10321*		100	200	171A-10321*	173A-10321*	171C-10321*	173C-10321*

Table Notes:

Part numbers in blue indicate complete assemblies.

*Denotes a full-port valve with no flow optimizer insert.

Two-Way Ball Valve Assemblies

Stainless Steel Ball and Stem
Electronic Non-Spring Return Actuator, GDE Series



Two-way Ball Valve & Non-spring Return Actuator Assembly





NO 1/2 to 1-1/4"				Non-Spring Return Actuator			
				Normally Open			
				Floating		0-10 Vdc	
2-way Valve Body Part No.	Valve Size in.	Flow Rate Cv	Close Off psi	 GDE131.1P 3-foot (.9m) Wires	 GDE131.1Q Conduit Adapter & 6-foot (1.8m) Wires	 GDE161.1P 3-foot (.9m) Wires	 GDE161.1Q Conduit Adapter & 6-foot (1.8m) Wires
Stainless Steel Ball and Stem							
599-10300S	1/2	0.4	200	171A-10300S	173A-10300S	171C-10300S	173C-10300S
599-10301S		0.63	200	171A-10301S	173A-10301S	171C-10301S	173C-10301S
599-10302S		1.0	200	171A-10302S	173A-10302S	171C-10302S	173C-10302S
599-10303S		1.6	200	171A-10303S	173A-10303S	171C-10303S	173C-10303S
599-10304S		2.5	200	171A-10304S	173A-10304S	171C-10304S	173C-10304S
599-10305S		4.0	200	171A-10305S	173A-10305S	171C-10305S	173C-10305S
599-10306S		6.3	200	171A-10306S	173A-10306S	171C-10306S	173C-10306S
599-10307S*		10	200	171A-10307S*	173A-10307S*	171C-10307S*	173C-10307S*
599-10308S	3/4	6.3	200	171A-10308S	173A-10308S	171C-10308S	173C-10308S
599-10309S		10	200	171A-10309S	173A-10309S	171C-10309S	173C-10309S
599-10310S		16	200	171A-10310S	173A-10310S	171C-10310S	173C-10310S
599-10311S*		25	200	171A-10311S*	173A-10311S*	171C-10311S*	173C-10311S*
599-10312S	1	10	200	171A-10312S	173A-10312S	171C-10312S	173C-10312S
599-10313S		16	200	171A-10313S	173A-10313S	171C-10313S	173C-10313S
599-10314S		25	200	171A-10314S	173A-10314S	171C-10314S	173C-10314S
599-10315S		40	200	171A-10315S	173A-10315S	171C-10315S	173C-10315S
599-10316S*	63	200	171A-10316S*	173A-10316S*	171C-10316S*	173C-10316S*	
599-10317S	1-1/4	16	200	171A-10317S	173A-10317S	171C-10317S	173C-10317S
599-10318S		25	200	171A-10318S	173A-10318S	171C-10318S	173C-10318S
599-10319S		40	200	171A-10319S	173A-10319S	171C-10319S	173C-10319S
599-10320S		63	200	171A-10320S	173A-10320S	171C-10320S	173C-10320S
599-10321S*	100	200	171A-10321S*	173A-10321S*	171C-10321S*	173C-10321S*	

Table Notes:

Part numbers in blue indicate complete assemblies.

*Denotes a full-port valve with no flow optimizer insert.

Two-Way Ball Valve Assemblies

Chrome-Plated Brass Ball and Brass Stem or Stainless Steel Ball and Stem
Electronic Non-Spring Return Actuator, GLB Series



Two-way Ball Valve & Non-spring Return Actuator Assembly




NO/NC 1-1/2 to 2"				Non-Spring Return Actuator			
				Normally Open		Normally Closed	
				Floating		0-10 Vdc	
				GLB131.1P 3-foot (.9m) Wires		GLB131.1Q Conduit Adapter & 6-foot (1.8m) Wires	
2-way Valve Body Part No.				GLB161.1Q Conduit Adapter & 6-foot (1.8m) Wires			
				Chrome-Plated Brass Ball and Brass Stem			
				599-10322	1-1/2	25	200	171B-10322	173B-10322	171D-10322	173D-10322
599-10323	40	200	171B-10323	173B-10323		171D-10323	173D-10323
599-10324	63	200	171B-10324	173B-10324		171D-10324	173D-10324
599-10325	100	200	171B-10325	173B-10325		171D-10325	173D-10325
599-10326*	160	200	171B-10326*	173B-10326*		171D-10326*	173D-10326*
599-10327	2	40	200	171B-10327	173B-10327	171D-10327	173D-10327
599-10328		63	200	171B-10328	173B-10328	171D-10328	173D-10328
599-10329*		100	200	171B-10329*	173B-10329*	171D-10329*	173D-10329*
599-10330		160	200	171B-10330	173B-10330	171D-10330	173D-10330
				Stainless Steel Ball and Stem			
				599-10322S	1-1/2	25	200	171B-10322S	173B-10322S	171D-10322S	173D-10322S
599-10323S	40	200	171B-10323S	173B-10323S		171D-10323S	173D-10323S
599-10324S	63	200	171B-10324S	173B-10324S		171D-10324S	173D-10324S
599-10325S	100	200	171B-10325S	173B-10325S		171D-10325S	173D-10325S
599-10326S*	160	200	171B-10326S*	173B-10326S*		171D-10326S*	173D-10326S*
599-10327S	2	40	200	171B-10327S	173B-10327S	171D-10327S	173D-10327S
599-10328S		63	200	171B-10328S	173B-10328S	171D-10328S	173D-10328S
599-10329S*		100	200	171B-10329S*	173B-10329S*	171D-10329S*	173D-10329S*
599-10330S		160	200	171B-10330S	173B-10330S	171D-10330S	173D-10330S

Table Notes:

Part numbers in blue indicate complete assemblies.

*Denotes a full-port valve with no flow optimizer insert.

Three-Way Ball Valve Assemblies

Chrome-Plated Brass Ball and Brass Stem
Electronic Spring Return Actuator, GMA Series



Three-way Ball Valve & Spring Return Actuator Assembly

Water Mixing 1/2 to 2"				Spring Return Actuator		
				Normally Open A-AB		
3-Way Valve Body Part No.	Valve Size in.	Flow Rate Cv	Close Off psi	2P	Floating	0-10 Vdc
Chrome-Plated Brass Ball and Brass Stem						
599-10250	1/2	0.4	50	171E-10250	171F-10250	171G-10250
599-10251		0.63	50	171E-10251	171F-10251	171G-10251
599-10252		1.0	50	171E-10252	171F-10252	171G-10252
599-10253		2.5	50	171E-10253	171F-10253	171G-10253
599-10254		4	50	171E-10254	171F-10254	171G-10254
599-10255*	3/4	10	50	171E-10255*	171F-10255*	171G-10255*
599-10256*		16	50	171E-10256*	171F-10256*	171G-10256*
599-10257	1	10	50	171E-10257	171F-10257	171G-10257
599-10258		16	50	171E-10258	171F-10258	171G-10258
599-10259*		25	50	171E-10259*	171F-10259*	171G-10259*
599-10260	1-1/4	16	40	171E-10260	171F-10260	171G-10260
599-10261*		40	40	171E-10261*	171F-10261*	171G-10261*
599-10262	1-1/2	16	40	171E-10262	171F-10262	171G-10262
599-10263		25	40	171E-10263	171F-10263	171G-10263
599-10264*		63	40	171E-10264*	171F-10264*	171G-10264*
599-10265	2	25	40	171E-10265	171F-10265	171G-10265
599-10266		40	40	171E-10266	171F-10266	171G-10266
599-10267*		100	40	171E-10267*	171F-10267*	171G-10267*

Table Notes:

Part numbers in blue indicate complete assemblies.

*Denotes a full-port valve with no flow optimizer insert.






Values are for the NC upper port. For NO lower port values, refer to the Reference section.

Three-Way Ball Valve Assemblies

Chrome-Plated Brass Ball and Brass Stem
Electronic Non-Spring Return Actuator, GDE and GLB Series



Three-way Ball Valve & Non-spring Return Actuator Assembly

Water Mixing 1/2 to 1-1/4"				Non-Spring Return Actuator				
				Normally Open				
				Floating		0-10 Vdc		
3-Way Valve Body Part No.	Valve Size in.	Flow Rate Cv	Close Off psi	 GDE131.1P Assembly with 3 ft. Wires	 GDE131.1Q Assembly with 6 ft. Wires and Conduit Adapter	 GDE161.1P Assembly with 3 ft. Wires	 GDE161.1Q Assembly with 6 ft. Wires and Conduit Adapter	
				GDE Series				
	1/2	599-10250	0.4	50	171A-10250	173A-10250	171C-10250	173C-10250
		599-10251	0.63	50	171A-10251	173A-10251	171C-10251	173C-10251
		599-10252	1.0	50	171A-10252	173A-10252	171C-10252	173C-10252
		599-10253	2.5	50	171A-10253	173A-10253	171C-10253	173C-10253
		599-10254	4	50	171A-10254	173A-10254	171C-10254	173C-10254
		599-10255*	10	50	171A-10255*	173A-10255*	171C-10255*	173C-10255*
	3/4	599-10256*	16	50	171A-10256*	173A-10256*	171C-10256*	173C-10256*
		599-10257	10	50	171A-10257	173A-10257	171C-10257	173C-10257
	1	599-10258	16	50	171A-10258	173A-10258	171C-10258	173C-10258
		599-10259*	25	50	171A-10259*	173A-10259*	171C-10259*	173C-10259*
	1-1/4	599-10260	16	40	171A-10260	173A-10260	171C-10260	173C-10260
		599-10261*	40	40	171A-10261*	173A-10261*	171C-10261*	173C-10261*






Water Mixing 1-1/2 to 2"				Non-Spring Return Actuator				
				Normally Open				
				Floating		0-10 Vdc		
3-Way Valve Body Part No.	Valve Size in.	Flow Rate Cv	Close Off psi	 GLB131.1P Assembly with 3 ft. Wires	 GLB131.1Q Assembly with 6 ft. Wires and Conduit Adapter	 GLB161.1P Assembly with 3 ft. Wires	 GLB161.1Q Assembly with 6 ft. Wires and Conduit Adapter	
				GLB Series				
	1-1/2	599-10262	16	40	171B-10262	173B-10262	171D-10262	173D-10262
		599-10263	25	40	171B-10263	173B-10263	171D-10263	173D-10263
		599-10264*	63	40	171B-10264*	173B-10264*	171D-10264*	173D-10264*
	2	599-10265	25	40	171B-10265	173B-10265	171D-10265	173D-10265
		599-10266	40	40	171B-10266	173B-10266	171D-10266	173D-10266
		599-10267*	100	40	171B-10267*	173B-10267*	171D-10267*	173D-10267*

Table Notes:

Part numbers in blue indicate complete assemblies.

*Denotes a full-port valve with no flow optimizer insert.

Values are for the NC upper port. For NO lower port values, refer to the Reference section.

Magnetic Valves

Incredibly fast and accurate positioning; long-life reliability

Magnetic valve and actuator assemblies use magnetic actuation to enhance response time and improve stability. A less than two-second positioning time and 1000:1 high-resolution stroke enables extremely fast and accurate positioning. Their unrivaled performance in water or steam HVAC applications make them the right choice for light industrial process control and extremely fast closed loop control.

Position feedback with wear-free inductive stroke measurement is more durable than typical potentiometer type position measurement for long life and consistent accurate feedback signal.



Magnetic Valves offer:

- Reduction in the level of control loop difficulty
- Fast stabilization of disturbance variables
- Instant response to set point changes
- Utilization of complex control algorithms
- Easy commissioning and monitoring
- Enhanced operational reliability
- Long service life and low labor costs

Control Valves for Hot and Chilled Water

Description

The Magnetic MX.. Mixing Valve uses magnetic actuation to enhance response time and provide stability. Large signal changes switch the actuator to the large signal band, allowing high-gain response to quickly position the valve element. Small signal changes switch the actuator to the small signal band to provide loop stability and precise positioning.

Features

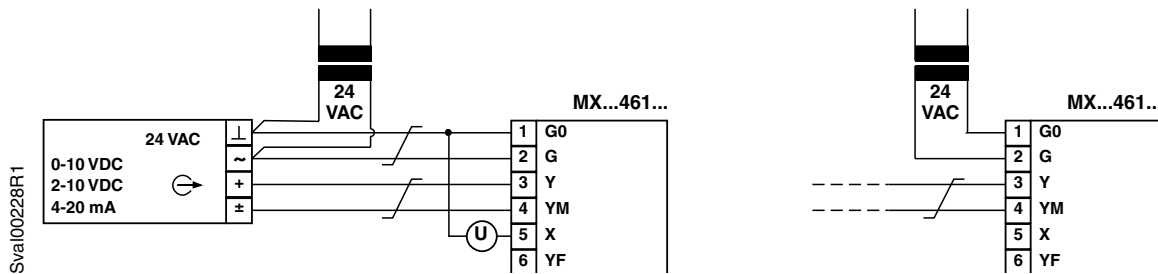
- Fast positioning time (< 2 seconds)
- 1000:1 resolution
- Magnetic actuation
- No maintenance
- Manual override
- Auto calibration
- Dip switch selectable signal input (0 to 10 V or 4 to 20 mA)
- Dip switch selectable flow characteristic
- Built-in position feedback

Applications

The Magnetic MX.. Mixing Valve is designed for modulating control of chilled water and low-pressure hot water and is well suited for HVAC systems.

The valves can be configured for straight-through or 3-way applications and can be used in closed loop applications. Valves are shipped with NPT screwed fittings. A flanged version is also available in the 2-1/2" line size.

Wiring Diagram



Connection to Controller with Four-wire Output.

Ⓢ = Indication of valve position (only where required).
0 to 10 Vdc → 0 to 100% volumetric flow

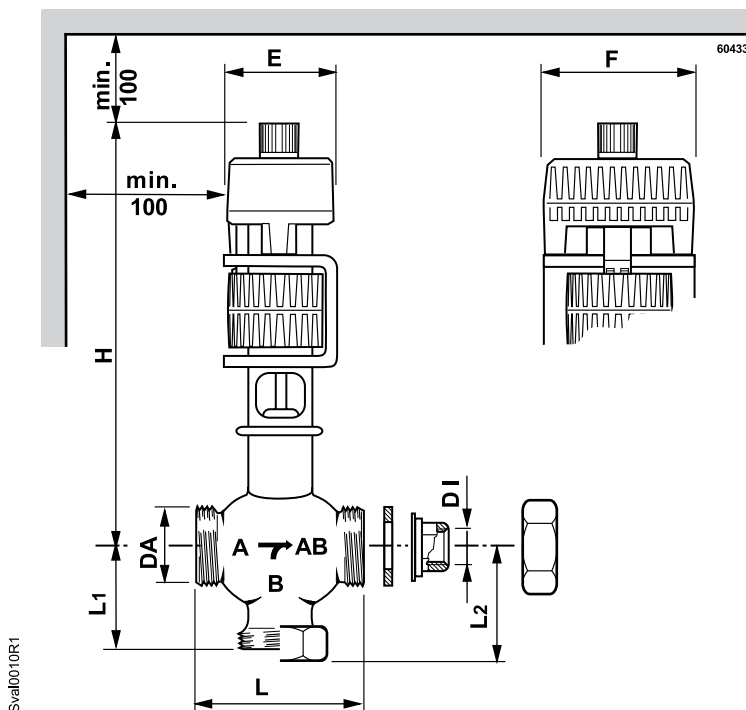
Specifications

Operating Voltage	24 Vac
Nominal Power	
1/2 - 1-1/4"	29 VA (5w)
1-1/2 - 2"	44 VA (6w)
2-1/2"	46 VA (6w)
Frequency	50/60 Hz +20/-15%
Control Signals	0 to 10 Vdc, 2 to 10 Vdc, or 4 to 20 mA
Position Feedback Signal	0 to 10 Vdc; Load Resistance > 500 Ω
Materials	
Body	Cast Iron
Plug	CrNi Steel
Seat	Brass
Bellows	Tombac, Bronze, CrNi Steel
Packing	
Normal Duty	EDPM (O-ring)
Max. Pressure	
p _e max	150 psig
Max. Differential Pressure	44 psi
Temperature of Medium	34° to 266°F (1° to 130°C)
Resolution	1000:1
Position with Actuator De-energized	A → AB Closed
Positioning Time	<2 Seconds
Agency Approvals	UL873, cUL CSA C22.2 No. 24
Flow Characteristics	Linear or Equal Percentage
Environmental Protection	NEMA Type 1



MXG461...U
Magnetic Control Valve.

Dimensions for MX.461...U Valves with Electronic Module



Dimensions shown in inches (mm).

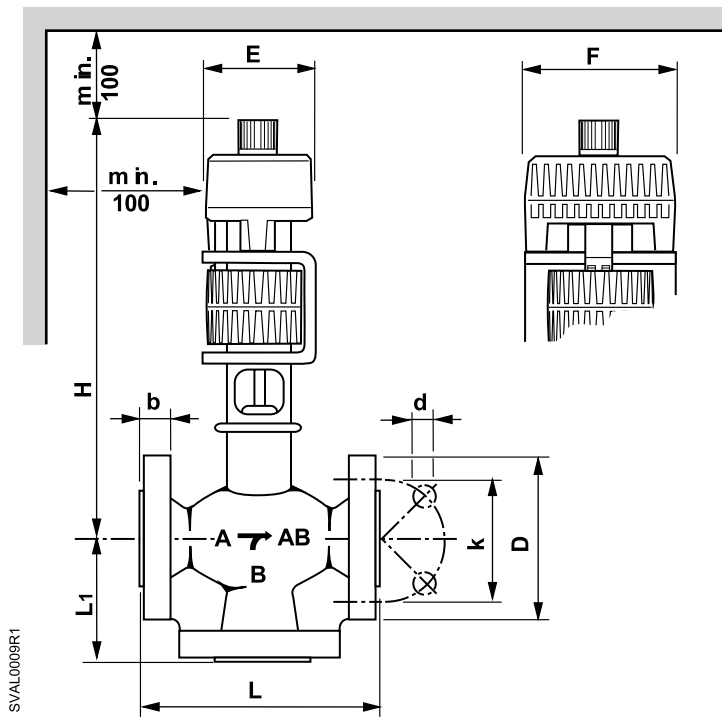
Part No.	DI	DA	L	L1	L2*	H	E	F	Weight lb. (kg)
MXG461.15-0.6U	1/2	1	3.15 (80)	1.67 (42.5)	2.01 (51)	9.45 (240)	3.15 (80)	3.94 (100)	8.4 (3.8)
MXG461.15-1.5U	1/2	1	3.15 (80)	1.67 (42.5)	2.01 (51)	9.45 (240)	3.15 (80)	3.94 (100)	8.4 (3.8)
MXG461.15-3.0U	1/2	1	3.15 (80)	1.67 (42.5)	2.01 (51)	9.45 (240)	3.15 (80)	3.94 (100)	8.4 (3.8)
MXG461.20-5.0U	3/4	1-1/4	3.74 (95)	2.07 (52.5)	2.40 (51)	10.24 (260)	3.15 (80)	3.94 (100)	9.3 (4.2)
MXG461.25-8.0U	1	1-1/2	4.33 (110)	2.22 (56.5)	2.56 (65)	10.63 (270)	3.15 (80)	3.94 (100)	10.4 (4.7)
MXG461.32-12U	1-1/4	2	4.92 (125)	2.66 (67.5)	2.99 (76)	11.22 (285)	3.15 (80)	3.94 (100)	12.3 (5.6)
MXG461.40-20U	1-1/2	2-1/4	5.51 (140)	3.17 (80.5)	3.70 (94)	12.60 (320)	3.94 (100)	4.72 (120)	20.5 (9.3)
MXG461.50-30U	2	2-3/4	6.69 (170)	3.68 (93.5)	4.29 (109)	13.39 (340)	3.94 (100)	4.72 (120)	26.2 (11.9)

Table Note:

*When used as a straight-through valve.

Control Valves for Hot and Chilled Water

MX.461...U Flanged Valves with Electronics Module Dimensions



Dimensions shown in inches (mm).

Part No.	L	L1	D	b	k	d 4X	H	E	F	Weight lb. (kg)
MXF461.65-50U	11.42 (290)	4.92 (125)	7.00 (177.8)	0.88 (22.4)	5.50 (139.7)	0.75 (19.05)	15.43 (392)	3.15 (80)	3.94 (100)	63.1 (28.6)



MXG461...U
Magnetic Control Valve.

Sizing

Part No.	Line Size (in.)	Cv	Max. Close-off Pressure (psi)	Power for Transformer Sizing (VA)	Power Consumption (W)	Fuse Required (A)	Wire Gauge			
							18	16	14	12
							Max. Cable Length (ft.)			
MXG461.15-0.6U	1/2	0.7	44	29	5	3.15	108	213	361	525
MXG461.15-1.5U	1/2	1.7	44	29	5	3.15	108	213	361	525
MXG461.15-3.0U	1/2	3.5	44	29	5	3.15	108	213	361	525
MXG461.20-5.0U	3/4	5.8	44	29	5	3.15	108	213	361	525
MXG461.25-8.0U	1	9.3	44	29	5	3.15	108	213	361	525
MXG461.32-12U	1-1/4	14	44	29	5	3.15	108	213	361	525
MXG461.40-20U	1-1/2	23	44	44	6	4.00	66	118	197	328
MXG461.50-30U	2	35	44	44	6	4.00	66	118	197	328
MXF461.65-50U	2-1/2	58	44	46	6	5.00	49	98	164	262

*All data relates to a supply of 24 Vac.

MX..Valves with Electronic Module Product Ordering

Valve Size	Cv	Part No.
NPT Union		
1/2"	0.7	MXG461.15-0.6U
1/2"	1.7	MXG461.15-1.5U
1/2"	3.5	MXG461.15-3.0U
3/4"	5.8	MXG461.20-5.0U
1"	9.3	MXG461.25-8.0U
1-1/4"	14	MXG461.32-12U
1-1/2"	23	MXG461.40-20U
2"	35	MXG461.50-30U
Flanged		
2-1/2"	58	MXF461.65-50U*

Table Note:

*No blanking flange

Control Valves for Hot and Chilled Water with ZM Signal Module

Description

The Magnetic M3P..FY valve uses a magnetic actuator to positively position with extremely high speed and accuracy. The combination of >1000:1 resolution and full range positioning in less than one second allows exceptional loop stability and reaction time.

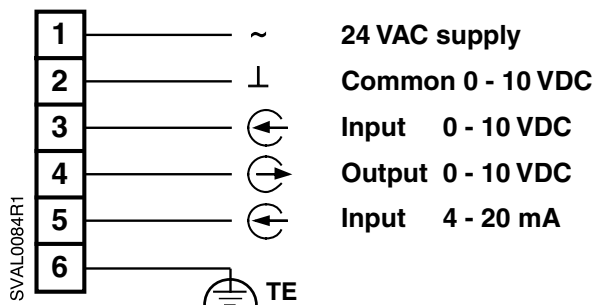
Features

- Fast positioning time (< 1 second)
- >1000:1 resolution
- Magnetic actuation
- No periodic maintenance
- Manual override
- Built-in position control and feedback
- Low friction, heavy-duty and maintenance free

Applications

The Magnetic M3P..FY Mixing Valve is designed for modulating control of chilled water and low-pressure hot water, especially in HVAC systems. The valves are also configured for straight-through applications. The valves may be shipped with flanged fittings: 2BN is two-way with Companion Flange Kit, and 3BN is three-way with Companion Flange Kit. The valves are used in closed loop applications.

Wiring Diagram



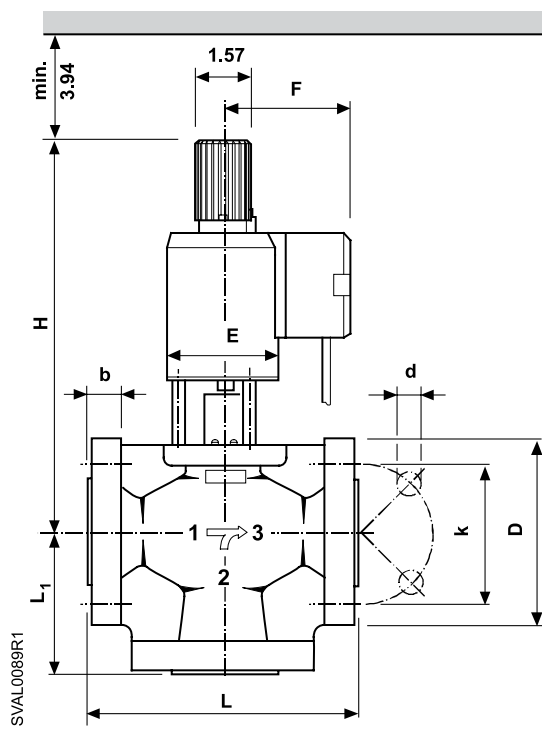
Specifications

Operating Voltage	24 Vac
Nominal Power	
3".....	80 VA (20w)
4".....	120 VA (30w)
Frequency	50/60 Hz +15/-10%
Control Signals	0 to 10 Vdc or 4 to 20 mA
Position Feedback Signal	0 to 10 Vdc
Materials	
Body.....	Cast Iron
Plug.....	CrNi Steel
Seat.....	Brass
Packing	
Normal Duty.....	EDPM (O-ring)
Max. Pressure	
$p_{e,max}$	145 psig
Max. Differential Pressure.....	44 psi (3 in.) 29 psi (4 in.)
Water Temperature	35° to 248°F (2° to 120°C)
Ambient Temperature	35° to 122°F (2° to 50°C)
Resolution	>1000:1
Position with Actuator De-energized	A → AB Closed
Positioning Time	<1 second
Agency Approvals	UL873, cUL CSA C22.2 No. 24
Flow Characteristic	Linear
Environmental Protection	NEMA Type 1



Magnetic M3P..FY
Mixing Valve with Actuator.

M3P..FY Control Valve Dimensions



Dimensions shown in inches (mm).

Part No.	L	L1	D	b	k	d	H	E	F	Weight lb. (kg)
M3P80FY	12.20 (310)	5.51 (140)	7.87 (200)	0.87 (22)	6.30 (160)	8 x 0.71 (8x18)	20.00 (508)	5.71 (145)	4.88 (124)	100.0 (45.5)
M3P100FY	13.78 (350)	6.30 (160)	8.66 (220)	0.94 (24)	7.09 (180)	8 x 0.71 (8x18)	22.44 (570)	5.71 (145)	4.88 (124)	130.0 (59.0)

Table Note:

Counter flanges are not supplied. Flange dimensions to DIN2533, PN16.
To order assemblies with flanges, see product ordering table on page 129.

Control Valves for Hot and Chilled Water with ZM Signal Module

Sizing

Part No.	Valve Size (in.)	Cv	Max. Differential Pressure and Close-off		Power for Transformer Sizing (VA)	Power Consumption (W)	Wire Gauge (AWG)		
			(psi)	(bar)			16	14	12
							Max. Wiring Length (ft.)		
M3P80FY	3	93	44	3	80	20	33	52	89
M3P100FY	4	152	29	2	120	30	20	33	56

Magnetic M3P..FY
Mixing Valve with Actuator.



M3P...FY Valves with ZM Module Product Ordering

Description	Cv	Part No.
Without Flanges		
3" 3-way, Pilot Position	93	M3P80FY
4" 3-way, Pilot Position	152	M3P100FY
With Flanges		
3" 2-way, Pilot Position	93	M3P80FY/2BN
4" 2-way, Pilot Position	152	M3P100FY/2BN
3" 3-way, Pilot Position	93	M3P80FY/3BN
4" 3-way, Pilot Position	152	M3P100FY/3BN

Modulating Control Valves with Magnetic Actuators

Positioning Control and Position Feedback for Hot Water and Steam

Description

MVF461H Series Modulating Control Valves are control valves with magnetic actuators, for modulating control of hot water, high temperature hot water, and steam.

Features

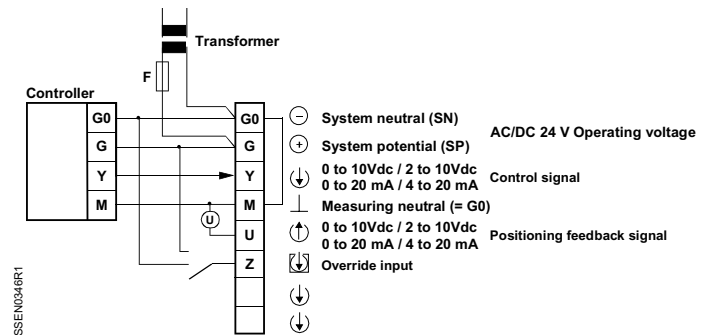
- Fast positioning time (< 2 seconds)
- Selectable valve characteristic: Equal percentage or linear
- Selectable standard interface: 0/2 to 10 Vdc or 0/4 to 20 mA
- High resolution (>1000:1)
- High rangeability
- Wear-free inductive stroke measurement
- Spring return A → AB closed when de-energized
- Positioning control and position feedback signal
- Low-friction, heavy-duty and maintenance-free

Applications

The MVF461H... Control Valves are through-port valves with magnetic actuators. The actuator is equipped with an electronics module for positioning control and position feedback. If the power is off, the valve control path A → AB is closed.

The short positioning time, high resolution and high rangeability make these valves ideal for proportional control of district heating stations, and heating applications using high temperature hot water and steam.

Wiring Diagram



MVF461H Series Magnetic Control Valve.



Specifications

Electrical

Low-voltage Use Only..... Class 2 (SELV, PELV)

24 Vac

Operating Voltage..... 24 Vac +20/-15%

Frequency..... 45 to 65 Hz

Typical Power Consumption..... See Sizing Table

Standby..... <1 W (Valve Fully Closed)

Nominal Apparent Power..... See Sizing Table

Suitable Fuse..... Slow

24 Vdc

Operating Voltage..... 20 to 30 Vdc

Functional Data of Actuator

Input

Positioning Signal Y..... 0/2 to 10 Vdc, 0/4 to 20mA

Impedance

0/2 to 10 Vdc..... 100 kΩ//5nF

0/4 to 20 mA 240 Ω//5nF

Forced Control

Impedance..... 22 kΩ

Closing the Valve (Z connected to G0)..... <1 Vac; <0.8 Vdc

Opening the valve (Z connected to G0)..... > 6 Vac; >5 Vdc

No Function (Z not wired)..... Positioning Signal Y Active

Output

Position Feedback Signal Voltage..... 0/2 to 10 Vdc;

Load Resistance > 500Ω

Current 0/4 to 20 mA;

Load Resistance < 500Ω

Stroke Measurement Inductive

Nonlinearity..... ±3% of End Value

Functional Data of Valve

Nominal Pressure ANSI 125 (PN 16)

Perm. Operating Pressure¹ Water up to 248°F (120°C)

232 psig (16 bar)

Water Above 248°F (120°C): 188 psig (13 bar)

Saturated Steam: 130 psig (9 bar)

Pressure Differential Δp_{max} / Δps 145 psi (10 bar)

Materials

Body Nodular Cast Iron

Cover Flange Nodular Cast Iron

Seat/Inner Valve Stainless Steel

Packing

Normal Duty EDPM (O-ring)

Electrical Connections

Cable Entries..... 3 x M20 x 1.5 or PG13.5/G1/2

Connection Terminals..... Screw Terminals for up to 12 AWG Wires

Min. Cross-sectional Area 4) 0.75 mm²

Max. Pressure

Max. Differential Pressure 145 psi

Media Temperature 34° to 356°F (1° to 180°C)

Ambient Conditions

Temperature

Operation and storage..... 23° to 113°F (-5° to 45°C)

Transport -13° to 158°F (-25° to 70°C)

Humidity..... 5 to 95% rh (Non-condensing)

Resolution 1000:1

Position with Actuator De-energized A → AB Closed

Positioning Time <2 seconds

Approvals IP31 to IEC 529

Conforms to CE Requirements, UL 873,

Certified to Canadian Standard C22.2, No. 24, C-Tick N-474,

PED 97/23/EC: Pressure-carrying Parts

Par. 1, Section. 2.1.4 / Par. 3, Section 3 Fluid group 2

Flow Characteristic Equal Percentage or Linear

Environmental Protection NEMA Type 1

Notes:

¹Tested at 1.5 x PN (24 bar), similar to DIN 3230-3

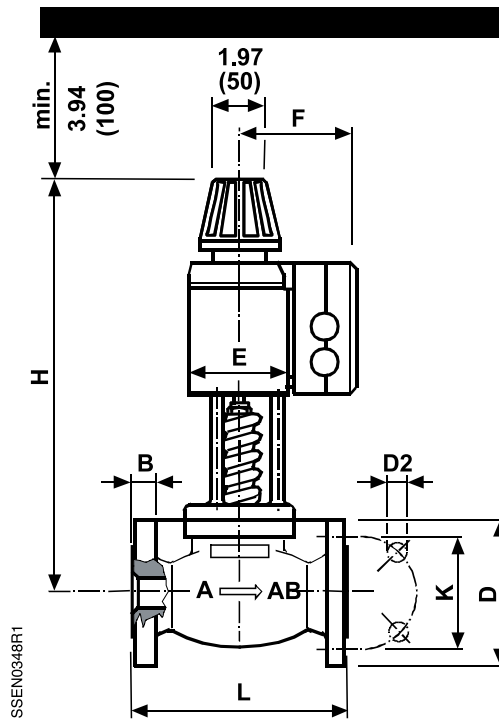
²Can be selected via DIP switch.

⁴In case of strong vibrations, use high-flex stranded wires.

Modulating Control Valves with Magnetic Actuators

Positioning Control and Position Feedback
for Hot Water and Steam

Dimensions



Dimensions shown in inches (mm).

Part No.	DN	L	D	D2	B	K	H	E	F	Weight lb. (kg)
MVF461H15-0.6	15	5.12 (130)	3.74 (95)	0.16 x 0.55 (4x14)	0.55 (14)	2.56 (65)	13.4 (340)	3.15 (80)	4.53 (115)	18.3 (8.3)
MVF461H15-1.5	15	5.12 (130)	3.74 (95)	0.16 x 0.55 (4x14)	0.55 (14)	2.56 (65)	13.4 (340)	3.15 (80)	4.53 (115)	18.3 (8.3)
MVF461H15-3	15	5.12 (130)	3.74 (95)	0.16 x 0.55 (4x14)	0.55 (14)	2.56 (65)	13.4 (340)	3.15 (80)	4.53 (115)	18.3 (8.3)
MVF461H20-5	20	5.91 (150)	4.13 (105)	0.16 x 0.55 (4x14)	0.63 (16)	2.95 (75)	13.3 (339)	3.15 (80)	4.53 (115)	19.6 (8.9)
MVF461H25-8	25	6.30 (160)	4.53 (115)	0.16 x 0.55 (4x14)	0.63 (16)	3.35 (85)	13.6 (346)	3.15 (80)	4.53 (115)	22.1 (10.0)
MVF461H32-12	32	7.09 (180)	5.51 (140)	0.16 x 0.71 (4x18)	0.71 (18)	3.94 (100)	15.12 (384)	3.94 (100)	4.92 (125)	34.6 (15.7)
MVF461H40-20	40	7.87 (200)	5.91 (150)	0.16 x 0.71 (4x18)	0.71 (18)	4.33 (110)	15.79 (401)	3.94 (100)	4.92 (125)	39.2 (17.8)
MVF461H50-30	50	9.05 (230)	6.50 (165)	0.16 x 0.71 (4x18)	0.79 (20)	4.92 (125)	17.58 (449)	4.92 (125)	5.43 (138)	60.0 (27.2)

Table expressed in inches (mm).



MVF461H Series Magnetic Control Valve.

Sizing

Part No.	Line Size (in.)	Cv	Max. Differential Pressure and Close-off (psi)	Power for Transformer Sizing (VA)	Power Consumption (W)	Slow Fuse	Wire Gauge (AWG)		
							16	14	12
							Max. Wiring Length (ft.)		
MVF461H15-0.6	1/2	0.7	145	33	15	3.15	130	215	360
MVF461H15-1.5	1/2	1.8	145	33	15	3.15	130	215	360
MVF461H15-3	1/2	3.5	145	33	15	3.15	130	215	360
MVF461H20-5	3/4	5.9	145	33	15	3.15	130	215	360
MVF461H25-8	1	9.4	145	33	15	3.15	130	215	360
MVF461H32-12	1-1/4	14.0	145	43	20	4	100	165	260
MVF461H40-20	1-1/2	23.3	145	65	20	6.3	100	165	260
MVF461H50-30	2	35.0	145	65	26	6.3	65	100	165

MVF461H Modulating Control Valve Product Ordering

Valve Size (in)	Cv	Part No.
Without Flanges		
1/2	0.7	MVF461H15-0.6
1/2	1.8	MVF461H15-1.5
1/2	3.5	MVF461H15-3
3/4	5.9	MVF461H20-5
1	9.4	MVF461H25-8
1-1/4	14.0	MVF461H32-12
1-1/2	23.3	MVF461H40-20
2	35.0	MVF461H50-30
With NPT Flanges		
1/2	0.7	MVF461H15-0.6-N
1/2	1.8	MVF461H15-1.5-N
1/2	3.5	MVF461H15-3-N
3/4	5.9	MVF461H20-5-N
1	9.4	MVF461H25-8-N
1-1/4	14.0	MVF461H32-12-N
1-1/2	23.3	MVF461H40-20-N
2	35.0	MVF461H50-30-N
With Weld Flanges		
1/2	0.7	MVF461H15-0.6-W
1/2	1.8	MVF461H15-1.5-W
1/2	3.5	MVF461H15-3-W
3/4	5.9	MVF461H20-5-W
1	9.4	MVF461H25-8-W
1-1/4	14.0	MVF461H32-12-W
1-1/2	23.3	MVF461H40-20-W
2	35.0	MVF461H50-30-W

Ordering Notes:

- When placing an order, specify the quantity, product number and description. **Example: 1 MVF461H15-0.6 valve**
- The valve body and magnetic actuator assemblies cannot be separated.

Modulating Control Valves with Magnetic Actuators

Positioning Control and Position Feedback for Domestic Water

Description

The MXG461B Modulating Control Valve is a control valve with magnetic actuators, for modulating control of domestic water, cold water and hot water systems.

Features

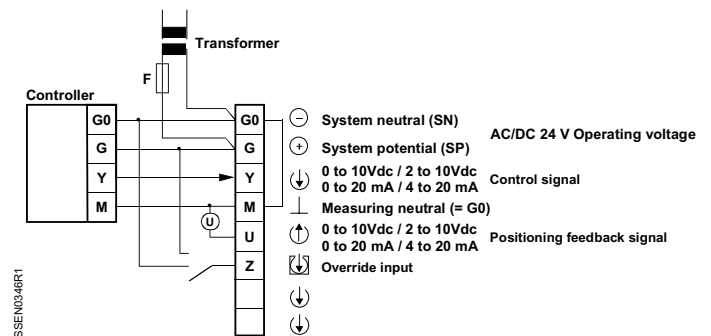
- Fast positioning time (< 2 seconds)
- Selectable valve characteristic: Equal percentage or linear
- Selectable standard interface: 0/2 to 10 Vdc or 0/4 to 20 mA
- High resolution (>1:1000)
- High rangeability
- Wear-free inductive stroke measurement
- Spring return A → AB closed when de-energized
- Positioning control and position feedback signal
- Low-friction, heavy-duty and maintenance-free

Applications

The MXG461B... Modulating Control Valves are through-port or mixing valves with magnetic actuators. The actuator is equipped with an electronics module for positioning control and position feedback. If the power is off, the valve control path A → AB is closed.

The short positioning time, high resolution and high rangeability make these valves ideal for modulating control of domestic, hot and cold water systems.

Wiring Diagram





MXG461B Series Modulating Control Valve.

Specifications

Electrical

Low-voltage Use Only Class 2 (SELV, PELV)

24 Vac

Operating Voltage 24 Vac +20/-15%

Frequency 45 to 65 Hz

Typical Power Consumption See Table 1

Standby <1 W (Valve Fully Closed)

Nominal Apparent Power See Sizing Table

Suitable Fuse Slow, See Table 1

24 Vdc

Operating Voltage 20 to 30 Vdc

Functional Data of Actuator

Input

Positioning Signal Y 0/2 to 10 Vdc or 0/4 to 20 mA

Impedance

0/2 to 10Vdc 100 k Ω /5nF

0/4 to 20 mA 240 Ω /5nF

Forced Control

Impedance 22 k Ω

Closing the Valve (Z connected to G0) <1 Vac; <0.8 Vdc

Opening the Valve (Z connected to G0) > 6 Vac; >5 Vdc

No Function (Z not wired) Positioning Signal Y Active

Output

Position Feedback Signal Voltage 0/2 to 10 Vdc;
Load Resistance > 500 Ω

Current 0/4 to 20 mA;
Load Resistance < 500 Ω

Stroke Measurement Inductive

Nonlinearity \pm 3% of End Value

Functional Data of Valve

Nominal Pressure ANSI 125 (PN 16)

Operating Pressure $p_{e,max}$ ¹ 232 psi (16 bar)

Pressure Differential $Dp_{v,max}$ See Sizing Table.

Leakage A \rightarrow AB Maximum 0.05% Cv
B \rightarrow AB Depends on Application Data
(0.2% Cv)

Water Temperature² -4 to 248°F (-20 to 120°C)

Valve Characteristic³ Equal Percentage or Linear, Optimized
Near the Closing Point

Resolution 1:1000

Type of Operation Modulating

Position De-energized A \rightarrow AB Closed

Orientation Upright to Horizontal

Positioning Time < 2 seconds

Materials

Body Red Bronze

Cover Flange Red Bronze

Seat/Inner Valve Stainless Steel

Packing

Normal Duty EPDM (O-ring)

Pipe Connections Screwed Fittings, Bronze/Brass

Electrical Connections

Cable Entries 3 x M20 x1.5 or PG13.5/G1/2

Connection Terminals Screw Terminals for 12 AWG Wires

Min. Cross-sectional Area⁴ 18 ga. AWG

Max. Cable Length Refer to Sizing Table.

Ambient Conditions

Temperature

Operation and Storage 23 to 113°F (-5 to 45°C)

Transport -13 to 158°F (-25 to 70°C)

Humidity 5 to 95% RH

Agency Approvals IP31 to IEC 529

Conforms to CE Requirements, UL 873,

Certified to Canadian Standard C22.2 No. 24, C-Tick N-474,

PED 97/23/EC: Pressure-carrying Parts,

Par. 1, Section. 2.1.4 / Par. 3, Section 3, Fluid Group 2

Flow Characteristics Equal Percentage or Linear

Notes:

¹ Tested at 1.5 x PN (24 bar), similar to DIN 3230-3

² For medium temperatures <32°F (0°C), the Z366 stem heating element is required.

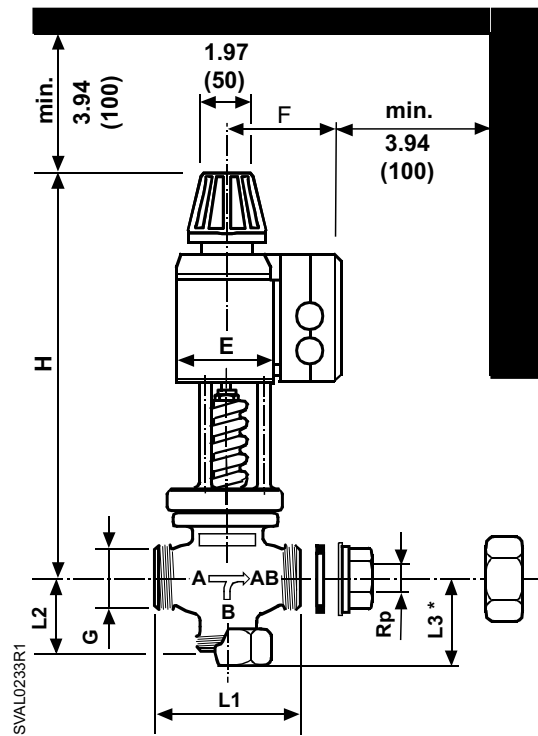
³ Can be selected via DIP switch.

⁴ In case of strong vibrations, use high-flex stranded wires.

Modulating Control Valves with Magnetic Actuators

Positioning Control and Position Feedback
for Domestic Water

Dimensions



Dimensions shown in inches (mm).

Part No.	DN		G (in)	L1	L2	L3	H	E	F	Weight lb. (kg)
	(mm)	(in)								
MXG461B15-0.6	15	Rp x	G1B	3.15 (80)	1.67 (42.5)	1.97 (50)	13.4 (340)	3.15 (80)	4.53 (115)	15.65 (7.1)
MXG461B15-1.5	15	Rp x	G1B	3.15 (80)	1.67 (42.5)	1.97 (50)	13.4 (340)	3.15 (80)	4.53 (115)	16.09 (7.3)
MXG461B15-3	15	Rp x	G1B	3.15 (80)	1.67 (42.5)	1.97 (50)	13.4 (340)	3.15 (80)	4.53 (115)	16.09 (7.3)
MXG461B20-5	20	Rp x	G1xB	3.74 (95)	2.07 (52.5)	2.36 (60)	13.3 (339)	3.15 (80)	4.53 (115)	16.97 (7.7)
MXG461B25-8	25	Rp 1	G1xB	4.33 (110)	2.22 (56.5)	2.52 (64)	13.6 (346)	3.15 (80)	4.53 (115)	18.73 (8.5)
MXG461B32-12	32	Rp 1x	G2B	4.92 (125)	2.66 (67.5)	2.95 (75)	15.12 (384)	3.94 (100)	4.92 (125)	28.22 (12.8)
MXG461B40-20	40	Rp 1x	G2xB	5.51 (140)	3.17 (80.5)	3.66 (93)	15.79 (401)	3.94 (100)	4.92 (125)	32.19 (14.6)
MXG461B50-30	50	Rp 2	G2xB	6.69 (170)	3.68 (93.5)	4.2 (108)	17.58 (449)	3.94 (100)	4.92 (125)	41.00 (18.6)

Table expressed in inches (mm).

Table Notes:

- A: External thread G...B to ISO228/1
- DN: Internal thread Rp to ISO7/1
- Fittings to ISO 49/DIN 2950 (supplied complete with flange gaskets)



MXG461B Series Modulating Control Valve.

Sizing

Part No.	Valve Size (in.)	Cv	Max. Differential Pressure and Close-off		Power for Transformer Sizing (VA)	Power Consumption (W)	Slow Fuse	Wire Gauge (AWG)		
			(psi)	(bar)				16	14	12
								Max. Wiring Length (ft.)		
MXG461B15-0.6	1/2	0.7	145	70	33	15	3.15	130	215	360
MXG461B15-1.5	1/2	1.8	145	70	33	15	3.15	130	215	360
MXG461B15-3	1/2	3.5	145	70	33	15	3.15	130	215	360
MXG461B20-5	3/4	5.8	116	70	33	15	3.15	130	215	360
MXG461B25-8	1	9.3	102	40	33	15	3.15	130	215	360
MXG461B32-12	1-1/4	14	87	40	43	20	4	100	165	260
MXG461B40-20	1-1/2	23	87	40	43	20	4	100	165	260
MXG461B50-30	2	35	87	40	65	22	6.3	65	100	185

MXG461B Modulating Control Valve Product Ordering

Valve Size (in)	Cv	Part No.
1/2	0.7	MXG461B15-0.6
1/2	1.8	MXG461B15-1.5
1/2	3.5	MXG461B15-3
3/4	5.8	MXG461B20-5
1	9.3	MXG461B25-8
1-1/4	14	MXG461B32-12
1-1/2	23	MXG461B40-20
2	35	MXG461B50-30

Ordering Notes:

- When placing an order, specify the quantity, product number and description.
Example: 1 MXG461B15-0.6 valve and 1 Z366 stem heater
- The valve body and magnetic actuator assemblies cannot be separated. The brass/bronze fittings are included. The Z366 stem heater must be ordered separately.
- The screwed fittings and gaskets are supplied with these valves.

Terminal Modules for Magnetic Valves



ZM, ZM../A Terminal Modules for Magnetic Valves.

Description

ZM../A Terminal Modules are signal transducers/power amplifiers. They convert a 0 to 10 Vdc or 4 - 20 mA control signal and a 24 Vac power supply into a 0 to 20 Vdc phase cut signal.

Applications

ZM../A Terminal Modules are for use with Magnetic Valves only.

Specifications

Supply Voltage	24 Vac +15/-10%, Class 2, 50/60 Hz
Current Consumption	Max. 1 mA @ 0 to 10 Vdc (Input Impedance 2 x 56 kΩ)
Control Signals	0 to 10 Vdc, 4 to 20 mA, 0 to 20 Vdc Phase Cut
Shunt Resistance (4 to 20 mA)	150 Ohms
Mean Operating Data	Refer to Appropriate Valve
Housing Material	Aluminum
Connection Terminals	For max. 1 x 12 AWG or 2 x 14 AWG

Ambient Temperature

ZM100/A, ZM110, ZM120/A	36 to 122°F (2 to 50°C)
ZM101/A, ZM111, ZM121/A	-40 to 122°F (-40 to 50°C)
ZM200/A, ZM210, ZM220/A	36 to 122°F (2 to 50°C)

Dimensions

ZM1..	1.6"H x 2.4"W x 3.0"D
ZM2..	1.6"H x 3.5"W x 4.5"D

Shipping Weights

ZM100/A, ZM111, ZM120/A	0.5 lb.
ZM101/A, ZM121/A	0.5 lb.
ZM110	0.4 lb.
ZM200/A	1.0 lb.
ZM210	0.8 lb.
ZM220/A	1.0 lb.

Agency Approvals Conforms to CE Requirements

Terminal Module Product Ordering

Description	Part No.
Terminal Module. Converts 0-10 Vdc input to 0-20 Vdc phase cut output.	
• up to 40W, IP30 rated housing	ZM100/A
• up to 40W, IP54 rated housing	ZM101/A
• up to 120W, IP30 rated housing	ZM200/A
Terminal Module. For straight through 0-20 Vdc electrical housing only.	
• up to 40W, IP30 rated housing	ZM110
• to 40W, IP54 rated housing	ZM111
• up to 120W, IP30 rated housing	ZM210
Terminal Module. Converts 0-20 mA/24 Vdc input to 0-20 Vdc phase cut output.	
• up to 40W, IP30 rated housing	ZM120/A
• to 40W, IP54 rated housing	ZM121/A
• up to 120W, IP30 rated housing	ZM220/A

Resilient Seat Butterfly Valves

Tight shut-off for tighter control of energy costs

Resilient Seat Butterfly Valves are now available in sizes up to 20-inches. Excellent for isolation applications, two-way and three-way Butterfly Valves provide 2-position (On/Off), floating and modulating control. Three-way Butterfly Valves are available in a variety of configurations.

This catalog contains information on sizes 2 through 12-inches. For larger sizes, please contact Customer Care.



Valve Size	2-Way	3-Way	Pneumatic	SR Electronic	NSR Electronic	In Catalog
2 to 12"	•	•	•	2 to 4"	2 to 12"	•
14 to 20"	•	•	•	—	•	Contact Customer Care.

For sizing information on Butterfly Valves, refer to Reference section.

Valve Size in.	Dimensions			Weight
	A	B	C	
1/2" (15 mm)	2-3/4" (70 mm)	2-15/16" (74 mm)	1-5/16" (33 mm)	1.5 lb. (0.7 kg)
3/4" (20 mm)	3-1/4" (83 mm)	2-3/8" (59 mm)	1-5/16" (33 mm)	2.3 lb. (1.05 kg)
1" (25 mm)	3-7/8" (98 mm)	3-15/16" (99 mm)	1-9/16" (39 mm)	3.3 lb. (1.5 kg)

Two- & Three-Way Resilient Seat Valve Assemblies

Description

Available in two-way and three-way arrangements for two-position (On/Off), floating and modulating control, Resilient Seat Butterfly Valve Assemblies provide bubble-tight shutoff for the assemblies' full-rated pressure.

Features

- Molded-in resilient seat provides bubble-tight shutoff up to 150 psi
- Operating temperature up to 250°F (120°C)
- Lugged body is drilled and tapped for isolation and removal of downstream piping at full-rated pressure
- Round, polished disc and hub edge provides 360 degree concentric seating, minimum flow restriction, lower torques and longer seat life
- Upper and lower inboard bronze bearings ensure longer service life with low operating torques
- Thru-stem design provides high strength and positive disc control with standardized end connection for operator interchangeability
- Extended neck allows adequate clearance for flanges and insulation
- Bi-directional, self-adjusting stem seal is suitable for vacuum and pressure while preventing external contamination of the stem area
- Heavy-duty corrosion resistant top bushing, absorbs actuator side thrust
- Cast-in top plate is an integral part of the body and is standardized to allow direct mounting of actuators
- Each valve is factory tested to 110 percent of specified pressure rating
- Available in multiple configurations to match jobsite needs.

Applications

Butterfly Valve assemblies provide excellent flow control of hot water, chilled water, condenser water, and thermal storage systems applications.

Specifications

Valve Size 2 to 20" (51 to 508 mm)

Body Style Butterfly

Assembly Type 2-Way/3-Way

Materials

Full Cut Disk 2 to 12" / Under Cut Disk 2 to 6":

Body Cast Iron

Disc 304 Stainless Steel

Stem 416 Stainless Steel

Seat EPDM

Bearing Bronze

Upper Stem Bushing Polyester

Upper Stem Seal NBR

Full Cut Disk 14 to 20" / Under Cut Disk 8 to 20":

Body Cast Iron

Disc Aluminum Bronze

Stem 316 or 18-8 Stainless Steel

Seat EPDM

Bearing Sintered Metal

Upper Stem Bushing Polyester

Upper Stem Seal NBR

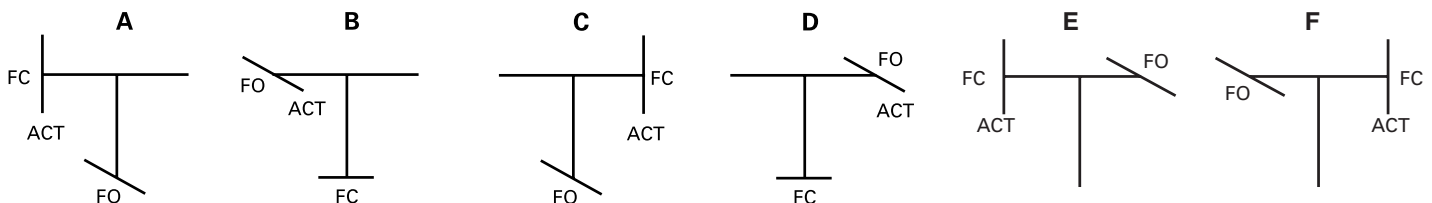
Controlled Medium Chilled Water, Hot Water

Temperatures -40 to +250°F
(-40 to +121°C)

Close-off Ratings Refer to Selection Tables

Three-Way Butterfly Valve Configurations

View from Top of Valve/Actuator Assembly (Shaft or Actuator End)



Key: FC Fail Closed FO Fail Open ACT Actuator Location

Two-Way Resilient Seat Valve Assemblies

S2 Series with 20 psi Pneumatic Spring Return Actuators

Figure 1 Dimensions — Two-Way Valve Assemblies with Pneumatic Actuators

Valve Size	A	B	C	D	E	F	G	H	H1	J	L	M	Notes
	Valve Height	Body O.D.	C _L Pipe To Top Plate	Face/ Face	Tap Size	Bolt Circle	# Bolts	Actuator Height	Actuator Removal Clearance	Actuator Width	C _L Length	Stroke Clearance	
2"	8.50" (216 mm)	6.00" (153 mm)	5.31" (135 mm)	1.69" (43 mm)	0.625-11 UNC-2B	4.75" (121 mm)	4	7.75" (197 mm)	9.75" (248 mm)	7.13" (181 mm)	18.00" (457 mm)	5.0" (127 mm)	1, 2
2.5"	9.31" (236 mm)	6.75" (172 mm)	5.98" (150 mm)	1.81" (46 mm)	0.625-11 UNC-2B	5.50" (140 mm)	4	7.75" (197 mm)	9.75" (248 mm)	7.13" (181 mm)	18.00" (457 mm)	5.0" (127 mm)	1, 2
3"	10.00" (254 mm)	7.25" (184 mm)	6.31" (160 mm)	1.81" (46 mm)	0.625-11 UNC-2B	6.00" (152 mm)	4	7.75" (197 mm)	9.75" (248 mm)	7.13" (181 mm)	18.00" (457 mm)	5.0" (127 mm)	1, 2
4"	11.38" (288 mm)	8.81" (223 mm)	7.13" (180 mm)	2.06" (52 mm)	0.625-11 UNC-2B	7.50" (191 mm)	8	7.75" (197 mm)	9.75" (248 mm)	7.13" (181 mm)	18.00" (457 mm)	5.0" (127 mm)	1, 2
5"	12.81" (325 mm)	10.00" (254 mm)	7.69" (195 mm)	2.25" (56 mm)	0.750-10 UNC-2B	8.50" (216 mm)	8	7.75" (197 mm)	9.75" (248 mm)	7.13" (181 mm)	18.00" (457 mm)	5.0" (127 mm)	1, 3
5"	12.81" (325 mm)	10.00" (254 mm)	7.69" (195 mm)	2.25" (56 mm)	0.750-10 UNC-2B	8.50" (216 mm)	8	7.75" (197 mm)	9.75" (248 mm)	7.13" (181 mm)	18.00" (457 mm)	5.0" (127 mm)	3
6"	13.94" (354 mm)	11.00" (279 mm)	8.31" (210 mm)	2.25" (56 mm)	0.750-10 UNC-2B	9.50" (241 mm)	8	7.75" (197 mm)	9.75" (248 mm)	7.13" (181 mm)	18.00" (457 mm)	5.0" (127 mm)	1, 3, 4
6"	13.94" (354 mm)	11.00" (279 mm)	8.31" (210 mm)	2.25" (56 mm)	0.750-10 UNC-2B	9.50" (241 mm)	8	7.75" (197 mm)	9.75" (248 mm)	7.13" (181 mm)	18.00" (457 mm)	5.0" (127 mm)	2
8"	16.19" (411 mm)	13.25" (336 mm)	9.50" (249 mm)	2.50" (64 mm)	0.750-10 UNC-2B	11.75" (298 mm)	8	7.75" (197 mm)	9.75" (248 mm)	7.13" (181 mm)	18.00" (457 mm)	7.5" (191 mm)	2, 3, 4
10"	19.00" (483 mm)	15.88" (403 mm)	10.75" (273 mm)	2.50" (64 mm)	0.875-9 UNC-2B	14.25" (362 mm)	12	7.75" (197 mm)	9.75" (248 mm)	7.13" (181 mm)	18.00" (457 mm)	7.5" (191 mm)	2, 3, 4
12"	21.63" (549 mm)	18.63" (473 mm)	12.25" (311 mm)	3.00" (76 mm)	0.875-9 UNC-2B	17.00" (432 mm)	12	9.25" (235 mm)	11.25" (286 mm)	8.25" (210 mm)	17.75" (451 mm)	7.5" (191 mm)	2, 3, 4

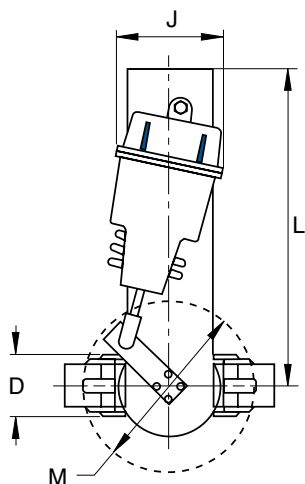
Table Notes:

1. Full cut assemblies (150 psi shutoff)
2. Under cut assemblies (100 psi shutoff) 2-6 inches; (50 psi shutoff) 8-12 inches
3. Two actuators included in assembly
4. Maximum angle of disc opening is 70°

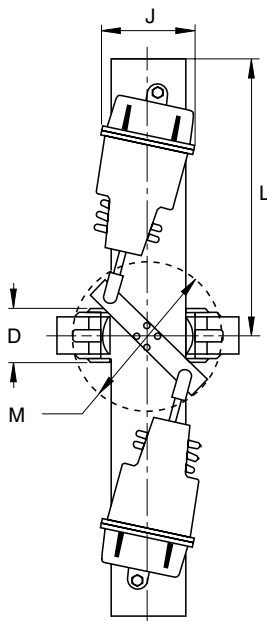


Two-Way Butterfly Valve with pneumatic actuator.

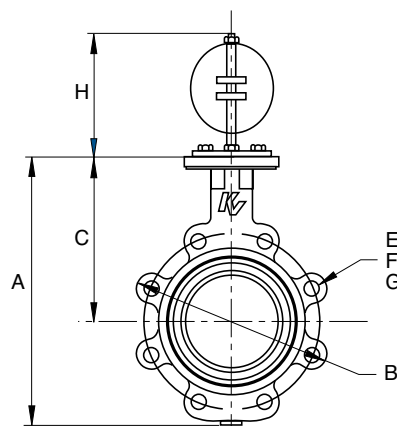
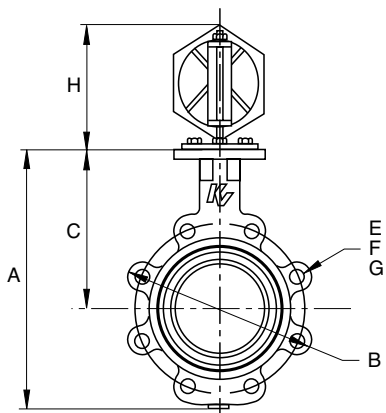
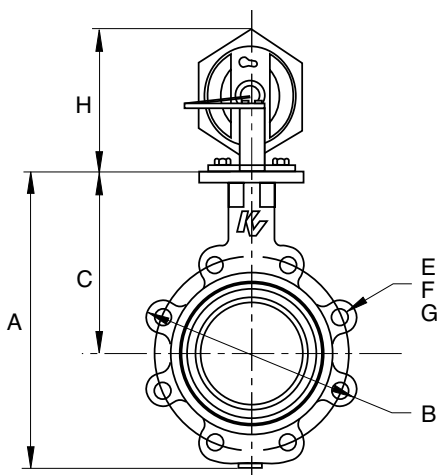
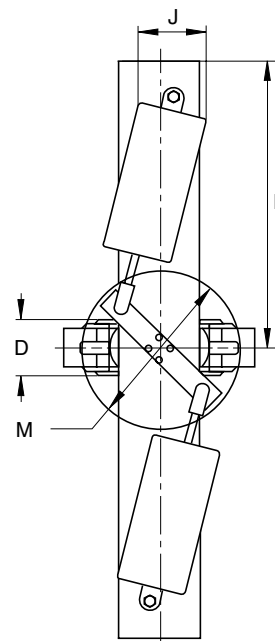
2 to 6-inch, 5 and 6-inch
(50 psi close off)



5 and 6-inch, 8 to 10-inch
(50 psi close off)



12-inch
(50 psi close off)



Three-Way Resilient Seat Valve Assemblies

S2 Series with 20 psi Pneumatic Spring Return Actuators

Figure 2 Dimensions — Three-Way Valve Assemblies with Pneumatic Actuators

Valve Size	A	B	C	D	E	F	G	H	H1	J	L	M	N	P	Notes
	Valve Height	Body O.D.	C _L Pipe To Top Plate	Face/ Face	Tap Size	Bolt Circle	# Bolts	Actuator Height	Actuator Removal Clearance	Actuator Width	C _L Length	Stroke Clearance	Tee Width	Run Length	
2"	8.50" (216 mm)	6.00" (153 mm)	5.31" (135 mm)	1.69" (43 mm)	0.625-11 UNC-2B	4.75" (121 mm)	4	7.75" (197 mm)	9.75" (248 mm)	7.13" (181 mm)	18.00" (457 mm)	8.38" (213 mm)	9.22" (234 mm)	10.69" (272 mm)	1, 2
2.5"	9.31" (236 mm)	6.75" (172 mm)	5.94" (150 mm)	1.81" (46 mm)	0.625-11 UNC-2B	5.50" (140 mm)	4	7.75" (197 mm)	9.75" (248 mm)	7.13" (181 mm)	18.00" (457 mm)	8.38" (213 mm)	10.31" (262 mm)	12.31" (313 mm)	1, 2
3"	10.00" (254 mm)	7.25" (184 mm)	6.31" (160 mm)	1.81" (46 mm)	0.625-11 UNC-2B	6.00" (152 mm)	4	7.75" (197 mm)	9.75" (248 mm)	7.13" (181 mm)	18.00" (457 mm)	10.38" (265 mm)	11.44" (291 mm)	12.88" (327 mm)	1, 2, 4
4"	11.38" (288 mm)	8.81" (223 mm)	7.13" (180 mm)	2.06" (52 mm)	0.625-11 UNC-2B	7.50" (191 mm)	8	7.75" (197 mm)	9.75" (248 mm)	7.13" (181 mm)	18.00" (457 mm)	7.25" (184 mm)	13.13" (333 mm)	15.13" (384 mm)	1, 2, 3, 4
5"	12.19" (310 mm)	10.00" (254 mm)	7.69" (195 mm)	2.25" (56 mm)	0.750-10 UNC-2B	8.50" (216 mm)	8	7.75" (197 mm)	9.75" (248 mm)	7.13" (181 mm)	18.00" (457 mm)	8.69" (221 mm)	14.56" (370 mm)	17.25" (438 mm)	1, 2, 3, 4
6"	13.94" (354 mm)	11.00" (279 mm)	8.31" (210 mm)	2.25" (56 mm)	0.750-10 UNC-2B	9.50" (241 mm)	8	7.75" (197 mm)	9.75" (248 mm)	7.13" (181 mm)	18.00" (457 mm)	10.38" (264 mm)	15.50" (394 mm)	18.25" (464 mm)	2, 3, 4
6"	13.94" (354 mm)	13.25" (337 mm)	8.31" (210 mm)	2.25" (56 mm)	0.750-10 UNC-2B	9.50" (241 mm)	8	9.25" (235 mm)	11.25" (286 mm)	8.25" (210 mm)	20.00" (508 mm)	15.00" (381 mm)	15.50" (394 mm)	18.25" (464 mm)	1, 3, 4
8"	16.19" (411 mm)	13.25" (337 mm)	9.50" (241 mm)	2.50" (64 mm)	0.750-10 UNC-2B	11.75" (298 mm)	8	9.25" (235 mm)	11.25" (286 mm)	8.25" (210 mm)	20.00" (508 mm)	15.00" (381 mm)	17.81" (452 mm)	20.50" (521 mm)	2, 3, 4
10"	19.00" (483 mm)	15.88" (403 mm)	10.75" (273 mm)	2.50" (64 mm)	0.875-9 UNC-2B	14.25" (362 mm)	12	9.25" (235 mm)	11.25" (286 mm)	8.25" (210 mm)	20.00" (508 mm)	15.00" (381 mm)	21.38" (543 mm)	24.25" (622 mm)	2, 3, 4
12"	21.63" (549 mm)	18.63" (473 mm)	12.25" (311 mm)	3.00" (76 mm)	0.875-9 UNC-2B	17.00" (432 mm)	12	9.25" (235 mm)	11.25" (286 mm)	8.25" (210 mm)	20.00" (508 mm)	15.00" (381 mm)	23.41" (595 mm)	27.00" (686 mm)	2, 3, 4

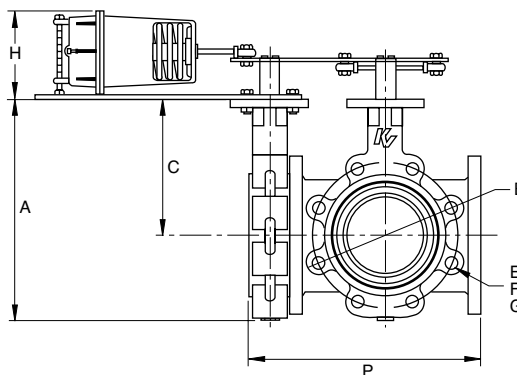
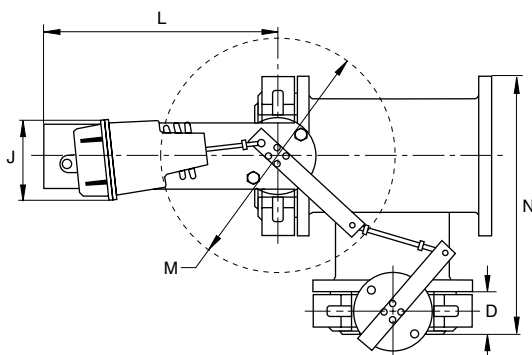
Table Notes:

1. Full cut assemblies (150 psi shutoff)
2. Under cut assemblies (100 psi shutoff) 2-6 inches; (50 psi shutoff) 8-12 inches
3. Two actuators included in assembly
4. Maximum angle of disc opening is 70°

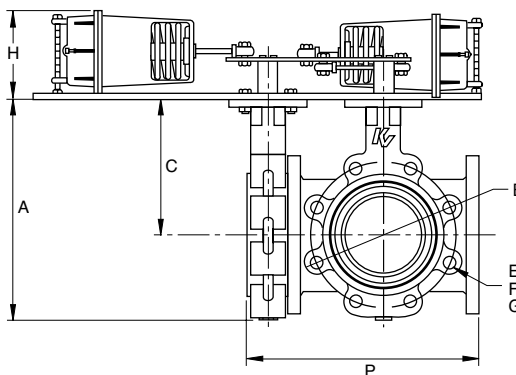
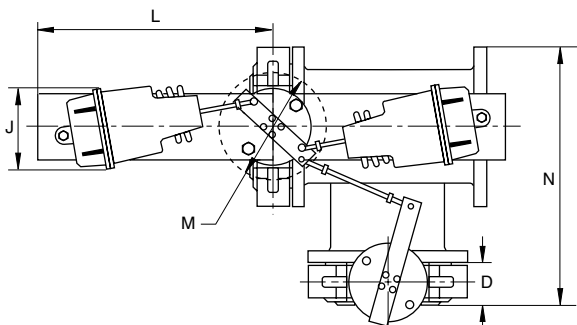


Three-Way Butterfly Valve with pneumatic actuators tandem mounted.

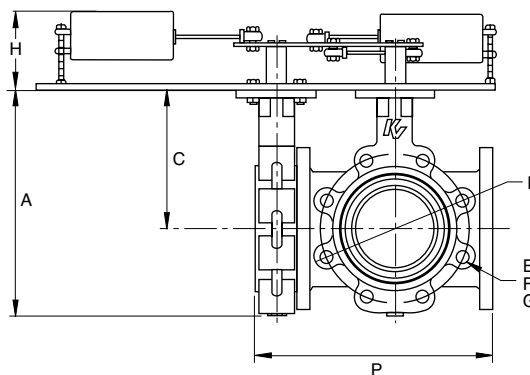
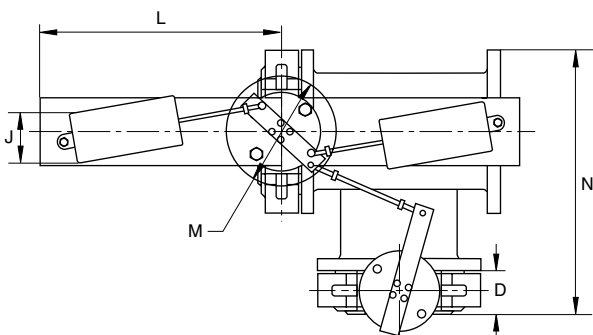
2 to 3-inch



4 to 6-inch



6 to 12-inch



Drawings shown are for Assemblies A & B. For Assemblies C & D, the valve and actuator are on right-hand side of the run of tee and for Assemblies E & F, the valves are on both sides of the run tee.

Two-Way Resilient Seat Valve Assemblies

G Series Electronic with Spring Return and Non-Spring Return Actuators

Figure 3 Dimensions — Two-Way OpenAir Electronic Actuator Valve Assemblies

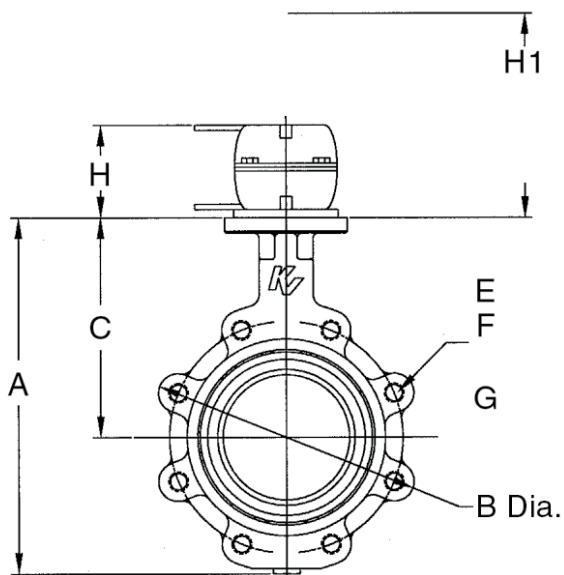
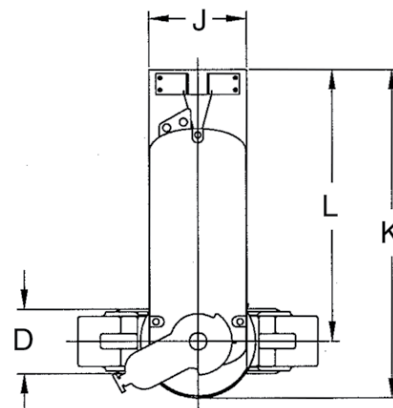
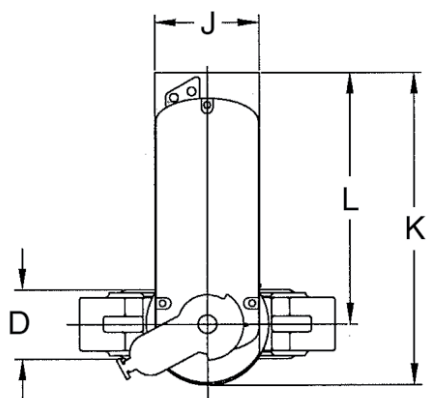
Valve Size	A	B	C	D	E	F	G	H	H1	H2	J	K	L	Notes
Valve Height	Body O.D.	C. Pipe To Top Plate	Face/ Face	Tap Size	Bolt Circle	# Bolts	Actuator Height	Actuator Removal Clearance	Dual Actuator Height	Actuator Width	Actuator Length	C _L Length		
2"	8.5" (216 mm)	6" (153 mm)	5.31" (135 mm)	1.69" (43 mm)	0.625-11 UNC-2B	4.75" (121 mm)	4	3.25" (83 mm)	5.25" (133 mm)	—	4.00" (102 mm)	10.35" (263 mm)	8.35" (212 mm)	1, 2, 4, 5
2.5"	9.31" (236 mm)	6.75" (172 mm)	5.98" (135 mm)	1.81" (46 mm)	0.625-11 UNC-2B	5.50" (140 mm)	4	3.25" (83 mm)	5.25" (133 mm)	—	4.00" (102 mm)	10.35" (263 mm)	8.35" (212 mm)	1, 2, 4, 5
3"	10" (254 mm)	7.25" (184 mm)	6.31" (160 mm)	1.81" (46 mm)	0.625-11 UNC-2B	6.00" (152 mm)	4	3.25" (83 mm)	5.25" (133 mm)	—	4.00" (102 mm)	10.35" (263 mm)	8.35" (212 mm)	1, 2, 4, 5
4"	11.38" (288 mm)	8.81" (223 mm)	7.14" (180 mm)	2.06" (52 mm)	0.625-11 UNC-2B	6.00" (152 mm)	4	3.25" (83 mm)	5.25" (133 mm)	—	4.00" (102 mm)	10.35" (263 mm)	8.35" (212 mm)	1, 2, 5
4"	11.13" (283 mm)	8.75" (222 mm)	7" (178 mm)	2" (51 mm)	0.625-11 UNC-2B	7.50" (191 mm)	8	3.25" (83 mm)	9.00" (229 mm)	7.00" (178 mm)	4.00" (102 mm)	14.84" (377 mm)	12.84" (327 mm)	1, 2, 3, 4
5"	12.13" (337 mm)	19" (254 mm)	7.50" (191 mm)	2.13" (54 mm)	0.625-11 UNC-2B	8.50" (216 mm)	8	3.25" (83 mm)	9.00" (229 mm)	7.00" (178 mm)	4.00" (102 mm)	14.84" (377 mm)	12.84" (327 mm)	1, 2, 3, 5
6"	13.25" (337 mm)	11" (279 mm)	8" (203 mm)	2.13" (54 mm)	0.625-11 UNC-2B	9.50" (241 mm)	8	3.25" (83 mm)	9.00" (229 mm)	7.00" (178 mm)	4.00" (102 mm)	14.84" (377 mm)	12.84" (327 mm)	1, 2, 3, 5

Table Notes:

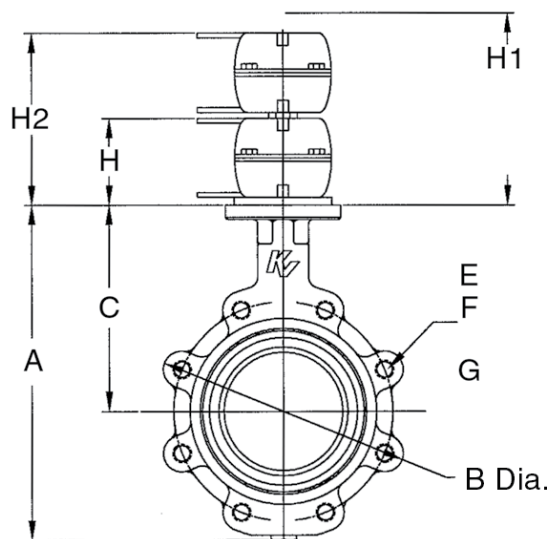
1. 100 psi shutoff pressure 2. Under cut assemblies 3. Tandem actuators 4. Spring return 5. Non-spring return



Two-Way Butterfly Valve with electronic actuator.



Minimum Clearance Required For Actuator Removal



Minimum Clearance Required For Actuator Removal

Three-Way Resilient Seat Valve Assemblies

G Series Electronic with Spring Return and Non-Spring Return Actuators

Figure 4 Dimensions — Three-Way OpenAir Electronic Actuator Valve Assemblies

Valve Size	A	B	C	D	E	F	G	H	H1	H2	J	K	L	M
	Valve Height	Body O.D.	C. Pipe To Top Plate	Face/ Face	Tap Size	Bolt Circle	# Bolts	Actuator Height	Actuator Removal Clearance	Dual Actuator Height	Actuator Width	Actuator Length	C _L Length	Arm Stroke Clearance
2"	8.50" (216 mm)	6.00" (153 mm)	5.31" (135 mm)	1.69" (43 mm)	0.625-11 UNC-2B	4.75" (121 mm)	4	3.25" (83 mm)	5.25" (133 mm)	—	4.00" (102 mm)	11.84" (301 mm)	8.35" (212 mm)	7.25" (184 mm)
2.5"	9.31" (236 mm)	6.75" (172 mm)	5.94" (150 mm)	1.81" (46 mm)	0.625-11 UNC-2B	5.50" (140 mm)	4	3.25" (83 mm)	5.25" (133 mm)	—	4.00" (102 mm)	13.41" (341 mm)	8.35" (212 mm)	7.25" (184 mm)
3"	10.00" (254 mm)	7.25" (184 mm)	6.31" (160 mm)	1.81" (46 mm)	0.625-11 UNC-2B	6.00" (152 mm)	4	3.25" (83 mm)	9.00" (229 mm)	—	4.00" (102 mm)	13.98" (355 mm)	8.35" (212 mm)	7.25" (184 mm)
3"	10.00" (254 mm)	7.25" (184 mm)	6.31" (160 mm)	1.81" (46 mm)	0.625-11 UNC-2B	6.00" (152 mm)	4	3.25" (83 mm)	9.00" (229 mm)	7.00" (178 mm)	4.00" (102 mm)	13.98" (355 mm)	8.35" (212 mm)	7.25" (184 mm)
4"	11.38" (288 mm)	8.81" (223 mm)	7.13" (180 mm)	2.06" (52 mm)	0.625-11 UNC-2B	7.50" (191 mm)	8	3.25" (83 mm)	5.25" (133 mm)	—	4.00" (102 mm)	16.06" (408 mm)	8.35" (212 mm)	7.25" (184 mm)
4"	11.13" (283 mm)	8.75" (222 mm)	7.00" (178 mm)	2.00" (51 mm)	0.625-11 UNC-2B	7.50" (191 mm)	8	3.25" (83 mm)	9.00" (229 mm)	7.00" (178 mm)	4.00" (102 mm)	16.06" (408 mm)	16.0" (212 mm)	6.36" (184 mm)
5"	12.19" (310 mm)	10.00" (254 mm)	7.50" (191 mm)	2.13" (54 mm)	0.750-10 UNC-2B	8.50" (216 mm)	8	3.25" (83 mm)	9.00" (229 mm)	7.00" (178 mm)	4.00" (102 mm)	18.06" (459 mm)	8.35" (212 mm)	7.25" (184 mm)
6"	13.25" (337 mm)	11.00" (279 mm)	8.00" (203 mm)	2.13" (54 mm)	0.750-10 UNC-2B	9.50" (241 mm)	8	3.25" (83 mm)	9.00" (229 mm)	7.00" (178 mm)	4.00" (102 mm)	4.00" (102 mm)	19.06" (484 mm)	7.25" (184 mm)

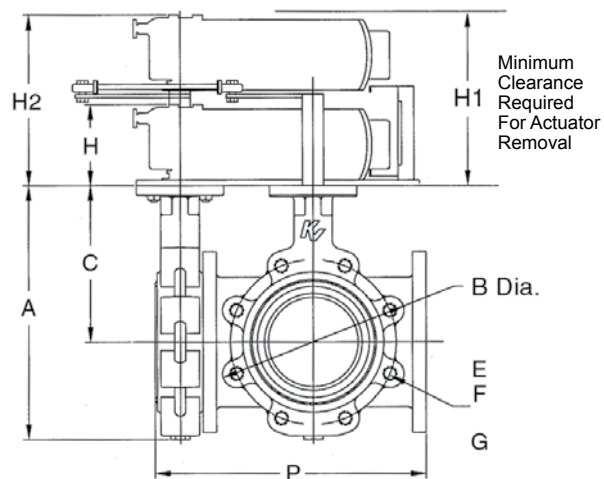
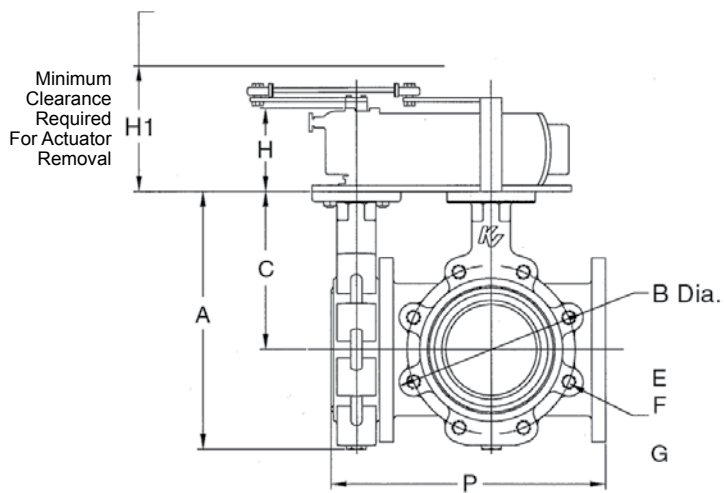
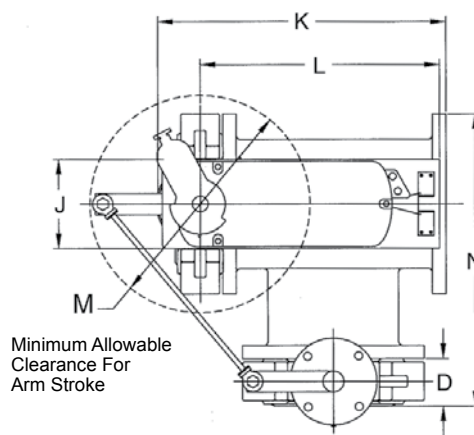
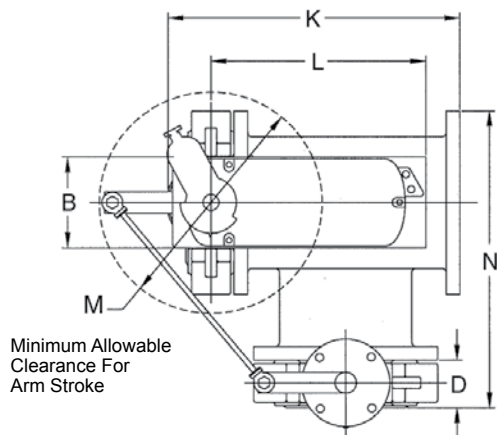
Valve Size	N	P	Notes
	B Port Depth	A — AB Face to Face	
2"	9.22" (234 mm)	10.69" (272 mm)	1, 2, 4, 5
2.5"	10.31" (236 mm)	12.31" (313 mm)	1, 2, 4, 5
3"	11.44" (291 mm)	12.88" (327 mm)	1, 2, 5
3"	11.44" (291 mm)	12.88" (327 mm)	1, 2, 3, 4
4"	13.06" (332 mm)	15.06" (383 mm)	1, 2, 5
4"	13.06" (332 mm)	15.06" (383 mm)	1, 2, 3, 4
5"	14.44" (367 mm)	17.13" (435 mm)	1, 2, 3, 5
6"	15.38" (391 mm)	18.13" (460 mm)	1, 2, 3, 5

Table Notes:

1. 100 psi shutoff pressure
2. Under cut assemblies
3. Tandem actuators
4. Spring return
5. Non-spring return



Three-Way Butterfly Valve with electronic actuators tandem mounted.



Drawings shown are for Assemblies A & B. For Assemblies C & D, the valve and actuator are on the left-hand side of the run of tee and for Assemblies E & F, the valves are on both sides of the run tee.

Two-Way Resilient Seat Valve Assemblies

Electronic Two-Position and Modulating Valve Assemblies

Figure 5 Dimensions — Two-Way EPI₂ Electronic Actuator Valve Assemblies

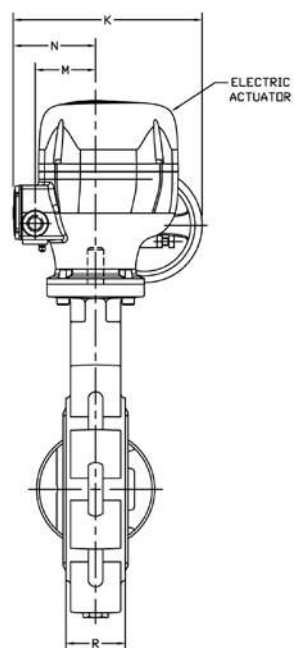
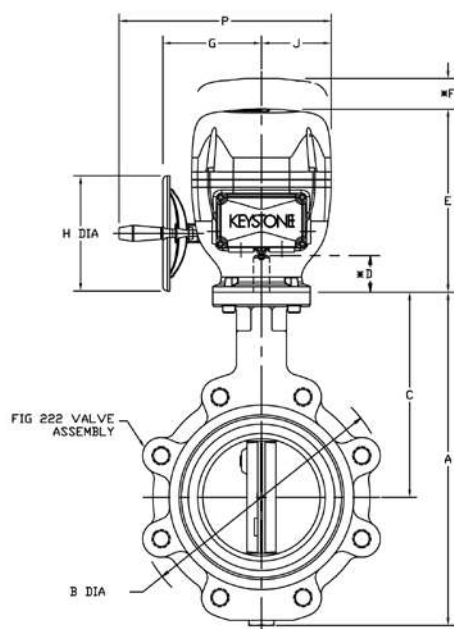
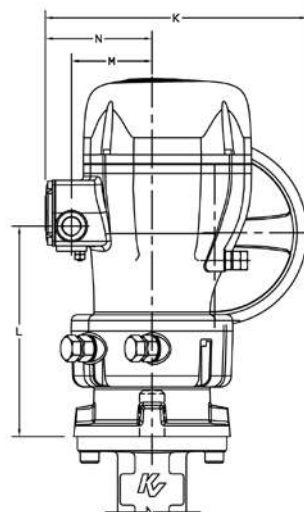
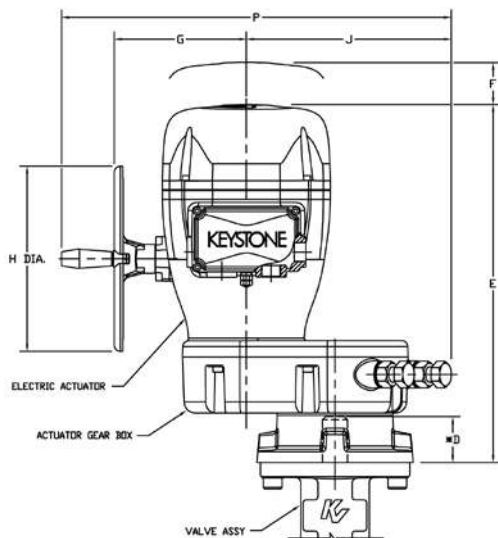
Valve Size	A Valve Height	B Body O.D.	C C _L Pipe To Top Plate	D Face/ Face	E Actuator Height	F Actuator Removal Clearance	G Pipe C _L To H.W.	H H.W. D.A.	J Valve CL To aH.W. Ring	K Total Width	Actuator Model	Notes
2"	8.50" (216 mm)	6.00" (153 mm)	5.31" (135 mm)	1.69" (43 mm)	7.75" (196 mm)	6.38" (162 mm)	4.56" (115 mm)	5.00" (127 mm)	4.94" (125 mm)	7.38" (200 mm)	EPI-3	1, 2, 3, 4
2.5"	9.31" (237 mm)	6.75" (171 mm)	5.94" (151 mm)	1.81" (46 mm)	7.75" (196 mm)	6.38" (162 mm)	4.56" (115 mm)	5.00" (127 mm)	4.94" (125 mm)	7.38" (200 mm)	EPI-3	1, 2, 3, 4
3"	10.00" (254 mm)	7.25" (184 mm)	6.31" (160 mm)	1.81" (46 mm)	7.75" (196 mm)	6.38" (162 mm)	4.56" (115 mm)	5.00" (127 mm)	4.94" (125 mm)	7.38" (200 mm)	EPI-3	1, 2, 3, 4
4"	11.38" (289 mm)	8.81" (224 mm)	7.13" (181 mm)	2.06" (52 mm)	9.63" (244 mm)	6.38" (162 mm)	6.50" (165 mm)	8.00" (203 mm)	7.13" (181 mm)	10.94" (278 mm)	EPI-6	2, 3, 4
4"	11.38" (289 mm)	8.81" (224 mm)	7.13" (181 mm)	2.06" (52 mm)	7.75" (196 mm)	6.38" (162 mm)	4.56" (116 mm)	5.00" (127 mm)	4.94" (125 mm)	7.38" (200 mm)	EPI-3	1
5"	12.81" (325 mm)	10.00" (254 mm)	7.69" (195 mm)	2.25" (56 mm)	9.63" (244 mm)	6.38" (162 mm)	6.50" (165 mm)	8.00" (203 mm)	7.13" (181 mm)	10.94" (278 mm)	EPI-13	3, 4
5"	12.81" (325 mm)	10.00" (254 mm)	7.69" (195 mm)	2.25" (56 mm)	9.63" (244 mm)	6.38" (162 mm)	6.50" (165 mm)	8.00" (203 mm)	7.13" (181 mm)	10.94" (278 mm)	EPI-6	1, 2
6"	13.94" (354 mm)	11.00" (279 mm)	8.31" (210 mm)	2.25" (56 mm)	9.63" (244 mm)	6.38" (162 mm)	6.50" (165 mm)	8.00" (203 mm)	7.13" (181 mm)	10.94" (278 mm)	EPI-13	2, 3, 4
6"	13.94" (354 mm)	11.00" (279 mm)	8.31" (210 mm)	2.25" (56 mm)	9.63" (244 mm)	6.38" (162 mm)	6.50" (165 mm)	8.00" (203 mm)	7.13" (181 mm)	10.94" (278 mm)	EPI-6	1
8"	16.44" (418 mm)	13.25" (337 mm)	9.50" (241 mm)	2.38" (60 mm)	13.00" (330 mm)	7.88" (200 mm)	8.25" (210 mm)	12.00" (305 mm)	10.31" (262 mm)	4.00" (102 mm)	EPI-36	2, 3
8"	16.19" (411 mm)	13.25" (337 mm)	9.50" (241 mm)	2.50" (64 mm)	9.63" (244 mm)	6.38" (162 mm)	6.50" (165 mm)	8.00" (203 mm)	7.13" (181 mm)	10.94" (278 mm)	EPI-6	1
10"	19.00" (483 mm)	16.00" (406 mm)	10.88" (276 mm)	2.69" (68 mm)	13.00" (330 mm)	7.88" (200 mm)	8.25" (210 mm)	12.00" (305 mm)	10.31" (262 mm)	4.00" (102 mm)	EPI-36	3, 4
10"	19.00" (483 mm)	15.90" (403 mm)	10.80" (273 mm)	2.50" (64 mm)	13.00" (330 mm)	6.38" (162 mm)	8.25" (210 mm)	12.00" (305 mm)	10.31" (262 mm)	4.00" (102 mm)	EPI-13	1, 2
12"	21.63" (549 mm)	18.75" (476 mm)	12.25" (311 mm)	3.13" (80 mm)	13.00" (330 mm)	7.88" (200 mm)	8.25" (210 mm)	12.00" (305 mm)	10.31" (262 mm)	4.00" (102 mm)	EPI-51	3
12"	21.63" (549 mm)	18.60" (473 mm)	12.30" (311 mm)	3.00" (76 mm)	13.00" (330 mm)	7.88" (200 mm)	8.25" (210 mm)	12.00" (305 mm)	10.31" (262 mm)	4.00" (102 mm)	EPI-36	1, 2
12"	21.63" (549 mm)	18.60" (473 mm)	12.30" (311 mm)	3.00" (76 mm)	17.375" (441 mm)	7.88" (200 mm)	8.25" (210 mm)	12.00" (305 mm)	16.132" (414 mm)	23.375" (594 mm)	EPI-91	4

Table Notes:

- 1. Under cut two-position assemblies
- 2. Under cut modulating assemblies
- 3. Full cut two-position assemblies
- 4. Full cut modulating assemblies



Two-Way Butterfly Valve with electronic actuator.



Three-Way Resilient Seat Valve Assemblies

Electronic Two-Position and Modulating Valve Assemblies

Figure 6 Dimensions — Three-Way EPI₂ Electronic Actuator Valve Assemblies

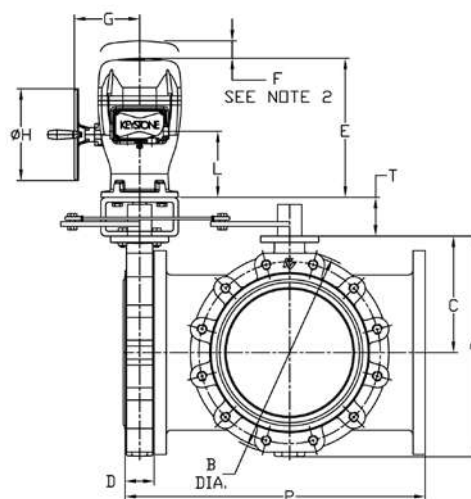
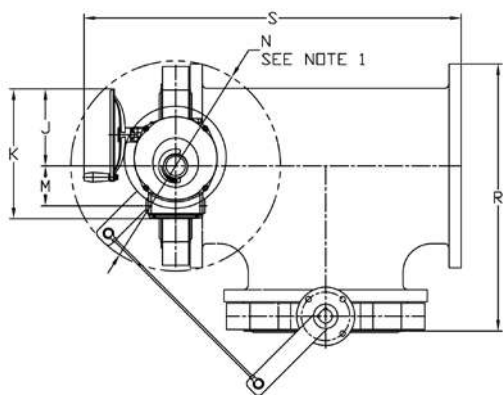
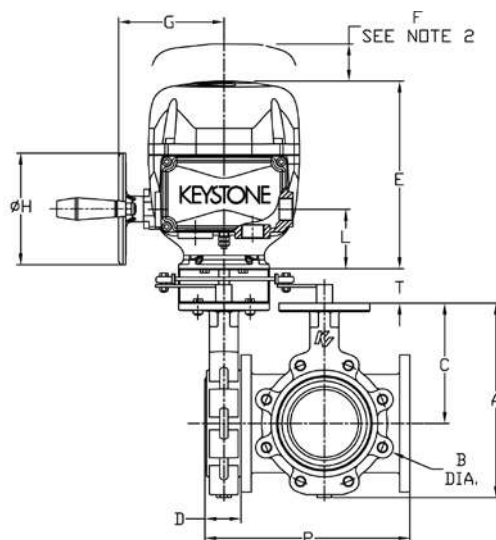
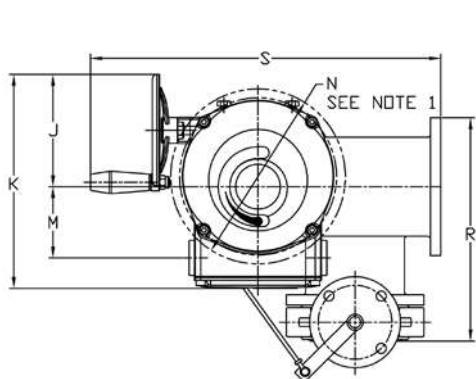
Valve Size	A	B	C	D				F	P	R	S	T		
Valve Height	Valve Height	Body O.D.	C _L Pipe To Top Plate	Face/ Face	Tap Size	Bolt Circle	# Bolts	Actuator Removal Clearance	Pipe Run Height	Total Width	Bracket Length	Bracket Height	Actuator Model	Notes
2"	8.50" (216 mm)	6.00" (152 mm)	5.31" (135 mm)	1.69" (43 mm)	0.625-11 UNC-2B	4.75" (121 mm)	4	6.38" (162 mm)	10.69" (272 mm)	9.22" (234 mm)	14.38" (365 mm)	4.00" (102 mm)	EPI-3	1, 3
2"	8.50" (216 mm)	6.00" (152 mm)	5.31" (135 mm)	1.69" (43 mm)	0.625-11 UNC-2B	4.75" (121 mm)	4	6.38" (162 mm)	10.69" (272 mm)	9.22" (234 mm)	14.38" (365 mm)	4.00" (102 mm)	EPI-6	2, 4
2.5"	9.31" (236 mm)	6.75" (171 mm)	5.94" (151 mm)	1.81" (46 mm)	0.625-11 UNC-2B	5.50" (140 mm)	4	6.38" (162 mm)	12.31" (313 mm)	10.31" (262 mm)	15.95" (405 mm)	4.00" (102 mm)	EPI-6	2, 3, 4
2.5"	9.31" (236 mm)	6.75" (171 mm)	5.94" (151 mm)	1.81" (46 mm)	0.625-11 UNC-2B	5.50" (140 mm)	4	6.38" (162 mm)	12.31" (313 mm)	10.31" (262 mm)	15.95" (405 mm)	4.00" (102 mm)	EPI-3	1
3"	10.00" (254 mm)	7.25" (184 mm)	6.31" (160 mm)	1.81" (46 mm)	0.625-11 UNC-2B	6.00" (152 mm)	4	6.38" (162 mm)	12.88" (327 mm)	11.44" (291 mm)	16.52" (420 mm)	4.00" (102 mm)	EPI-6	2, 3, 4
3"	10.00" (254 mm)	7.25" (184 mm)	6.31" (160 mm)	1.81" (46 mm)	0.625-11 UNC-2B	6.00" (152 mm)	4	6.38" (162 mm)	12.88" (327 mm)	11.44" (291 mm)	16.52" (420 mm)	4.00" (102 mm)	EPI-3	1
4"	11.38" (289 mm)	8.81" (224 mm)	7.13" (181 mm)	2.06" (52 mm)	0.625-11 UNC-2B	7.50" (191 mm)	8	6.38" (162 mm)	15.13" (384 mm)	13.13" (334 mm)	20.59" (523 mm)	4.00" (102 mm)	EPI-13	4
4"	11.38" (289 mm)	8.81" (224 mm)	7.13" (181 mm)	2.06" (52 mm)	0.625-11 UNC-2B	7.50" (191 mm)	8	6.38" (162 mm)	15.13" (384 mm)	13.13" (334 mm)	20.59" (523 mm)	4.00" (102 mm)	EPI-6	1, 2, 3
5"	12.81" (325 mm)	10.00" (254 mm)	7.69" (195 mm)	2.25" (57 mm)	0.750-10 UNC-2B	8.50" (216 mm)	8	6.38" (162 mm)	17.25" (438 mm)	14.56" (370 mm)	22.63" (575 mm)	4.00" (102 mm)	EPI-13	1, 2, 3, 4
6"	13.94" (354 mm)	11.00" (279 mm)	8.31" (211 mm)	2.25" (57 mm)	0.750-10 UNC-2B	9.50" (241 mm)	8	7.88" (200 mm)	18.25" (464 mm)	15.50" (394 mm)	23.63" (600 mm)	4.00" (102 mm)	EPI-36	3, 4
6"	13.94" (354 mm)	11.00" (279 mm)	8.31" (211 mm)	2.25" (57 mm)	0.750-10 UNC-2B	9.50" (241 mm)	8	6.38" (162 mm)	18.25" (464 mm)	15.50" (394 mm)	23.63" (600 mm)	4.00" (102 mm)	EPI-13	1, 2
8"	16.44" (418 mm)	13.25" (337 mm)	9.50" (241 mm)	2.38" (60 mm)	0.750-10 UNC-2B	11.75" (298 mm)	8	7.88" (200 mm)	20.38" (518 mm)	17.69" (449 mm)	25.66" (652 mm)	4.00" (102 mm)	EPI-51	4
8"	16.19" (411 mm)	13.25" (337 mm)	9.50" (241 mm)	2.50" (64 mm)	0.750-10 UNC-2B	11.75" (298 mm)	8	7.88" (200 mm)	20.50" (521 mm)	17.81" (452 mm)	25.69" (652 mm)	4.00" (102 mm)	EPI-36	1, 2, 3
10"	19.00" (483 mm)	16.00" (406 mm)	10.88" (276 mm)	2.69" (68 mm)	0.875-9 UNC-2B	14.25" (361 mm)	12	7.88" (200 mm)	26.69" (678 mm)	23.09" (543 mm)	33.81" (859 mm)	4.00" (102 mm)	EPI-91	3, 4
10"	19.00" (483 mm)	15.88" (403 mm)	10.75" (273 mm)	2.50" (64 mm)	0.875-9 UNC-2B	14.25" (361 mm)	12	7.88" (200 mm)	24.50" (622 mm)	21.38" (543 mm)	31.50" (800 mm)	4.00" (102 mm)	EPI-36	1, 2
12"	21.63" (549 mm)	18.75" (476 mm)	12.25" (311 mm)	3.13" (80 mm)	0.875-9 UNC-2B	17.00" (432 mm)	12	7.88" (200 mm)	27.13" (622 mm)	23.53" (598)	33.81" (859 mm)	4.00" (102 mm)	EPI-91	3, 4
12"	21.63" (549 mm)	18.60" (473 mm)	12.30" (311 mm)	3.00" (76 mm)	0.875-9 UNC-2B	17.00" (432 mm)	12	7.88" (200 mm)	27.00" (686 mm)	23.41" (595 mm)	33.75" (857 mm)	4.00" (102 mm)	EPI-36/51	1, 2

Table Notes:

- 1. Under cut two-position assemblies
- 2. Under cut modulating assemblies
- 3. Full cut two-position assemblies
- 4. Full cut modulating assemblies



Three-Way Butterfly Valve with electronic actuators tandem mounted.




Drawings shown are for Assemblies A & B. For Assemblies C & D, the valve and actuator are on the right-hand side of the run of tee and for Assemblies E & F, the valves are on both sides of the run tee.

Two-Way Butterfly Valves

2 to 12"

Pneumatic, Spring Return Actuators

2 to 12" 		Normally Open (Fail Open)		Normally Closed (Fail Closed)	
		150 psi Close-off	100 psi Close-off — 4-6 50 psi Close-off — 8-12	150 psi Close-off	100 psi Close-off — 4-6 50 psi Close-off — 8-12
Valve Size in.	Flow Rate Cv	Part No.	Part No.	Part No.	Part No.
Base Model					
2	60	BV2W02FS2LOXXXX	N/A	BV2W02FS2LCXXXX	N/A
2-1/2	151	BV2W25FS2LOXXXX	N/A	BV2W25FS2LCXXXX	N/A
3	262	BV2W03FS2LOXXXX	N/A	BV2W03FS2LCXXXX	N/A
4	647	BV2W04FS2LOXXXX	BV2W04US2LOXXXX	BV2W04FS2LCXXXX	BV2W04US2LCXXXX
5	1141	BV2W05FS2LOXXXX	BV2W05US2LOXXXX	BV2W05FS2LCXXXX	BV2W05US2LCXXXX
6	1580	BV2W06FS2LOXXXX	BV2W06US2LOXXXX	BV2W06FS2LCXXXX	BV2W06US2LCXXXX
8	1754*	N/A	BV2W08US2LOXXXX	N/A	BV2W08US2LCXXXX
10	2524*	N/A	BV2W10US2LOXXXX	N/A	BV2W10US2LCXXXX
12	3470*	N/A	BV2W12US2LOXXXX	N/A	BV2W12US2LCXXXX
Positioner					
2	60	BV2W02FS2LOPXXX	N/A	BV2W02FS2LCPXXX	N/A
2-1/2	151	BV2W25FS2LOPXXX	N/A	BV2W25FS2LCPXXX	N/A
3	262	BV2W03FS2LOPXXX	N/A	BV2W03FS2LCPXXX	N/A
4	647	BV2W04FS2LOPXXX	BV2W04US2LOPXXX	BV2W04FS2LCPXXX	BV2W04US2LCPXXX
5	1141	BV2W05FS2LOPXXX	BV2W05US2LOPXXX	BV2W05FS2LCPXXX	BV2W05US2LCPXXX
6	1160*/1580	BV2W06FS2LOPXXX	BV2W06US2LOPXXX	BV2W06FS2LCPXXX	BV2W06US2LCPXXX
8	1754*	N/A	BV2W08US2LOPXXX	N/A	BV2W08US2LCPXXX
10	2524*	N/A	BV2W10US2LOPXXX	N/A	BV2W10US2LCPXXX
12	3470*	N/A	BV2W12US2LOPXXX	N/A	BV2W12US2LCPXXX
120 V E/P Valve					
2	60	BV2W02FS2LOTXXX	N/A	BV2W02FS2LCTXXX	N/A
2-1/2	151	BV2W25FS2LOTXXX	N/A	BV2W25FS2LCTXXX	N/A
3	262	BV2W03FS2LOTXXX	N/A	BV2W03FS2LCTXXX	N/A
4	647	BV2W04FS2LOTXXX	BV2W04US2LOTXXX	BV2W04FS2LCTXXX	BV2W04US2LCTXXX
5	1141	BV2W05FS2LOTXXX	BV2W05US2LOTXXX	BV2W05FS2LCTXXX	BV2W05US2LCTXXX
6	1160*/1580	BV2W06FS2LOTXXX	BV2W06US2LOTXXX	BV2W06FS2LCTXXX	BV2W06US2LCTXXX
8	1754*	N/A	BV2W08US2LOTXXX	N/A	BV2W08US2LCTXXX
10	2524*	N/A	BV2W10US2LOTXXX	N/A	BV2W10US2LCTXXX
12	3470*	N/A	BV2W12US2LOTXXX	N/A	BV2W12US2LCTXXX
24 V E/P Valve					
2	60	BV2W02FS2LOUXXX	N/A	BV2W02FS2LCUXXX	N/A
2-1/2	151	BV2W25FS2LOUXXX	N/A	BV2W25FS2LCUXXX	N/A
3	262	BV2W03FS2LOUXXX	N/A	BV2W03FS2LCUXXX	N/A
4	647	BV2W04US2LOUXXX	BV2W04FS2LOUXXX	BV2W04US2LCUXXX	BV2W04FS2LCUXXX
5	1141	BV2W05FS2LOUXXX	BV2W05US2LOUXXX	BV2W05FS2LCUXXX	BV2W05US2LCUXXX
6	1580	BV2W06FS2LOUXXX	BV2W06US2LOUXXX	BV2W06FS2LCUXXX	BV2W06US2LCUXXX
8	1754*	N/A	BV2W08US2LOUXXX	N/A	BV2W08US2LCUXXX
10	2524*	N/A	BV2W10US2LOUXXX	N/A	BV2W10US2LCUXXX
12	3470*	N/A	BV2W12US2LOUXXX	N/A	BV2W12US2LCUXXX


*6-inch 150 psi and 8-, 10- and 12-inch only rotate to 70° max. S6 actuator option also available. Contact customer support for part numbers.

High performance valves are special order. Contact customer support for parts and pricing.

Three-Way Butterfly Valves

2 to 12"

Pneumatic, Spring Return Actuators

2 to 12" 			Normally Open (Fail Open to Port B)		Normally Closed (Fail Closed to Port B)	
			150 psi Close-off	100 psi Close-off — 4-6 50 psi Close-off — 8-12	150 psi Close-off	100 psi Close-off — 4-6 50 psi Close-off — 8-12
Valve Size in.	Cv		Part No.	Part No.	Part No.	Part No.
	Run	Branch				
Base Model						
			Assembly A	Assembly A	Assembly B	Assembly B
2	58	54	BV3W02FS2LAXXXX	N/A	BV3W02FS2LBXXXX	N/A
2-1/2	135	114	BV3W25FS2LAXXXX	N/A	BV3W25FS2LBXXXX	N/A
3	165	148*	BV3W03FS2LAXXXX	N/A	BV3W03FS2LBXXXX	N/A
4	419	348*	BV3W04FS2LAXXXX	BV3W04US2LAXXXX	BV3W04FS2LBXXXX	BV3W04US2LBXXXX
5	740	600*	BV3W05FS2LAXXXX	BV3W05US2LAXXXX	BV3W05FS2LBXXXX	BV3W05US2LBXXXX
6	1051	867*	BV3W06FS2LAXXXX	BV3W06US2LAXXXX	BV3W06FS2LBXXXX	BV3W06US2LBXXXX
8	1661	1424*	N/A	BV3W08US2LAXXXX	N/A	BV3W08US2LBXXXX
10	2439	2132*	N/A	BV3W10US2LAXXXX	N/A	BV3W10US2LBXXXX
12	3401	3019*	N/A	BV3W12US2LAXXXX	N/A	BV3W12US2LBXXXX
			Assembly C	Assembly C	Assembly D	Assembly D
2	58	54	BV3W02FS2LCXXXX	N/A	BV3W02FS2LDXXXX	N/A
2-1/2	135	114	BV3W25FS2LCXXXX	N/A	BV3W25FS2LDXXXX	N/A
3	165	148*	BV3W03FS2LCXXXX	N/A	BV3W03FS2LDXXXX	N/A
4	419	348*	BV3W04FS2LCXXXX	BV3W04US2LCXXXX	BV3W04FS2LDXXXX	BV3W04US2LDXXXX
5	740	600*	BV3W05FS2LCXXXX	BV3W05US2LCXXXX	BV3W05FS2LDXXXX	BV3W05US2LDXXXX
6	1051	867*	BV3W06FS2LCXXXX	BV3W06US2LCXXXX	BV3W06FS2LDXXXX	BV3W06US2LDXXXX
8	1661	1424*	N/A	BV3W08US2LCXXXX	N/A	BV3W08US2LDXXXX
10	2439	2132*	N/A	BV3W10US2LCXXXX	N/A	BV3W10US2LDXXXX
12	3401	3019*	N/A	BV3W12US2LCXXXX	N/A	BV3W12US2LDXXXX
Positioner						
			Assembly A	Assembly A	Assembly B	Assembly B
2	58	54	BV3W02FS2LAPXXX	N/A	BV3W02FS2LBPXXX	N/A
2-1/2	135	114	BV3W25FS2LAPXXX	N/A	BV3W25FS2LBPXXX	N/A
3	165	148*	BV3W03FS2LAPXXX	N/A	BV3W03FS2LBPXXX	N/A
4	419	348*	BV3W04FS2LAPXXX	BV3W04US2LAPXXX	BV3W04FS2LBPXXX	BV3W04US2LBPXXX
5	740	600*	BV3W05FS2LAPXXX	BV3W05US2LAPXXX	BV3W05FS2LBPXXX	BV3W05US2LBPXXX
6	1051	867*	BV3W06FS2LAPXXX	BV3W06US2LAPXXX	BV3W06FS2LBPXXX	BV3W06US2LBPXXX
8	1661	1424*	N/A	BV3W08US2LAPXXX	N/A	BV3W08US2LBPXXX
10	2439	2132*	N/A	BV3W10US2LAPXXX	N/A	BV3W10US2LBPXXX
12	3401	3019*	N/A	BV3W12US2LAPXXX	N/A	BV3W12US2LBPXXX
			Assembly C	Assembly C	Assembly D	Assembly D
2	58	54	BV3W02FS2LCPXXX	N/A	BV3W02FS2LDPXXX	N/A
2-1/2	135	114	BV3W25FS2LCPXXX	N/A	BV3W25FS2LDPXXX	N/A
3	165	148*	BV3W03FS2LCPXXX	N/A	BV3W03FS2LDPXXX	N/A
4	419	348*	BV3W04FS2LCPXXX	BV3W04US2LCPXXX	BV3W04FS2LDPXXX	BV3W04US2LDPXXX
5	740	600*	BV3W05FS2LCPXXX	BV3W05US2LCPXXX	BV3W05FS2LDPXXX	BV3W05US2LDPXXX
6	1051	867*	BV3W06FS2LCPXXX	BV3W06US2LCPXXX	BV3W06FS2LDPXXX	BV3W06US2LDPXXX
8	1661	1424*	N/A	BV3W08US2LCPXXX	N/A	BV3W08US2LDPXXX
10	2439	2132*	N/A	BV3W10US2LCPXXX	N/A	BV3W10US2LDPXXX
12	3401	3019*	N/A	BV3W12US2LCPXXX	N/A	BV3W12US2LDPXXX


*3- through 12-inch valves only rotate 70° max.

S6 actuator option also available. Assemblies E and F also available. Contact customer support for part numbers.

Three-Way Butterfly Actuators

2 to 12"

Pneumatic, Spring Return

2 to 12" 			Normally Open (Fail Open to Port B)		Normally Closed (Fail Closed to Port B)	
			150 psi Close-off	100 psi Close-off — 4-6 50 psi Close-off — 8-12	150 psi Close-off	100 psi Close-off — 4-6 50 psi Close-off — 8-12
Valve Size in.	Cv		Part No.	Part No.	Part No.	Part No.
	Run	Branch				
120 V E/P Valve						
			Assembly A	Assembly A	Assembly B	Assembly B
2	58	54	BV3W02FS2LATXXX	N/A	BV3W02FS2LBTXXX	N/A
2-1/2	135	114	BV3W25FS2LATXXX	N/A	BV3W25FS2LBTXXX	N/A
3	165	148*	BV3W03FS2LATXXX	N/A	BV3W03FS2LBTXXX	N/A
4	419	348*	BV3W04FS2LATXXX	BV3W04US2LATXXX	BV3W04FS2LBTXXX	BV3W04US2LBTXXX
5	740	600*	BV3W05FS2LATXXX	BV3W05US2LATXXX	BV3W05FS2LBTXXX	BV3W05US2LBTXXX
6	1051	867*	BV3W06FS2LATXXX	BV3W06US2LATXXX	BV3W06FS2LBTXXX	BV3W06US2LBTXXX
8	1661	1424*	N/A	BV3W08US2LATXXX	N/A	BV3W08US2LBTXXX
10	2439	2132*	N/A	BV3W10US2LATXXX	N/A	BV3W10US2LBTXXX
12	3401	3019*	N/A	BV3W12US2LATXXX	N/A	BV3W12US2LBTXXX
			Assembly C	Assembly C	Assembly D	Assembly D
2	58	54	BV3W02FS2LCTXXX	N/A	BV3W02FS2LDTXXX	N/A
2-1/2	135	114	BV3W25FS2LCTXXX	N/A	BV3W25FS2LDTXXX	N/A
3	165	148*	BV3W03FS2LCTXXX	N/A	BV3W03FS2LDTXXX	N/A
4	419	348*	BV3W04FS2LCTXXX	BV3W04US2LCTXXX	BV3W04FS2LDTXXX	BV3W04US2LDTXXX
5	740	600*	BV3W05FS2LCTXXX	BV3W05US2LCTXXX	BV3W05FS2LDTXXX	BV3W05US2LDTXXX
6	1051	867*	BV3W06FS2LCTXXX	BV3W06US2LCTXXX	BV3W06FS2LDTXXX	BV3W06US2LDTXXX
8	1661	1424*	N/A	BV3W08US2LCTXXX	N/A	BV3W08US2LDTXXX
10	2439	2132*	N/A	BV3W10US2LCTXXX	N/A	BV3W10US2LDTXXX
12	3401	3019*	N/A	BV3W12US2LCTXXX	N/A	BV3W12US2LDTXXX
24 V E/P Valve						
			Assembly A	Assembly A	Assembly B	Assembly B
2	58	54	BV3W02FS2LAUXXX	N/A	BV3W02FS2LBUXXX	N/A
2-1/2	135	114	BV3W25FS2LAUXXX	N/A	BV3W25FS2LBUXXX	N/A
3	165	148*	BV3W03FS2LAUXXX	N/A	BV3W03FS2LBUXXX	N/A
4	419	348*	BV3W04FS2LAUXXX	BV3W04US2LAUXXX	BV3W04FS2LBUXXX	BV3W04US2LBUXXX
5	740	600*	BV3W05FS2LAUXXX	BV3W05US2LAUXXX	BV3W05FS2LBUXXX	BV3W05US2LBUXXX
6	1051	867*	BV3W06FS2LAUXXX	BV3W06US2LAUXXX	BV3W06FS2LBUXXX	BV3W06US2LBUXXX
8	1661	1424*	N/A	BV3W08US2LAUXXX	N/A	BV3W08US2LBUXXX
10	2439	2132*	N/A	BV3W10US2LAUXXX	N/A	BV3W10US2LBUXXX
12	3401	3019*	N/A	BV3W12US2LAUXXX	N/A	BV3W12US2LBUXXX
			Assembly C	Assembly C	Assembly D	Assembly D
2	58	54	BV3W02FS2LCUXXX	N/A	BV3W02FS2LDUXXX	N/A
2-1/2	135	114	BV3W25FS2LCUXXX	N/A	BV3W25FS2LDUXXX	N/A
3	165	148*	BV3W03FS2LCUXXX	N/A	BV3W03FS2LDUXXX	N/A
4	419	348*	BV3W04FS2LCUXXX	BV3W04US2LCUXXX	BV3W04FS2LDUXXX	BV3W04US2LDUXXX
5	740	600*	BV3W05FS2LCUXXX	BV3W05US2LCUXXX	BV3W05FS2LDUXXX	BV3W05US2LDUXXX
6	1051	867*	BV3W06FS2LCUXXX	BV3W06US2LCUXXX	BV3W06FS2LDUXXX	BV3W06US2LDUXXX
8	1661	1424*	N/A	BV3W08US2LCUXXX	N/A	BV3W08US2LDUXXX
10	2439	2132*	N/A	BV3W10US2LCUXXX	N/A	BV3W10US2LDUXXX
12	3401	3019*	N/A	BV3W12US2LCUXXX	N/A	BV3W12US2LDUXXX


*3- through 12-inch valves only rotate 70° max.

Assemblies E and F also available. Contact customer support for part numbers.

Two-Way Butterfly Actuators

2 to 4"

Electronic, Spring Return

2 to 4"			
		Normally Open	Normally Closed
		100 psi Close-off	100 psi Close-off
Valve Size in.	Flow Rate Cv	Part No.	Part No.
120 Vac On/Off			
2	60	BV2W02UG1LOXXX	BV2W02UG1LCXXX
2-1/2	151	BV2W25UG1LOXXX	BV2W25UG1LCXXX
3	262	BV2W03UG1LOXXX	BV2W03UG1LCXXX
4	647	BV2W04UG1LOXXX	BV2W04UG1LCXXX
24 Vac On/Off			
2	60	BV2W02UG2LOXXX	BV2W02UG2LCXXX
2-1/2	151	BV2W25UG2LOXXX	BV2W25UG2LCXXX
3	262	BV2W03UG2LOXXX	BV2W03UG2LCXXX
4	647	BV2W04UG2LOXXX	BV2W04UG2LCXXX
24 Vac Floating			
2	60	BV2W02UG3LOXXX	BV2W02UG3LCXXX
2-1/2	151	BV2W25UG3LOXXX	BV2W25UG3LCXXX
3	262	BV2W03UG3LOXXX	BV2W03UG3LCXXX
4	647	BV2W04UG3LOXXX	BV2W04UG3LCXXX
24 Vac Modulating 0-10 V			
2	60	BV2W02UG4LOXXX	BV2W02UG4LCXXX
2-1/2	151	BV2W25UG4LOXXX	BV2W25UG4LCXXX
3	262	BV2W03UG4LOXXX	BV2W03UG4LCXXX
4	647	BV2W04UG4LOXXX	BV2W04UG4LCXXX
24 Vac Modulating 4-20 mA			
2	60	BV2W02UG5LOXXX	BV2W02UG5LCXXX
2-1/2	151	BV2W25UG5LOXXX	BV2W25UG5LCXXX
3	262	BV2W03UG5LOXXX	BV2W03UG5LCXXX
4	647	BV2W04UG5LOXXX	BV2W04UG5LCXXX

Three-Way Butterfly Actuators

2 to 4"


Electronic, Spring Return

2 to 4"			Normally Open (Fail Open to Port B)		Normally Closed (Fail Closed to Port B)	
Valve Size in.	Cv		100 psi Close-off	100 psi Close-off	100 psi Close-off	100 psi Close-off
	Run	Branch	Part No.	Part No.	Part No.	Part No.
120 Vac On/Off						
			Assembly A	Assembly C	Assembly B	Assembly D
2	58	54	BV3W02UG1LAXXXX	BV3W02UG1LCXXXX	BV3W02UG1LBXXXX	BV3W02UG1LDXXXX
2-1/2	135	114	BV3W25UG1LAXXXX	BV3W25UG1LCXXXX	BV3W25UG1LBXXXX	BV3W25UG1LDXXXX
3	229	188	BV3W03UG1LAXXXX	BV3W03UG1LCXXXX	BV3W03UG1LBXXXX	BV3W03UG1LDXXXX
4	511	385	BV3W04UG1LAXXXX	BV3W04UG1LCXXXX	BV3W04UG1LBXXXX	BV3W04UG1LDXXXX
24 Vac On/Off						
2	58	54	BV3W02UG2LAXXXX	BV3W02UG2LCXXXX	BV3W02UG2LBXXXX	BV3W02UG2LDXXXX
2-1/2	135	114	BV3W25UG2LAXXXX	BV3W25UG2LCXXXX	BV3W25UG2LBXXXX	BV3W25UG2LDXXXX
3	229	188	BV3W03UG2LAXXXX	BV3W03UG2LCXXXX	BV3W03UG2LBXXXX	BV3W03UG2LDXXXX
4	511	385	BV3W04UG2LAXXXX	BV3W04UG2LCXXXX	BV3W04UG2LBXXXX	BV3W04UG2LDXXXX
24 Vac Floating						
2	58	54	BV3W02UG3LAXXXX	BV3W02UG3LCXXXX	BV3W02UG3LBXXXX	BV3W02UG3LDXXXX
2-1/2	135	114	BV3W25UG3LAXXXX	BV3W25UG3LCXXXX	BV3W25UG3LBXXXX	BV3W25UG3LDXXXX
3	229	188	BV3W03UG3LAXXXX	BV3W03UG3LCXXXX	BV3W03UG3LBXXXX	BV3W03UG3LDXXXX
4	511	385	BV3W04UG3LAXXXX	BV3W04UG3LCXXXX	BV3W04UG3LBXXXX	BV3W04UG3LDXXXX
24 Vac Modulating 0-10 V						
2	58	54	BV3W02UG4LAXXXX	BV3W02UG4LCXXXX	BV3W02UG4LBXXXX	BV3W02UG4LDXXXX
2-1/2	135	114	BV3W25UG4LAXXXX	BV3W25UG4LCXXXX	BV3W25UG4LBXXXX	BV3W25UG4LDXXXX
3	229	188	BV3W03UG4LAXXXX	BV3W03UG4LCXXXX	BV3W03UG4LBXXXX	BV3W03UG4LDXXXX
4	511	385	BV3W04UG4LAXXXX	BV3W04UG4LCXXXX	BV3W04UG4LBXXXX	BV3W04UG4LDXXXX
24 Vac Modulating 4-20 mA						
2	58	54	BV3W02UG5LAXXXX	BV3W02UG5LCXXXX	BV3W02UG5LBXXXX	BV3W02UG5LDXXXX
2-1/2	135	114	BV3W25UG5LAXXXX	BV3W25UG5LCXXXX	BV3W25UG5LBXXXX	BV3W25UG5LDXXXX
3	229	188	BV3W03UG5LAXXXX	BV3W03UG5LCXXXX	BV3W03UG5LBXXXX	BV3W03UG5LDXXXX
4	511	385	BV3W04UG5LAXXXX	BV3W04UG5LCXXXX	BV3W04UG5LBXXXX	BV3W04UG5LDXXXX

Two-Way Butterfly Actuators

2 to 12"

Electronic, Non-Spring Return


2 to 12" 		Non-Spring Return Actuator		
Valve Size in.	Flow Rate Cv	150 psi Close-off	100 psi Close-off	50 psi Close-off, 4-6" 100 psi Close-off, 8-12"
		Part No.	Part No.	Part No.
Floating / 2-position				
2	60	BV2W02FE2LNXXX	BV2W02UG6LNXXX	—
2-1/2	151	BV2W25FE2LNXXX	BV2W25UG6LNXXX	—
3	262	BV2W03FE2LNXXX	BV2W03UG6LNXXX	—
4	647	BV2W04FE2LNXXX	BV2W04UG6LNXXX	BV2W04UE2LNXXX
5	1141	BV2W05FE2LNXXX	BV2W05UG6LNXXX	BV2W05UE2LNXXX
6	1580	BV2W06FE2LNXXX	BV2W06UG6LNXXX	BV2W06UE2LNXXX
8	2892	BV2W08FE2LNXXX	—	BV2W08UE2LNXXX
10	4593	BV2W10FE2LNXXX	—	BV2W10UE2LNXXX
12	6682	BV2W12FE2LNXXX	—	BV2W12UE2LNXXX
Modulating 0-10 V				
2	60	BV2W02FEMLNXXHX	BV2W02UG7LNXXX	—
2-1/2	151	BV2W25FEMLNXXHX	BV2W25UG7LNXXX	—
3	262	BV2W03FEMLNXXHX	BV2W03UG7LNXXX	—
4	647	BV2W04FEMLNXXHX	BV2W04UG7LNXXX	BV2W04UEMLNXXX
5	1141	BV2W05FEMLNXXHX	BV2W05UG7LNXXX	BV2W05UEMLNXXX
6	1580	BV2W06FEMLNXXHX	BV2W06UG7LNXXX	BV2W06UEMLNXXX
8	2892	BV2W08FEMLNXXHX	—	BV2W08UEMLNXXHX
10	4593	BV2W10FEMLNXXHX	—	BV2W10UEMLNXXHX
12	6682	BV2W12FEMLNXXHX	—	BV2W12UEMLNXXHX
Modulating 4-20 mA				
2	60	BV2W02FEPLNXXHX	BV2W02UG8LNXXX	—
2-1/2	151	BV2W25FEPLNXXHX	BV2W25UG8LNXXX	—
3	262	BV2W03FEPLNXXHX	BV2W03UG8LNXXX	—
4	647	BV2W04FEPLNXXHX	BV2W04UG8LNXXX	BV2W04UEPLNXXHX
5	1141	BV2W05FEPLNXXHX	BV2W05UG8LNXXX	BV2W05UEPLNXXHX
6	1580	BV2W06FEPLNXXHX	BV2W06UG8LNXXX	BV2W06UEPLNXXHX
8	2892	BV2W08FEPLNXXHX	—	BV2W08UEPLNXXHX
10	4593	BV2W10FEPLNXXHX	—	BV2W10UEPLNXXHX
12	6682	BV2W12FEPLNXXHX	—	BV2W12UEPLNXXHX

*6-inch 150 psi and 8-, 10- and 12-inch only rotate to 70° max.

Three-Way Butterfly Actuators

2 to 12"

Electronic, Non-Spring Return


2 to 12" 			Normally Open (Fail Open)		Normally Closed (Fail Closed)	
			150 psi Close-off	100 psi Close-off, 2-6" 50 psi Close-off, 8-12"	150 psi Close-off	100 psi Close-off, 2-6" 50 psi Close-off, 8-12"
Valve Size in.	Cv		Part No.	Part No.	Part No.	Part No.
	Run	Branch				
Floating 2-position						
			Assembly A	Assembly A	Assembly B	Assembly B
2	58	54	BV3W02FE2LAXXXX	BV3W02UG6LAXXXX	BV3W02FE2LBXXXX	BV3W02UG6LBXXXX
2-1/2	135	114	BV3W25FE2LAXXXX	BV3W25UG6LAXXXX	BV3W25FE2LBXXXX	BV3W25UG6LBXXXX
3	229	188	BV3W03FE2LAXXXX	BV3W03UG6LAXXXX	BV3W03FE2LBXXXX	BV3W03UG6LBXXXX
4	511	385	BV3W04FE2LAXXXX	BV3W04UG6LAXXXX	BV3W04FE2LBXXXX	BV3W04UG6LBXXXX
5	870	642	BV3W05FE2LAXXXX	BV3W05UG6LAXXXX	BV3W05FE2LBXXXX	BV3W05UG6LBXXXX
6	1242	935	BV3W06FE2LAXXXX	BV3W06UG6LAXXXX	BV3W06FE2LBXXXX	BV3W06UG6LBXXXX
8	2254	1688	BV3W08FE2LAXXXX	BV3W08UE2LAXXXX	BV3W08FE2LBXXXX	BV3W08UE2LBXXXX
10	3570	2667	BV3W10FE2LAXXXX	BV3W10UE2LAXXXX	BV3W10FE2LBXXXX	BV3W10UE2LBXXXX
12	5240	3938	BV3W12FE2LAXXXX	BV3W12UE2LAXXXX	BV3W12FE2LBXXXX	BV3W12UE2LBXXXX
			Assembly C	Assembly C	Assembly D	Assembly D
2	58	54	BV3W02FE2LCXXXX	BV3W02UG6LCXXXX	BV3W02FE2LDXXXX	BV3W02UG6LDXXXX
2-1/2	135	114	BV3W25FE2LCXXXX	BV3W25UG6LCXXXX	BV3W25FE2LDXXXX	BV3W25UG6LDXXXX
3	229	188	BV3W03FE2LCXXXX	BV3W03UG6LCXXXX	BV3W03FE2LDXXXX	BV3W03UG6LDXXXX
4	511	385	BV3W04FE2LCXXXX	BV3W04UG6LCXXXX	BV3W04FE2LDXXXX	BV3W04UG6LDXXXX
5	870	642	BV3W05FE2LCXXXX	BV3W05UG6LCXXXX	BV3W05FE2LDXXXX	BV3W05UG6LDXXXX
6	1242	935	BV3W06FE2LCXXXX	BV3W06UG6LCXXXX	BV3W06FE2LDXXXX	BV3W06UG6LDXXXX
8	2254	1688	BV3W08FE2LCXXXX	BV3W08UE2LCXXXX	BV3W08FE2LDXXXX	BV3W08UE2LDXXXX
10	3570	2667	BV3W10FE2LCXXXX	BV3W10UE2LCXXXX	BV3W10FE2LDXXXX	BV3W10UE2LDXXXX
12	5240	3938	BV3W12FE2LCXXXX	BV3W12UE2LCXXXX	BV3W12FE2LDXXXX	BV3W12UE2LDXXXX

4, 5, and 6" undercut with E2 actuators also available.
Assemblies E and F also available. Contact customer support for part numbers.

Three-Way Butterfly Actuators

2 to 12"

Electronic, Non-Spring Return

2 to 12" 			Normally Open		Normally Closed	
			150 psi Close-off	100 psi Close-off, 2-6" 50 psi Close-off, 8-12"	150 psi Close-off	100 psi Close-off, 2-6" 50 psi Close-off, 8-12"
Valve Size in.	Cv		Part No.	Part No.	Part No.	Part No.
	Run	Branch				
Modulating 0-10 V						
			Assembly A	Assembly A	Assembly B	Assembly B
2	58	54	BV3W02FEMLAXXHX	BV3W02UG7LAXXXX	BV3W02FEMLBXXHX	BV3W02UG7LBXXXX
2-1/2	135	114	BV3W25FEMLAXXHX	BV3W25UG7LAXXXX	BV3W25FEMLBXXHX	BV3W25UG7LBXXXX
3	229	188	BV3W03FEMLAXXHX	BV3W03UG7LAXXXX	BV3W03FEMLBXXHX	BV3W03UG7LBXXXX
4	511	385	BV3W04FEMLAXXHX	BV3W04UG7LAXXXX	BV3W04FEMLBXXHX	BV3W04UG7LBXXXX
5	870	642	BV3W05FEMLAXXHX	BV3W05UG7LAXXXX	BV3W05FEMLBXXHX	BV3W05UG7LBXXXX
6	1242	935	BV3W06FEMLAXXHX	BV3W06UG7LAXXXX	BV3W06FEMLBXXHX	BV3W06UG7LBXXXX
8	2254	1688	BV3W08FEMLAXXHX	BV3W08UEMLAXXHX	BV3W08FEMLBXXHX	BV3W08UEMLBXXHX
10	3570	2667	BV3W10FEMLAXXHX	BV3W10UEMLAXXHX	BV3W10FEMLBXXHX	BV3W10UEMLBXXHX
12	5240	3938	BV3W12FEMLAXXHX	BV3W12UEMLAXXHX	BV3W12FEMLBXXHX	BV3W12UEMLBXXHX
			Assembly C	Assembly C	Assembly D	Assembly D
2	58	54	BV3W02FEMLCXXHX	BV3W02UG7LCXXXX	BV3W02FEMLDXXHX	BV3W02UG7LDXXXX
2-1/2	135	114	BV3W25FEMLCXXHX	BV3W25UG7LCXXXX	BV3W25FEMLDXXHX	BV3W25UG7LDXXXX
3	229	188	BV3W03FEMLCXXHX	BV3W03UG7LCXXXX	BV3W03FEMLDXXHX	BV3W03UG7LDXXXX
4	511	385	BV3W04FEMLCXXHX	BV3W04UG7LCXXXX	BV3W04FEMLDXXHX	BV3W04UG7LDXXXX
5	870	642	BV3W05FEMLCXXHX	BV3W05UG7LCXXXX	BV3W05FEMLDXXHX	BV3W05UG7LDXXXX
6	1242	935	BV3W06FEMLCXXHX	BV3W06UG7LCXXXX	BV3W06FEMLDXXHX	BV3W06UG7LDXXXX
8	2254	1688	BV3W08FEMLCXXHX	BV3W08UEMLCXXHX	BV3W08FEMLDXXHX	BV3W08UEMLDXXHX
10	3570	2667	BV3W10FEMLCXXHX	BV3W10UEMLCXXHX	BV3W10FEMLDXXHX	BV3W10UEMLDXXHX
12	5240	3938	BV3W12FEMLCXXHX	BV3W12UEMLCXXHX	BV3W12FEMLDXXHX	BV3W12UEMLDXXHX
Modulating 4-20 mA						
			Assembly A	Assembly A	Assembly B	Assembly B
2	58	54	BV3W02FEPLAXXHX	BV3W02UG8LAXXXX	BV3W02FEPLBXXHX	BV3W02UG8LBXXXX
2-1/2	135	114	BV3W25FEPLAXXHX	BV3W25UG8LAXXXX	BV3W25FEPLBXXHX	BV3W25UG8LBXXXX
3	229	188	BV3W03FEPLAXXHX	BV3W03UG8LAXXXX	BV3W03FEPLBXXHX	BV3W03UG8LBXXXX
4	511	385	BV3W04FEPLAXXHX	BV3W04UG8LAXXXX	BV3W04FEPLBXXHX	BV3W04UG8LBXXXX
5	870	642	BV3W05FEPLAXXHX	N/A	BV3W05FEPLBXXHX	N/A
6	1242	935	BV3W06FEPLAXXHX	N/A	BV3W06FEPLBXXHX	N/A
8	2254	1688	BV3W08FEPLAXXHX	BV3W08UEPLAXXHX	BV3W08FEPLBXXHX	BV3W08UEPLBXXHX
10	3570	2667	BV3W10FEPLAXXHX	BV3W10UEPLAXXHX	BV3W10FEPLBXXHX	BV3W10UEPLBXXHX
12	5240	3938	BV3W12FEPLAXXHX	BV3W12UEPLAXXHX	BV3W12FEPLBXXHX	BV3W12UEPLBXXHX
			Assembly C	Assembly C	Assembly D	Assembly D
2	58	54	BV3W02FEPLCXXHX	BV3W02UG8LCXXXX	BV3W02FEPLDXXHX	BV3W02UG8LDXXXX
2-1/2	135	114	BV3W25FEPLCXXHX	BV3W25UG8LCXXXX	BV3W25FEPLDXXHX	BV3W25UG8LDXXXX
3	229	188	BV3W03FEPLCXXHX	BV3W03UG8LCXXXX	BV3W03FEPLDXXHX	BV3W03UG8LDXXXX
4	511	385	BV3W04FEPLCXXHX	BV3W04UG8LCXXXX	BV3W04FEPLDXXHX	BV3W04UG8LDXXXX
5	870	642	BV3W05FEPLCXXHX	N/A	BV3W05FEPLDXXHX	N/A
6	1242	935	BV3W06FEPLCXXHX	N/A	BV3W06FEPLDXXHX	N/A
8	2254	1688	BV3W08FEPLCXXHX	BV3W08UEPLCXXHX	BV3W08FEPLDXXHX	BV3W08UEPLDXXHX
10	3570	2667	BV3W10FEPLCXXHX	BV3W10UEPLCXXHX	BV3W10FEPLDXXHX	BV3W10UEPLDXXHX
12	5240	3938	BV3W12FEPLCXXHX	BV3W12UEPLCXXHX	BV3W12FEPLDXXHX	BV3W12UEPLDXXHX

4, 5, and 6" undercut with E2 actuators also available.
Assemblies E and F also available. Contact customer support for part numbers.

Resilient Seat Butterfly Valves

Tight shut-off for tighter control of energy costs

Resilient Seat Butterfly Valves are now available in sizes up to 20-inches. Excellent for isolation applications, two-way and three-way Butterfly Valves provide 2-position (On/Off), floating and modulating control. Three-way Butterfly Valves are available in a variety of configurations.

This catalog contains information on sizes 2 through 12-inches. For larger sizes, please contact Customer Care.



Valve Size	2-Way	3-Way	Pneumatic	SR Electronic	NSR Electronic	In Catalog
2 to 12"	•	•	•	2 to 4"	2 to 12"	•
14 to 20"	•	•	•	—	•	Contact Customer Care.

For sizing information on Butterfly Valves, refer to Reference section.

Valve Size in.	Dimensions			Weight
	A	B	C	
1/2" (15 mm)	2-3/4" (70 mm)	2-15/16" (74 mm)	1-5/16" (33 mm)	1.5 lb. (0.7 kg)
3/4" (20 mm)	3-1/4" (83 mm)	2-3/8" (59 mm)	1-5/16" (33 mm)	2.3 lb. (1.05 kg)
1" (25 mm)	3-7/8" (98 mm)	3-15/16" (99 mm)	1-9/16" (39 mm)	3.3 lb. (1.5 kg)

Two- & Three-Way Resilient Seat Valve Assemblies

Description

Available in two-way and three-way arrangements for two-position (On/Off), floating and modulating control, Resilient Seat Butterfly Valve Assemblies provide bubble-tight shutoff for the assemblies' full-rated pressure.

Features

- Molded-in resilient seat provides bubble-tight shutoff up to 150 psi
- Operating temperature up to 250°F (120°C)
- Lugged body is drilled and tapped for isolation and removal of downstream piping at full-rated pressure
- Round, polished disc and hub edge provides 360 degree concentric seating, minimum flow restriction, lower torques and longer seat life
- Upper and lower inboard bronze bearings ensure longer service life with low operating torques
- Thru-stem design provides high strength and positive disc control with standardized end connection for operator interchangeability
- Extended neck allows adequate clearance for flanges and insulation
- Bi-directional, self-adjusting stem seal is suitable for vacuum and pressure while preventing external contamination of the stem area
- Heavy-duty corrosion resistant top bushing, absorbs actuator side thrust
- Cast-in top plate is an integral part of the body and is standardized to allow direct mounting of actuators
- Each valve is factory tested to 110 percent of specified pressure rating
- Available in multiple configurations to match jobsite needs.

Applications

Butterfly Valve assemblies provide excellent flow control of hot water, chilled water, condenser water, and thermal storage systems applications.

Specifications

Valve Size 2 to 20" (51 to 508 mm)

Body Style Butterfly

Assembly Type 2-Way/3-Way

Materials

Full Cut Disk 2 to 12" / Under Cut Disk 2 to 6":

Body Cast Iron

Disc 304 Stainless Steel

Stem 416 Stainless Steel

Seat EPDM

Bearing Bronze

Upper Stem Bushing Polyester

Upper Stem Seal NBR

Full Cut Disk 14 to 20" / Under Cut Disk 8 to 20":

Body Cast Iron

Disc Aluminum Bronze

Stem 316 or 18-8 Stainless Steel

Seat EPDM

Bearing Sintered Metal

Upper Stem Bushing Polyester

Upper Stem Seal NBR

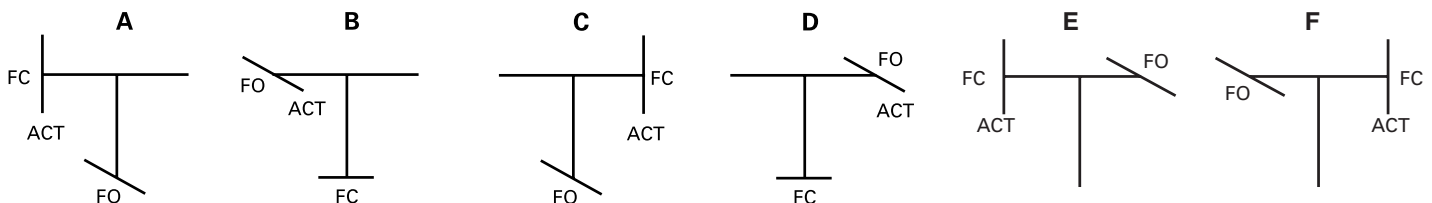
Controlled Medium Chilled Water, Hot Water

Temperatures -40 to +250°F
(-40 to +121°C)

Close-off Ratings Refer to Selection Tables

Three-Way Butterfly Valve Configurations

View from Top of Valve/Actuator Assembly (Shaft or Actuator End)



Key: FC Fail Closed FO Fail Open ACT Actuator Location



Two-Way Butterfly Valve with pneumatic actuator.



Three-Way Butterfly Valve with pneumatic actuators tandem mounted.



Two-Way Butterfly Valve with electronic actuator.



Three-Way Butterfly Valve with electronic actuators tandem mounted.

Part Number Configuration

		BV	2W	02	F	S2	L	O	X	X	X	X	Add accessories by simply replacing the X with the appropriate letter.	
Assembly Configuration													Manual Override	
2W	2-Way												M Manual Override (Non-STD) (Pneumatic Actuator Only)	
3W	3-Way												X Not Used	
Valve Size													Heater	
02	2-inch												H Heater (Must Be Used with EM and EP, Optional with E2)	
25	2.5-inch												X Not Used	
03	3-inch													
	to													
20	20-inch													
Disc Type													Actuator Type	
F	Full Cut Disc — 150 psi Shutoff												S Limit (End) Switch for Pneumatic, Actuators (Non-STD)	
U	Under Cut Disc												A Limit (End) Switch for G1, G2, G4, G5, G7, and G8 Actuators (Non-STD)	
	100 psi Tight Shutoff 2-6"												X Not Used	
	50 psi Tight Shutoff 8"+													
Actuator Type													Actuator Accessories/Options	
S2³	Pneumatic Spring Return 30 psi												P Pneumatic Positioner, 20 psi Actuator	
S6	Pneumatic Spring Return 60 psi												Q Pneumatic Positioner, 60 psi Spring Return Actuator	
D6	Pneumatic Double Acting 60 psi, Non-Spring Return												R Pneumatic Positioner, 60 psi Direct Acting Actuator	
E2	Electronic 2-position/Floating, 24-240 Vac/Vdc, Non-Spring Return												T E/P Valve, 120 Vac, 20 psi Spring Return Actuator	
EM	Electronic Modulating 0-10 Vdc, 24-240 Vac/Vdc, Non-Spring Return												U E/P Valve, 24 Vac, 20 psi Spring Return Actuator	
EP	Electronic Modulating 4-20 mA, 24-240 Vac/Vdc, Non-Spring Return												V E/P Valve, 120 Vac, 60 psi Spring Return Actuator	
G1¹	Electronic Spring Return, On/Off, 120 Vac												W E/P Valve, 24 Vac, 60 psi Spring Return Actuator	
G2¹	Electronic Spring Return, On/Off, 24 Vac												Y E/P Valve, 120 Vac, 60 psi Direct Acting Actuator	
G3¹	Electronic Spring Return, Floating, 24 Vac												Z E/P Valve, 24 Vac, 60 psi Direct Acting Actuator	
G4¹	Electronic Spring Return, Modulating 0-10 V, 24 Vac												X Not Used	
G5¹	Electronic Spring Return, Modulating 4-20 mA, 24 Vac													
G6²	Electronic Floating, 24 Vac, NSR													
G7²	Electronic Modulating 0-10 Vdc, 24 Vac, Non-Spring Return													
G8¹	Electronic Modulating 4-20 mA, 24 Vac ⁴ , Non-Spring Return													
Valve Body Style													Fail Position/Assembly Configuration	
L	Lug-cast Iron (Standard)												O Fail Open 2-Way Spring Return	
													C Fail Closed 2-Way Spring Return	
													N 2-Way Non-Spring Return	
													A-F 3-Way Spring Return	
													A-F 3-Way Non-Spring Return	

Ordering Notes: ¹2 to 4-inch sizes only ²2 to 6-inch sizes only ³2 to 12-inch sizes only ⁴Also order 499 Ohm Restrictor Kit, 985-124.

Table Notes:

- Not all assembly configurations are available. Consult Customer Care.
- Items marked NON-STD (non-standard) will require factory pricing and may have longer lead times.
- For 3-way valve assemblies with spring return actuators — 1 Port Fail Close (FC). 1 Port Fail Open (FO).

- For 2-way and 3-way valve assemblies with pneumatic non-spring return actuators, fail last position. For 2-way and 3-way valve assemblies with electric non-spring return actuators, fail position will depend on type of failure and controls installed, consult Customer Care.

Two-Way Resilient Seat Valve Assemblies

S2 Series with 20 psi Pneumatic Spring Return Actuators

Figure 1 Dimensions — Two-Way Valve Assemblies with Pneumatic Actuators

Valve Size	A	B	C	D	E	F	G	H	H1	J	L	M	Notes
	Valve Height	Body O.D.	C _L Pipe To Top Plate	Face/ Face	Tap Size	Bolt Circle	# Bolts	Actuator Height	Actuator Removal Clearance	Actuator Width	C _L Length	Stroke Clearance	
2"	8.50" (216 mm)	6.00" (153 mm)	5.31" (135 mm)	1.69" (43 mm)	0.625-11 UNC-2B	4.75" (121 mm)	4	7.75" (197 mm)	9.75" (248 mm)	7.13" (181 mm)	18.00" (457 mm)	5.0" (127 mm)	1, 2
2.5"	9.31" (236 mm)	6.75" (172 mm)	5.98" (150 mm)	1.81" (46 mm)	0.625-11 UNC-2B	5.50" (140 mm)	4	7.75" (197 mm)	9.75" (248 mm)	7.13" (181 mm)	18.00" (457 mm)	5.0" (127 mm)	1, 2
3"	10.00" (254 mm)	7.25" (184 mm)	6.31" (160 mm)	1.81" (46 mm)	0.625-11 UNC-2B	6.00" (152 mm)	4	7.75" (197 mm)	9.75" (248 mm)	7.13" (181 mm)	18.00" (457 mm)	5.0" (127 mm)	1, 2
4"	11.38" (288 mm)	8.81" (223 mm)	7.13" (180 mm)	2.06" (52 mm)	0.625-11 UNC-2B	7.50" (191 mm)	8	7.75" (197 mm)	9.75" (248 mm)	7.13" (181 mm)	18.00" (457 mm)	5.0" (127 mm)	1, 2
5"	12.81" (325 mm)	10.00" (254 mm)	7.69" (195 mm)	2.25" (56 mm)	0.750-10 UNC-2B	8.50" (216 mm)	8	7.75" (197 mm)	9.75" (248 mm)	7.13" (181 mm)	18.00" (457 mm)	5.0" (127 mm)	1, 3
5"	12.81" (325 mm)	10.00" (254 mm)	7.69" (195 mm)	2.25" (56 mm)	0.750-10 UNC-2B	8.50" (216 mm)	8	7.75" (197 mm)	9.75" (248 mm)	7.13" (181 mm)	18.00" (457 mm)	5.0" (127 mm)	3
6"	13.94" (354 mm)	11.00" (279 mm)	8.31" (210 mm)	2.25" (56 mm)	0.750-10 UNC-2B	9.50" (241 mm)	8	7.75" (197 mm)	9.75" (248 mm)	7.13" (181 mm)	18.00" (457 mm)	5.0" (127 mm)	1, 3, 4
6"	13.94" (354 mm)	11.00" (279 mm)	8.31" (210 mm)	2.25" (56 mm)	0.750-10 UNC-2B	9.50" (241 mm)	8	7.75" (197 mm)	9.75" (248 mm)	7.13" (181 mm)	18.00" (457 mm)	5.0" (127 mm)	2
8"	16.19" (411 mm)	13.25" (336 mm)	9.50" (249 mm)	2.50" (64 mm)	0.750-10 UNC-2B	11.75" (298 mm)	8	7.75" (197 mm)	9.75" (248 mm)	7.13" (181 mm)	18.00" (457 mm)	7.5" (191 mm)	2, 3, 4
10"	19.00" (483 mm)	15.88" (403 mm)	10.75" (273 mm)	2.50" (64 mm)	0.875-9 UNC-2B	14.25" (362 mm)	12	7.75" (197 mm)	9.75" (248 mm)	7.13" (181 mm)	18.00" (457 mm)	7.5" (191 mm)	2, 3, 4
12"	21.63" (549 mm)	18.63" (473 mm)	12.25" (311 mm)	3.00" (76 mm)	0.875-9 UNC-2B	17.00" (432 mm)	12	9.25" (235 mm)	11.25" (286 mm)	8.25" (210 mm)	17.75" (451 mm)	7.5" (191 mm)	2, 3, 4

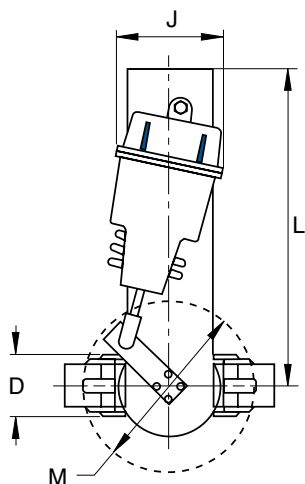
Table Notes:

1. Full cut assemblies (150 psi shutoff)
2. Under cut assemblies (100 psi shutoff) 2-6 inches; (50 psi shutoff) 8-12 inches
3. Two actuators included in assembly
4. Maximum angle of disc opening is 70°

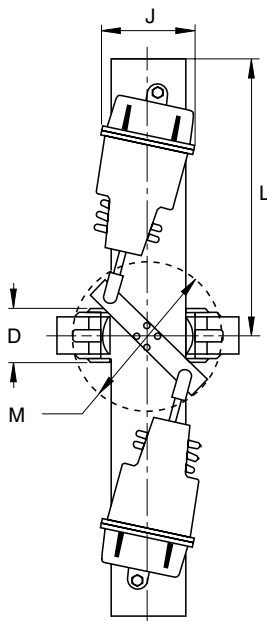


Two-Way Butterfly Valve with pneumatic actuator.

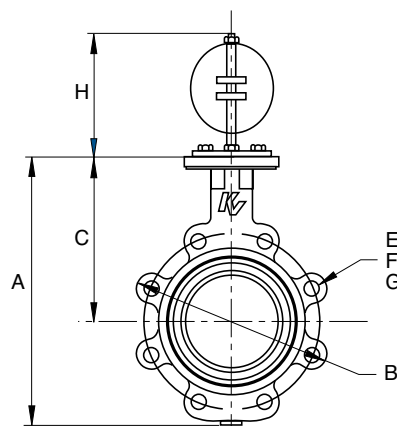
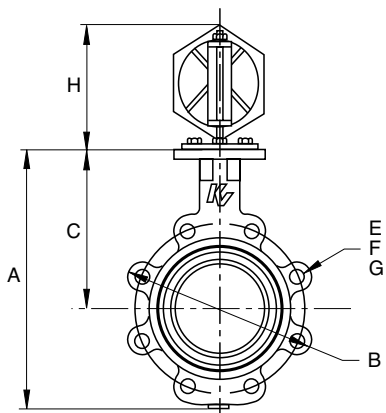
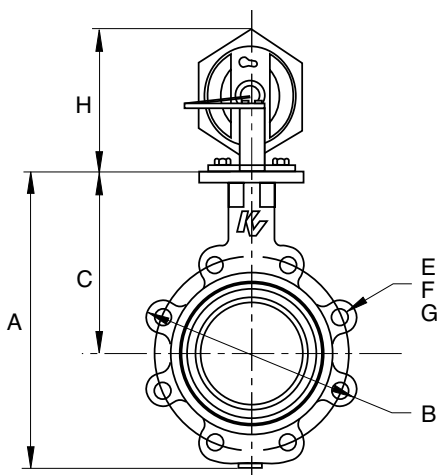
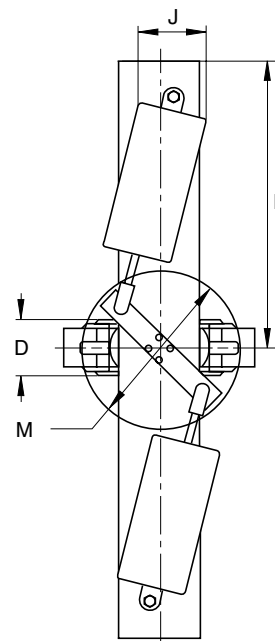
2 to 6-inch, 5 and 6-inch
(50 psi close off)



5 and 6-inch, 8 to 10-inch
(50 psi close off)



12-inch
(50 psi close off)



Three-Way Resilient Seat Valve Assemblies

S2 Series with 20 psi Pneumatic Spring Return Actuators

Figure 2 Dimensions — Three-Way Valve Assemblies with Pneumatic Actuators

Valve Size	A Valve Height	B Body O.D.	C C _L Pipe To Top Plate	D Face/ Face	E Tap Size	F Bolt Circle	G # Bolts	H Actuator Height	H1 Actuator Removal Clearance	J Actuator Width	L C _L Length	M Stroke Clearance	N Tee Width	P Run Length	Notes
2"	8.50" (216 mm)	6.00" (153 mm)	5.31" (135 mm)	1.69" (43 mm)	0.625-11 UNC-2B	4.75" (121 mm)	4	7.75" (197 mm)	9.75" (248 mm)	7.13" (181 mm)	18.00" (457 mm)	8.38" (213 mm)	9.22" (234 mm)	10.69" (272 mm)	1, 2
2.5"	9.31" (236 mm)	6.75" (172 mm)	5.94" (150 mm)	1.81" (46 mm)	0.625-11 UNC-2B	5.50" (140 mm)	4	7.75" (197 mm)	9.75" (248 mm)	7.13" (181 mm)	18.00" (457 mm)	8.38" (213 mm)	10.31" (262 mm)	12.31" (313 mm)	1, 2
3"	10.00" (254 mm)	7.25" (184 mm)	6.31" (160 mm)	1.81" (46 mm)	0.625-11 UNC-2B	6.00" (152 mm)	4	7.75" (197 mm)	9.75" (248 mm)	7.13" (181 mm)	18.00" (457 mm)	10.38" (265 mm)	11.44" (291 mm)	12.88" (327 mm)	1, 2, 4
4"	11.38" (288 mm)	8.81" (223 mm)	7.13" (180 mm)	2.06" (52 mm)	0.625-11 UNC-2B	7.50" (191 mm)	8	7.75" (197 mm)	9.75" (248 mm)	7.13" (181 mm)	18.00" (457 mm)	7.25" (184 mm)	13.13" (333 mm)	15.13" (384 mm)	1, 2, 3, 4
5"	12.19" (310 mm)	10.00" (254 mm)	7.69" (195 mm)	2.25" (56 mm)	0.750-10 UNC-2B	8.50" (216 mm)	8	7.75" (197 mm)	9.75" (248 mm)	7.13" (181 mm)	18.00" (457 mm)	8.69" (221 mm)	14.56" (370 mm)	17.25" (438 mm)	1, 2, 3, 4
6"	13.94" (354 mm)	11.00" (279 mm)	8.31" (210 mm)	2.25" (56 mm)	0.750-10 UNC-2B	9.50" (241 mm)	8	7.75" (197 mm)	9.75" (248 mm)	7.13" (181 mm)	18.00" (457 mm)	10.38" (264 mm)	15.50" (394 mm)	18.25" (464 mm)	2, 3, 4
6"	13.94" (354 mm)	13.25" (337 mm)	8.31" (210 mm)	2.25" (56 mm)	0.750-10 UNC-2B	9.50" (241 mm)	8	9.25" (235 mm)	11.25" (286 mm)	8.25" (210 mm)	20.00" (508 mm)	15.00" (381 mm)	15.50" (394 mm)	18.25" (464 mm)	1, 3, 4
8"	16.19" (411 mm)	13.25" (337 mm)	9.50" (241 mm)	2.50" (64 mm)	0.750-10 UNC-2B	11.75" (298 mm)	8	9.25" (235 mm)	11.25" (286 mm)	8.25" (210 mm)	20.00" (508 mm)	15.00" (381 mm)	17.81" (452 mm)	20.50" (521 mm)	2, 3, 4
10"	19.00" (483 mm)	15.88" (403 mm)	10.75" (273 mm)	2.50" (64 mm)	0.875-9 UNC-2B	14.25" (362 mm)	12	9.25" (235 mm)	11.25" (286 mm)	8.25" (210 mm)	20.00" (508 mm)	15.00" (381 mm)	21.38" (543 mm)	24.25" (622 mm)	2, 3, 4
12"	21.63" (549 mm)	18.63" (473 mm)	12.25" (311 mm)	3.00" (76 mm)	0.875-9 UNC-2B	17.00" (432 mm)	12	9.25" (235 mm)	11.25" (286 mm)	8.25" (210 mm)	20.00" (508 mm)	15.00" (381 mm)	23.41" (595 mm)	27.00" (686 mm)	2, 3, 4

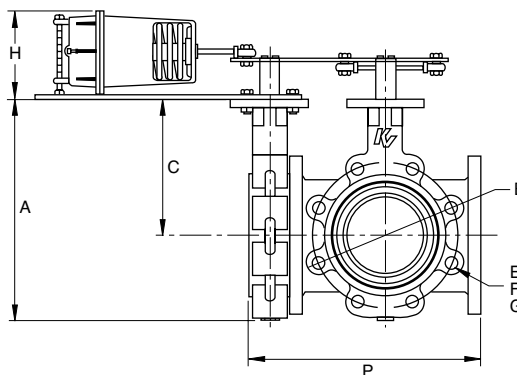
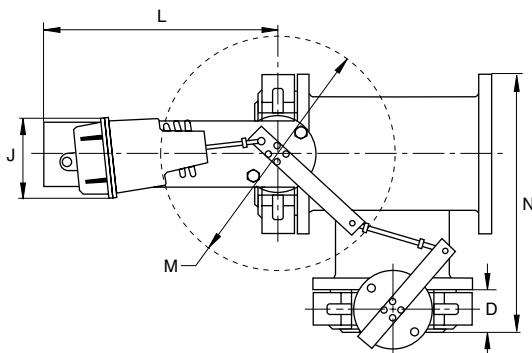
Table Notes:

1. Full cut assemblies (150 psi shutoff)
2. Under cut assemblies (100 psi shutoff) 2-6 inches; (50 psi shutoff) 8-12 inches
3. Two actuators included in assembly
4. Maximum angle of disc opening is 70°

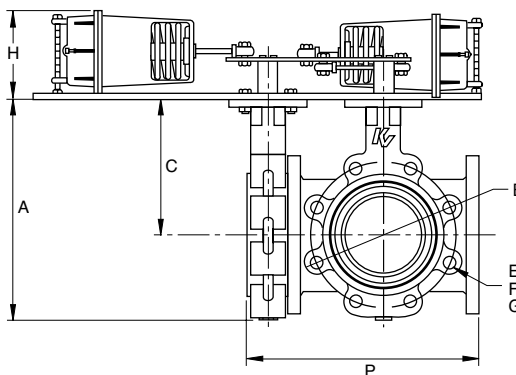
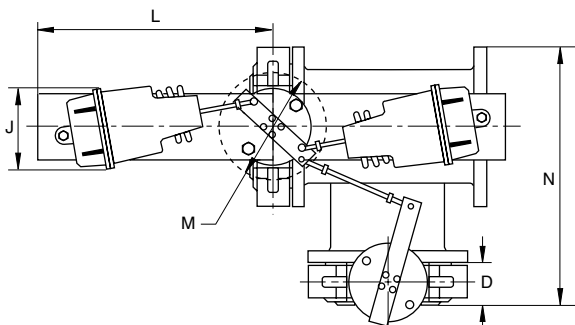


Three-Way Butterfly Valve with pneumatic actuators tandem mounted.

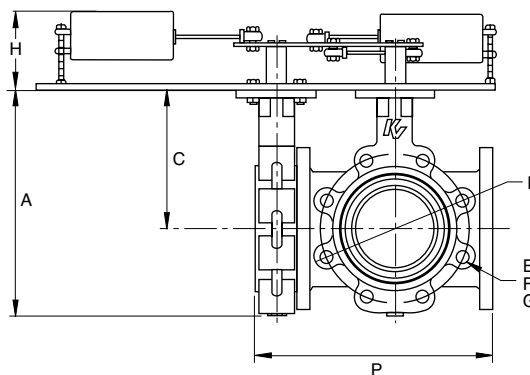
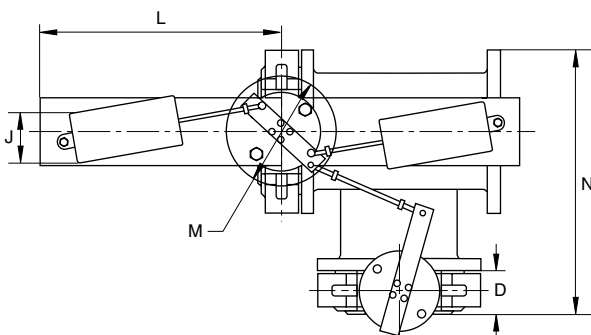
2 to 3-inch



4 to 6-inch



8 to 12-inch



Drawings shown are for Assemblies A & B. For Assemblies C & D, the valve and actuator are on right-hand side of the run of tee and for Assemblies E & F, the valves are on both sides of the run tee.

Two-Way Resilient Seat Valve Assemblies

G Series Electronic with Spring Return and Non-Spring Return Actuators

Figure 3 Dimensions — Two-Way OpenAir Electronic Actuator Valve Assemblies

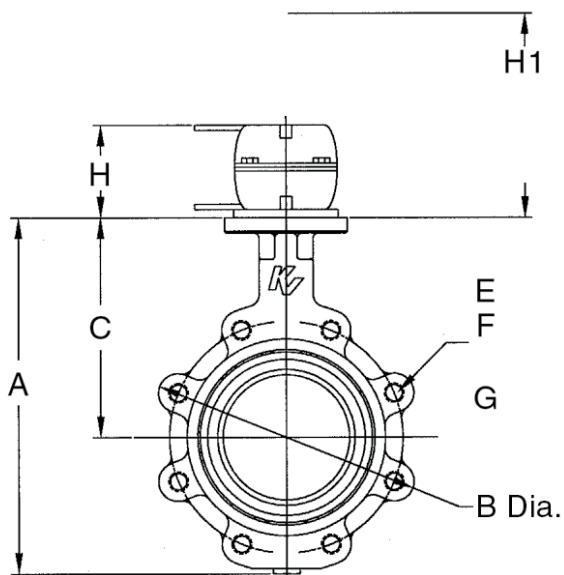
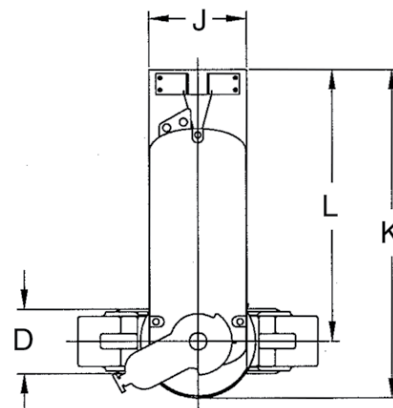
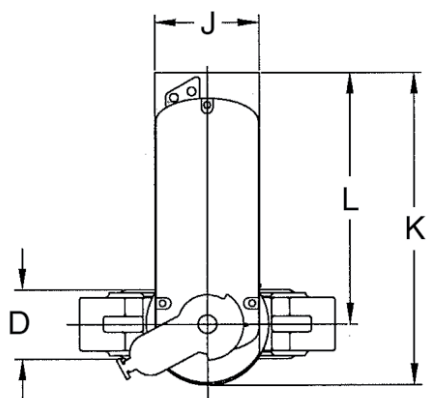
Valve Size	A	B	C	D	E	F	G	H	H1	H2	J	K	L	Notes
Valve Height	Valve Height	Body O.D.	C. Pipe To Top Plate	Face/ Face	Tap Size	Bolt Circle	# Bolts	Actuator Height	Actuator Removal Clearance	Dual Actuator Height	Actuator Width	Actuator Length	C _L Length	
2"	8.5" (216 mm)	6" (153 mm)	5.31" (135 mm)	1.69" (43 mm)	0.625-11 UNC-2B	4.75" (121 mm)	4	3.25" (83 mm)	5.25" (133 mm)	—	4.00" (102 mm)	10.35" (263 mm)	8.35" (212 mm)	1, 2, 4, 5
2.5"	9.31" (236 mm)	6.75" (172 mm)	5.98" (135 mm)	1.81" (46 mm)	0.625-11 UNC-2B	5.50" (140 mm)	4	3.25" (83 mm)	5.25" (133 mm)	—	4.00" (102 mm)	10.35" (263 mm)	8.35" (212 mm)	1, 2, 4, 5
3"	10" (254 mm)	7.25" (184 mm)	6.31" (160 mm)	1.81" (46 mm)	0.625-11 UNC-2B	6.00" (152 mm)	4	3.25" (83 mm)	5.25" (133 mm)	—	4.00" (102 mm)	10.35" (263 mm)	8.35" (212 mm)	1, 2, 4, 5
4"	11.38" (288 mm)	8.81" (223 mm)	7.14" (180 mm)	2.06" (52 mm)	0.625-11 UNC-2B	6.00" (152 mm)	4	3.25" (83 mm)	5.25" (133 mm)	—	4.00" (102 mm)	10.35" (263 mm)	8.35" (212 mm)	1, 2, 5
4"	11.13" (283 mm)	8.75" (222 mm)	7" (178 mm)	2" (51 mm)	0.625-11 UNC-2B	7.50" (191 mm)	8	3.25" (83 mm)	9.00" (229 mm)	7.00" (178 mm)	4.00" (102 mm)	14.84" (377 mm)	12.84" (327 mm)	1, 2, 3, 4
5"	12.13" (337 mm)	19" (254 mm)	7.50" (191 mm)	2.13" (54 mm)	0.625-11 UNC-2B	8.50" (216 mm)	8	3.25" (83 mm)	9.00" (229 mm)	7.00" (178 mm)	4.00" (102 mm)	14.84" (377 mm)	12.84" (327 mm)	1, 2, 3, 5
6"	13.25" (337 mm)	11" (279 mm)	8" (203 mm)	2.13" (54 mm)	0.625-11 UNC-2B	9.50" (241 mm)	8	3.25" (83 mm)	9.00" (229 mm)	7.00" (178 mm)	4.00" (102 mm)	14.84" (377 mm)	12.84" (327 mm)	1, 2, 3, 5

Table Notes:

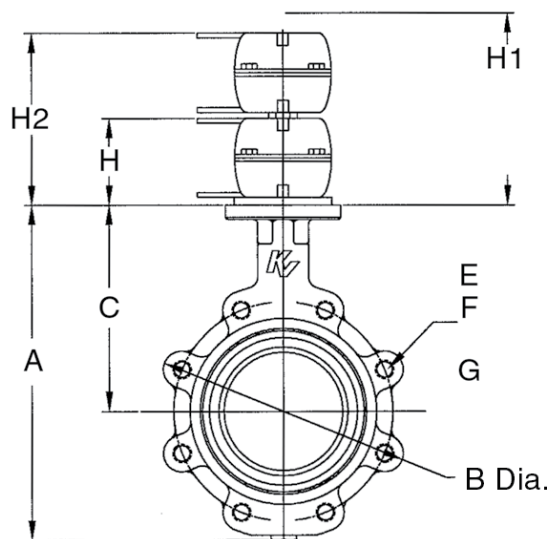
1. 100 psi shutoff pressure 2. Under cut assemblies 3. Tandem actuators 4. Spring return 5. Non-spring return



Two-Way Butterfly Valve with electronic actuator.



Minimum Clearance Required For Actuator Removal



Minimum Clearance Required For Actuator Removal

Three-Way Resilient Seat Valve Assemblies

G Series Electronic with Spring Return and Non-Spring Return Actuators

Figure 4 Dimensions — Three-Way OpenAir Electronic Actuator Valve Assemblies

Valve Size	A	B	C	D	E	F	G	H	H1	H2	J	K	L	M
Valve Size	Valve Height	Body O.D.	C. Pipe To Top Plate	Face/ Face	Tap Size	Bolt Circle	# Bolts	Actuator Height	Actuator Removal Clearance	Dual Actuator Height	Actuator Width	Actuator Length	C _L Length	Arm Stroke Clearance
2"	8.50" (216 mm)	6.00" (153 mm)	5.31" (135 mm)	1.69" (43 mm)	0.625-11 UNC-2B	4.75" (121 mm)	4	3.25" (83 mm)	5.25" (133 mm)	—	4.00" (102 mm)	11.84" (301 mm)	8.35" (212 mm)	7.25" (184 mm)
2.5"	9.31" (236 mm)	6.75" (172 mm)	5.94" (150 mm)	1.81" (46 mm)	0.625-11 UNC-2B	5.50" (140 mm)	4	3.25" (83 mm)	5.25" (133 mm)	—	4.00" (102 mm)	13.41" (341 mm)	8.35" (212 mm)	7.25" (184 mm)
3"	10.00" (254 mm)	7.25" (184 mm)	6.31" (160 mm)	1.81" (46 mm)	0.625-11 UNC-2B	6.00" (152 mm)	4	3.25" (83 mm)	9.00" (229 mm)	—	4.00" (102 mm)	13.98" (355 mm)	8.35" (212 mm)	7.25" (184 mm)
3"	10.00" (254 mm)	7.25" (184 mm)	6.31" (160 mm)	1.81" (46 mm)	0.625-11 UNC-2B	6.00" (152 mm)	4	3.25" (83 mm)	9.00" (229 mm)	7.00" (178 mm)	4.00" (102 mm)	13.98" (355 mm)	8.35" (212 mm)	7.25" (184 mm)
4"	11.38" (288 mm)	8.81" (223 mm)	7.13" (180 mm)	2.06" (52 mm)	0.625-11 UNC-2B	7.50" (191 mm)	8	3.25" (83 mm)	5.25" (133 mm)	—	4.00" (102 mm)	16.06" (408 mm)	8.35" (212 mm)	7.25" (184 mm)
4"	11.13" (283 mm)	8.75" (222 mm)	7.00" (178 mm)	2.00" (51 mm)	0.625-11 UNC-2B	7.50" (191 mm)	8	3.25" (83 mm)	9.00" (229 mm)	7.00" (178 mm)	4.00" (102 mm)	16.06" (408 mm)	16.0" (212 mm)	6.36" (184 mm)
5"	12.19" (310 mm)	10.00" (254 mm)	7.50" (191 mm)	2.13" (54 mm)	0.750-10 UNC-2B	8.50" (216 mm)	8	3.25" (83 mm)	9.00" (229 mm)	7.00" (178 mm)	4.00" (102 mm)	18.06" (459 mm)	8.35" (212 mm)	7.25" (184 mm)
6"	13.25" (337 mm)	11.00" (279 mm)	8.00" (203 mm)	2.13" (54 mm)	0.750-10 UNC-2B	9.50" (241 mm)	8	3.25" (83 mm)	9.00" (229 mm)	7.00" (178 mm)	4.00" (102 mm)	4.00" (102 mm)	19.06" (484 mm)	7.25" (184 mm)

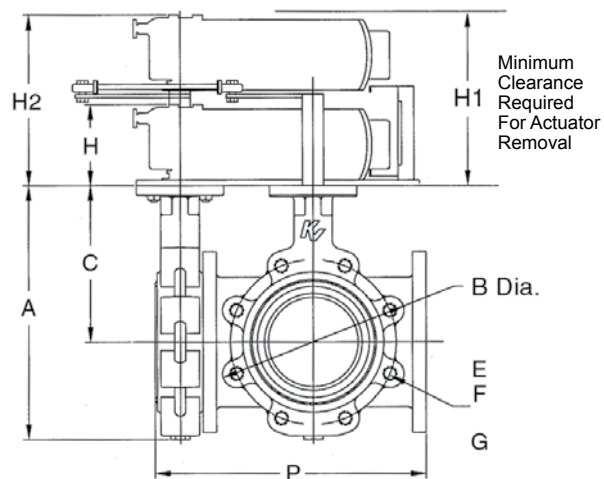
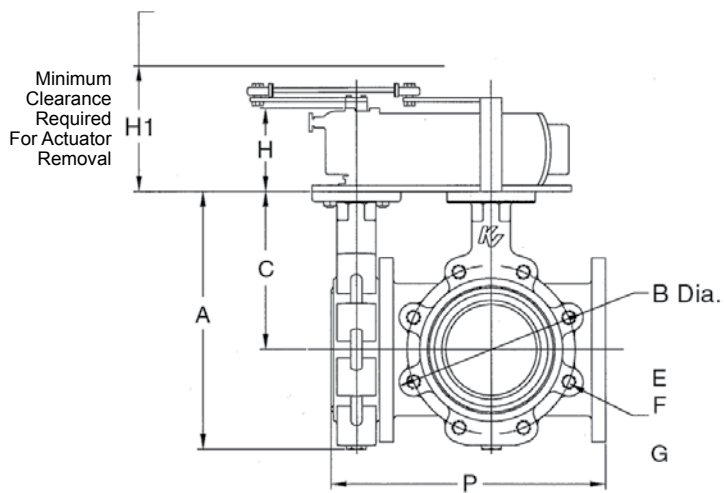
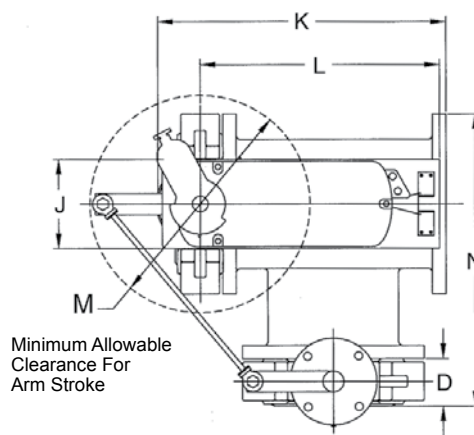
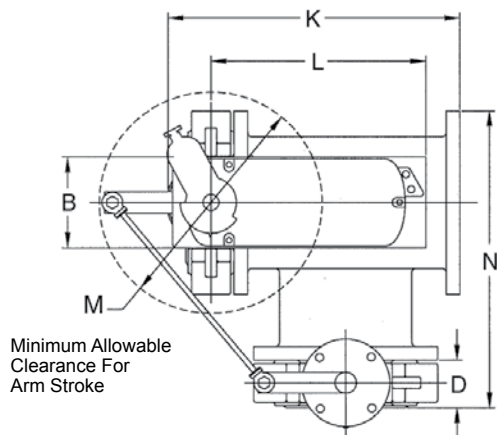
Valve Size	N	P	Notes
	B Port Depth	A — AB Face to Face	
2"	9.22" (234 mm)	10.69" (272 mm)	1, 2, 4, 5
2.5"	10.31" (263 mm)	12.31" (313 mm)	1, 2, 4, 5
3"	11.44" (291 mm)	12.88" (327 mm)	1, 2, 5
3"	11.44" (291 mm)	12.88" (327 mm)	1, 2, 3, 4
4"	13.06" (332 mm)	15.06" (383 mm)	1, 2, 5
4"	13.06" (332 mm)	15.06" (383 mm)	1, 2, 3, 4
5"	14.44" (367 mm)	17.13" (435 mm)	1, 2, 3, 5
6"	15.38" (391 mm)	18.13" (460 mm)	1, 2, 3, 5

Table Notes:

1. 100 psi shutoff pressure
2. Under cut assemblies
3. Tandem actuators
4. Spring return
5. Non-spring return



Three-Way Butterfly Valve with electronic actuators tandem mounted.



Drawings shown are for Assemblies A & B. For Assemblies C & D, the valve and actuator are on the left-hand side of the run of tee and for Assemblies E & F, the valves are on both sides of the run tee.

Two-Way Resilient Seat Valve Assemblies

Electronic Two-Position and Modulating Valve Assemblies

Figure 5 Dimensions — Two-Way EPI₂ Electronic Actuator Valve Assemblies

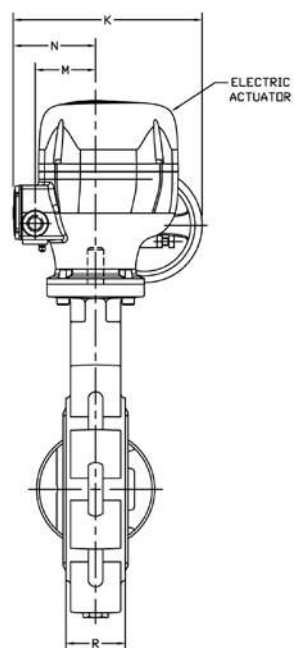
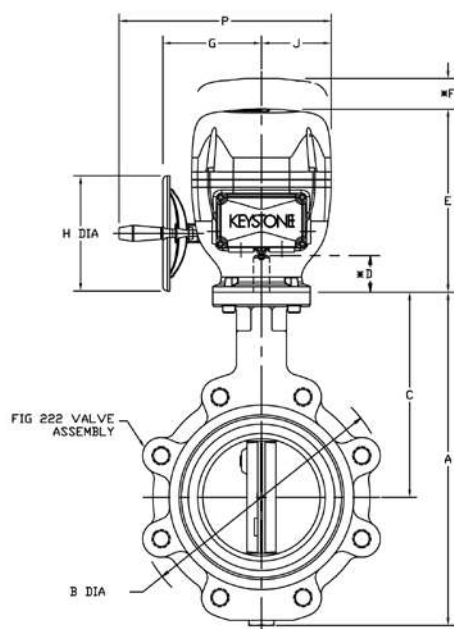
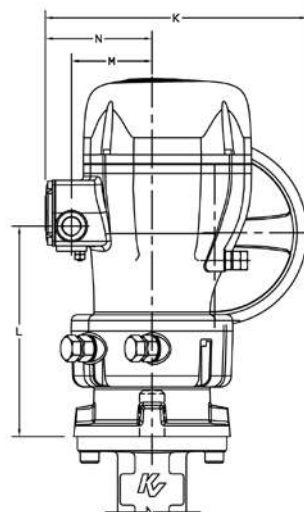
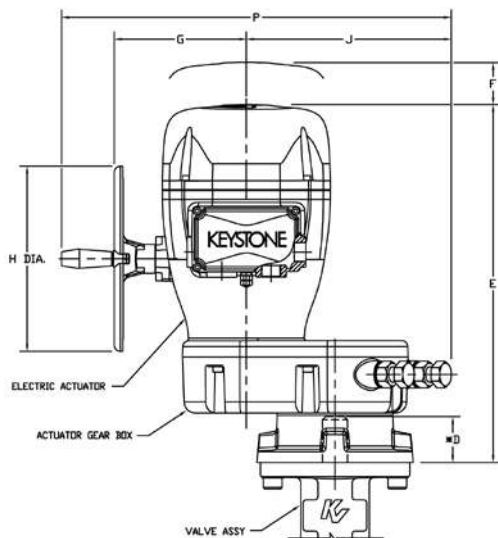
Valve Size	A Valve Height	B Body O.D.	C C _L Pipe To Top Plate	D Face/ Face	E Actuator Height	F Actuator Removal Clearance	G Pipe C _L To H.W.	H H.W. D.A.	J Valve CL To aH.W. Ring	K Total Width	Actuator Model	Notes
2"	8.50" (216 mm)	6.00" (153 mm)	5.31" (135 mm)	1.69" (43 mm)	7.75" (196 mm)	6.38" (162 mm)	4.56" (115 mm)	5.00" (127 mm)	4.94" (125 mm)	7.38" (200 mm)	EPI-3	1, 2, 3, 4
2.5"	9.31" (237 mm)	6.75" (171 mm)	5.94" (151 mm)	1.81" (46 mm)	7.75" (196 mm)	6.38" (162 mm)	4.56" (115 mm)	5.00" (127 mm)	4.94" (125 mm)	7.38" (200 mm)	EPI-3	1, 2, 3, 4
3"	10.00" (254 mm)	7.25" (184 mm)	6.31" (160 mm)	1.81" (46 mm)	7.75" (196 mm)	6.38" (162 mm)	4.56" (115 mm)	5.00" (127 mm)	4.94" (125 mm)	7.38" (200 mm)	EPI-3	1, 2, 3, 4
4"	11.38" (289 mm)	8.81" (224 mm)	7.13" (181 mm)	2.06" (52 mm)	9.63" (244 mm)	6.38" (162 mm)	6.50" (165 mm)	8.00" (203 mm)	7.13" (181 mm)	10.94" (278 mm)	EPI-6	2, 3, 4
4"	11.38" (289 mm)	8.81" (224 mm)	7.13" (181 mm)	2.06" (52 mm)	7.75" (196 mm)	6.38" (162 mm)	4.56" (116 mm)	5.00" (127 mm)	4.94" (125 mm)	7.38" (200 mm)	EPI-3	1
5"	12.81" (325 mm)	10.00" (254 mm)	7.69" (195 mm)	2.25" (56 mm)	9.63" (244 mm)	6.38" (162 mm)	6.50" (165 mm)	8.00" (203 mm)	7.13" (181 mm)	10.94" (278 mm)	EPI-13	3, 4
5"	12.81" (325 mm)	10.00" (254 mm)	7.69" (195 mm)	2.25" (56 mm)	9.63" (244 mm)	6.38" (162 mm)	6.50" (165 mm)	8.00" (203 mm)	7.13" (181 mm)	10.94" (278 mm)	EPI-6	1, 2
6"	13.94" (354 mm)	11.00" (279 mm)	8.31" (210 mm)	2.25" (56 mm)	9.63" (244 mm)	6.38" (162 mm)	6.50" (165 mm)	8.00" (203 mm)	7.13" (181 mm)	10.94" (278 mm)	EPI-13	2, 3, 4
6"	13.94" (354 mm)	11.00" (279 mm)	8.31" (210 mm)	2.25" (56 mm)	9.63" (244 mm)	6.38" (162 mm)	6.50" (165 mm)	8.00" (203 mm)	7.13" (181 mm)	10.94" (278 mm)	EPI-6	1
8"	16.44" (418 mm)	13.25" (337 mm)	9.50" (241 mm)	2.38" (60 mm)	13.00" (330 mm)	7.88" (200 mm)	8.25" (210 mm)	12.00" (305 mm)	10.31" (262 mm)	4.00" (102 mm)	EPI-36	2, 3
8"	16.19" (411 mm)	13.25" (337 mm)	9.50" (241 mm)	2.50" (64 mm)	9.63" (244 mm)	6.38" (162 mm)	6.50" (165 mm)	8.00" (203 mm)	7.13" (181 mm)	10.94" (278 mm)	EPI-6	1
10"	19.00" (483 mm)	16.00" (406 mm)	10.88" (276 mm)	2.69" (68 mm)	13.00" (330 mm)	7.88" (200 mm)	8.25" (210 mm)	12.00" (305 mm)	10.31" (262 mm)	4.00" (102 mm)	EPI-36	3, 4
10"	19.00" (483 mm)	15.90" (403 mm)	10.80" (273 mm)	2.50" (64 mm)	13.00" (330 mm)	6.38" (162 mm)	8.25" (210 mm)	12.00" (305 mm)	10.31" (262 mm)	4.00" (102 mm)	EPI-13	1, 2
12"	21.63" (549 mm)	18.75" (476 mm)	12.25" (311 mm)	3.13" (80 mm)	13.00" (330 mm)	7.88" (200 mm)	8.25" (210 mm)	12.00" (305 mm)	10.31" (262 mm)	4.00" (102 mm)	EPI-51	3
12"	21.63" (549 mm)	18.60" (473 mm)	12.30" (311 mm)	3.00" (76 mm)	13.00" (330 mm)	7.88" (200 mm)	8.25" (210 mm)	12.00" (305 mm)	10.31" (262 mm)	4.00" (102 mm)	EPI-36	1, 2
12"	21.63" (549 mm)	18.60" (473 mm)	12.30" (311 mm)	3.00" (76 mm)	17.375" (441 mm)	7.88" (200 mm)	8.25" (210 mm)	12.00" (305 mm)	16.132" (414 mm)	23.375" (594 mm)	EPI-91	4

Table Notes:

- 1. Under cut two-position assemblies
- 2. Under cut modulating assemblies
- 3. Full cut two-position assemblies
- 4. Full cut modulating assemblies



Two-Way Butterfly Valve with electronic actuator.



Three-Way Resilient Seat Valve Assemblies

Electronic Two-Position and Modulating Valve Assemblies

Figure 6 Dimensions — Three-Way EPI₂ Electronic Actuator Valve Assemblies

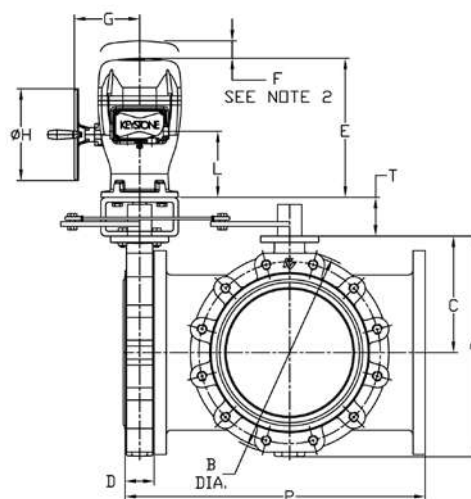
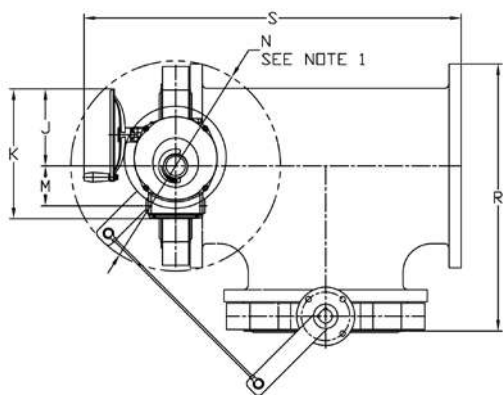
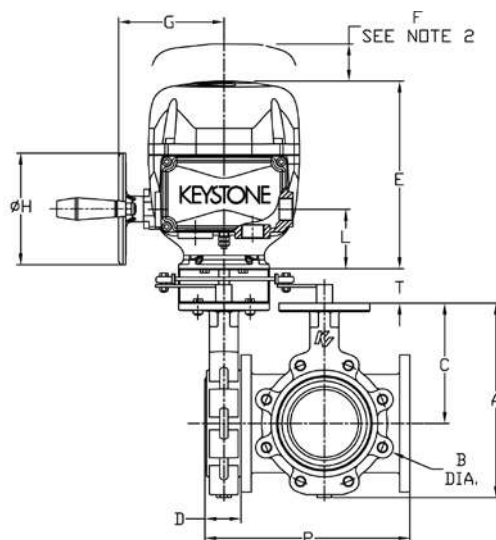
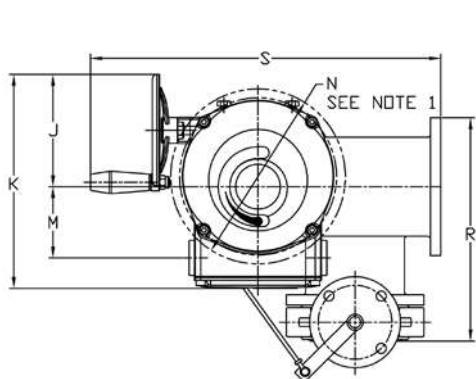
Valve Size	A	B	C	D				F	P	R	S	T		
Valve Height	Valve Height	Body O.D.	C _L Pipe To Top Plate	Face/ Face	Tap Size	Bolt Circle	# Bolts	Actuator Removal Clearance	Pipe Run Height	Total Width	Bracket Length	Bracket Height	Actuator Model	Notes
2"	8.50" (216 mm)	6.00" (152 mm)	5.31" (135 mm)	1.69" (43 mm)	0.625-11 UNC-2B	4.75" (121 mm)	4	6.38" (162 mm)	10.69" (272 mm)	9.22" (234 mm)	14.38" (365 mm)	4.00" (102 mm)	EPI-3	1, 3
2"	8.50" (216 mm)	6.00" (152 mm)	5.31" (135 mm)	1.69" (43 mm)	0.625-11 UNC-2B	4.75" (121 mm)	4	6.38" (162 mm)	10.69" (272 mm)	9.22" (234 mm)	14.38" (365 mm)	4.00" (102 mm)	EPI-6	2, 4
2.5"	9.31" (236 mm)	6.75" (171 mm)	5.94" (151 mm)	1.81" (46 mm)	0.625-11 UNC-2B	5.50" (140 mm)	4	6.38" (162 mm)	12.31" (313 mm)	10.31" (262 mm)	15.95" (405 mm)	4.00" (102 mm)	EPI-6	2, 3, 4
2.5"	9.31" (236 mm)	6.75" (171 mm)	5.94" (151 mm)	1.81" (46 mm)	0.625-11 UNC-2B	5.50" (140 mm)	4	6.38" (162 mm)	12.31" (313 mm)	10.31" (262 mm)	15.95" (405 mm)	4.00" (102 mm)	EPI-3	1
3"	10.00" (254 mm)	7.25" (184 mm)	6.31" (160 mm)	1.81" (46 mm)	0.625-11 UNC-2B	6.00" (152 mm)	4	6.38" (162 mm)	12.88" (327 mm)	11.44" (291 mm)	16.52" (420 mm)	4.00" (102 mm)	EPI-6	2, 3, 4
3"	10.00" (254 mm)	7.25" (184 mm)	6.31" (160 mm)	1.81" (46 mm)	0.625-11 UNC-2B	6.00" (152 mm)	4	6.38" (162 mm)	12.88" (327 mm)	11.44" (291 mm)	16.52" (420 mm)	4.00" (102 mm)	EPI-3	1
4"	11.38" (289 mm)	8.81" (224 mm)	7.13" (181 mm)	2.06" (52 mm)	0.625-11 UNC-2B	7.50" (191 mm)	8	6.38" (162 mm)	15.13" (384 mm)	13.13" (334 mm)	20.59" (523 mm)	4.00" (102 mm)	EPI-13	4
4"	11.38" (289 mm)	8.81" (224 mm)	7.13" (181 mm)	2.06" (52 mm)	0.625-11 UNC-2B	7.50" (191 mm)	8	6.38" (162 mm)	15.13" (384 mm)	13.13" (334 mm)	20.59" (523 mm)	4.00" (102 mm)	EPI-6	1, 2, 3
5"	12.81" (325 mm)	10.00" (254 mm)	7.69" (195 mm)	2.25" (57 mm)	0.750-10 UNC-2B	8.50" (216 mm)	8	6.38" (162 mm)	17.25" (438 mm)	14.56" (370 mm)	22.63" (575 mm)	4.00" (102 mm)	EPI-13	1, 2, 3, 4
6"	13.94" (354 mm)	11.00" (279 mm)	8.31" (211 mm)	2.25" (57 mm)	0.750-10 UNC-2B	9.50" (241 mm)	8	7.88" (200 mm)	18.25" (464 mm)	15.50" (394 mm)	23.63" (600 mm)	4.00" (102 mm)	EPI-36	3, 4
6"	13.94" (354 mm)	11.00" (279 mm)	8.31" (211 mm)	2.25" (57 mm)	0.750-10 UNC-2B	9.50" (241 mm)	8	6.38" (162 mm)	18.25" (464 mm)	15.50" (394 mm)	23.63" (600 mm)	4.00" (102 mm)	EPI-13	1, 2
8"	16.44" (418 mm)	13.25" (337 mm)	9.50" (241 mm)	2.38" (60 mm)	0.750-10 UNC-2B	11.75" (298 mm)	8	7.88" (200 mm)	20.38" (518 mm)	17.69" (449 mm)	25.66" (652 mm)	4.00" (102 mm)	EPI-51	4
8"	16.19" (411 mm)	13.25" (337 mm)	9.50" (241 mm)	2.50" (64 mm)	0.750-10 UNC-2B	11.75" (298 mm)	8	7.88" (200 mm)	20.50" (521 mm)	17.81" (452 mm)	25.69" (652 mm)	4.00" (102 mm)	EPI-36	1, 2, 3
10"	19.00" (483 mm)	16.00" (406 mm)	10.88" (276 mm)	2.69" (68 mm)	0.875-9 UNC-2B	14.25" (361 mm)	12	7.88" (200 mm)	26.69" (678 mm)	23.09" (583 mm)	33.81" (859 mm)	4.00" (102 mm)	EPI-91	3, 4
10"	19.00" (483 mm)	15.88" (403 mm)	10.75" (273 mm)	2.50" (64 mm)	0.875-9 UNC-2B	14.25" (361 mm)	12	7.88" (200 mm)	24.50" (622 mm)	21.38" (543 mm)	31.50" (800 mm)	4.00" (102 mm)	EPI-36	1, 2
12"	21.63" (549 mm)	18.75" (476 mm)	12.25" (311 mm)	3.13" (80 mm)	0.875-9 UNC-2B	17.00" (432 mm)	12	7.88" (200 mm)	27.13" (692 mm)	23.53" (598)	33.81" (859 mm)	4.00" (102 mm)	EPI-91	3, 4
12"	21.63" (549 mm)	18.60" (473 mm)	12.30" (311 mm)	3.00" (76 mm)	0.875-9 UNC-2B	17.00" (432 mm)	12	7.88" (200 mm)	27.00" (686 mm)	23.41" (595 mm)	33.75" (857 mm)	4.00" (102 mm)	EPI-36/51	1, 2

Table Notes:

- 1. Under cut two-position assemblies
- 2. Under cut modulating assemblies
- 3. Full cut two-position assemblies
- 4. Full cut modulating assemblies



Three-Way Butterfly Valve with electronic actuators tandem mounted.




Drawings shown are for Assemblies A & B. For Assemblies C & D, the valve and actuator are on the right-hand side of the run of tee and for Assemblies E & F, the valves are on both sides of the run tee.

Two-Way Butterfly Valves

2 to 12"

Pneumatic, Spring Return Actuators

2 to 12" 		Normally Open (Fail Open)		Normally Closed (Fail Closed)	
		150 psi Close-off	100 psi Close-off — 4-6 50 psi Close-off — 8-12	150 psi Close-off	100 psi Close-off — 4-6 50 psi Close-off — 8-12
Valve Size in.	Flow Rate Cv	Part No.	Part No.	Part No.	Part No.
Base Model					
2	60	BV2W02FS2LOXXXX	N/A	BV2W02FS2LCXXXX	N/A
2-1/2	151	BV2W25FS2LOXXXX	N/A	BV2W25FS2LCXXXX	N/A
3	262	BV2W03FS2LOXXXX	N/A	BV2W03FS2LCXXXX	N/A
4	647	BV2W04FS2LOXXXX	BV2W04US2LOXXXX	BV2W04FS2LCXXXX	BV2W04US2LCXXXX
5	1141	BV2W05FS2LOXXXX	BV2W05US2LOXXXX	BV2W05FS2LCXXXX	BV2W05US2LCXXXX
6	1580	BV2W06FS2LOXXXX	BV2W06US2LOXXXX	BV2W06FS2LCXXXX	BV2W06US2LCXXXX
8	1754*	N/A	BV2W08US2LOXXXX	N/A	BV2W08US2LCXXXX
10	2524*	N/A	BV2W10US2LOXXXX	N/A	BV2W10US2LCXXXX
12	3470*	N/A	BV2W12US2LOXXXX	N/A	BV2W12US2LCXXXX
Positioner					
2	60	BV2W02FS2LOPXXX	N/A	BV2W02FS2LCPXXX	N/A
2-1/2	151	BV2W25FS2LOPXXX	N/A	BV2W25FS2LCPXXX	N/A
3	262	BV2W03FS2LOPXXX	N/A	BV2W03FS2LCPXXX	N/A
4	647	BV2W04FS2LOPXXX	BV2W04US2LOPXXX	BV2W04FS2LCPXXX	BV2W04US2LCPXXX
5	1141	BV2W05FS2LOPXXX	BV2W05US2LOPXXX	BV2W05FS2LCPXXX	BV2W05US2LCPXXX
6	1160*/1580	BV2W06FS2LOPXXX	BV2W06US2LOPXXX	BV2W06FS2LCPXXX	BV2W06US2LCPXXX
8	1754*	N/A	BV2W08US2LOPXXX	N/A	BV2W08US2LCPXXX
10	2524*	N/A	BV2W10US2LOPXXX	N/A	BV2W10US2LCPXXX
12	3470*	N/A	BV2W12US2LOPXXX	N/A	BV2W12US2LCPXXX
120 V E/P Valve					
2	60	BV2W02FS2LOTXXX	N/A	BV2W02FS2LCTXXX	N/A
2-1/2	151	BV2W25FS2LOTXXX	N/A	BV2W25FS2LCTXXX	N/A
3	262	BV2W03FS2LOTXXX	N/A	BV2W03FS2LCTXXX	N/A
4	647	BV2W04FS2LOTXXX	BV2W04US2LOTXXX	BV2W04FS2LCTXXX	BV2W04US2LCTXXX
5	1141	BV2W05FS2LOTXXX	BV2W05US2LOTXXX	BV2W05FS2LCTXXX	BV2W05US2LCTXXX
6	1160*/1580	BV2W06FS2LOTXXX	BV2W06US2LOTXXX	BV2W06FS2LCTXXX	BV2W06US2LCTXXX
8	1754*	N/A	BV2W08US2LOTXXX	N/A	BV2W08US2LCTXXX
10	2524*	N/A	BV2W10US2LOTXXX	N/A	BV2W10US2LCTXXX
12	3470*	N/A	BV2W12US2LOTXXX	N/A	BV2W12US2LCTXXX
24 V E/P Valve					
2	60	BV2W02FS2LOUXXX	N/A	BV2W02FS2LCUXXX	N/A
2-1/2	151	BV2W25FS2LOUXXX	N/A	BV2W25FS2LCUXXX	N/A
3	262	BV2W03FS2LOUXXX	N/A	BV2W03FS2LCUXXX	N/A
4	647	BV2W04US2LOUXXX	BV2W04FS2LOUXXX	BV2W04US2LCUXXX	BV2W04FS2LCUXXX
5	1141	BV2W05FS2LOUXXX	BV2W05US2LOUXXX	BV2W05FS2LCUXXX	BV2W05US2LCUXXX
6	1580	BV2W06FS2LOUXXX	BV2W06US2LOUXXX	BV2W06FS2LCUXXX	BV2W06US2LCUXXX
8	1754*	N/A	BV2W08US2LOUXXX	N/A	BV2W08US2LCUXXX
10	2524*	N/A	BV2W10US2LOUXXX	N/A	BV2W10US2LCUXXX
12	3470*	N/A	BV2W12US2LOUXXX	N/A	BV2W12US2LCUXXX


*6-inch 150 psi and 8-, 10- and 12-inch only rotate to 70° max. S6 actuator option also available. Contact customer support for part numbers.

High performance valves are special order. Contact customer support for parts and pricing.

Three-Way Butterfly Valves

2 to 12"

Pneumatic, Spring Return Actuators

2 to 12" 			Normally Open (Fail Open to Port B)		Normally Closed (Fail Closed to Port B)	
			150 psi Close-off	100 psi Close-off — 4-6 50 psi Close-off — 8-12	150 psi Close-off	100 psi Close-off — 4-6 50 psi Close-off — 8-12
Valve Size in.	Cv		Part No.	Part No.	Part No.	Part No.
	Run	Branch				
Base Model						
			Assembly A	Assembly A	Assembly B	Assembly B
2	58	54	BV3W02FS2LAXXXX	N/A	BV3W02FS2LBXXXX	N/A
2-1/2	135	114	BV3W25FS2LAXXXX	N/A	BV3W25FS2LBXXXX	N/A
3	165	148*	BV3W03FS2LAXXXX	N/A	BV3W03FS2LBXXXX	N/A
4	419	348*	BV3W04FS2LAXXXX	BV3W04US2LAXXXX	BV3W04FS2LBXXXX	BV3W04US2LBXXXX
5	740	600*	BV3W05FS2LAXXXX	BV3W05US2LAXXXX	BV3W05FS2LBXXXX	BV3W05US2LBXXXX
6	1051	867*	BV3W06FS2LAXXXX	BV3W06US2LAXXXX	BV3W06FS2LBXXXX	BV3W06US2LBXXXX
8	1661	1424*	N/A	BV3W08US2LAXXXX	N/A	BV3W08US2LBXXXX
10	2439	2132*	N/A	BV3W10US2LAXXXX	N/A	BV3W10US2LBXXXX
12	3401	3019*	N/A	BV3W12US2LAXXXX	N/A	BV3W12US2LBXXXX
			Assembly C	Assembly C	Assembly D	Assembly D
2	58	54	BV3W02FS2LCXXXX	N/A	BV3W02FS2LDXXXX	N/A
2-1/2	135	114	BV3W25FS2LCXXXX	N/A	BV3W25FS2LDXXXX	N/A
3	165	148*	BV3W03FS2LCXXXX	N/A	BV3W03FS2LDXXXX	N/A
4	419	348*	BV3W04FS2LCXXXX	BV3W04US2LCXXXX	BV3W04FS2LDXXXX	BV3W04US2LDXXXX
5	740	600*	BV3W05FS2LCXXXX	BV3W05US2LCXXXX	BV3W05FS2LDXXXX	BV3W05US2LDXXXX
6	1051	867*	BV3W06FS2LCXXXX	BV3W06US2LCXXXX	BV3W06FS2LDXXXX	BV3W06US2LDXXXX
8	1661	1424*	N/A	BV3W08US2LCXXXX	N/A	BV3W08US2LDXXXX
10	2439	2132*	N/A	BV3W10US2LCXXXX	N/A	BV3W10US2LDXXXX
12	3401	3019*	N/A	BV3W12US2LCXXXX	N/A	BV3W12US2LDXXXX
Positioner						
			Assembly A	Assembly A	Assembly B	Assembly B
2	58	54	BV3W02FS2LAPXXX	N/A	BV3W02FS2LBPXXX	N/A
2-1/2	135	114	BV3W25FS2LAPXXX	N/A	BV3W25FS2LBPXXX	N/A
3	165	148*	BV3W03FS2LAPXXX	N/A	BV3W03FS2LBPXXX	N/A
4	419	348*	BV3W04FS2LAPXXX	BV3W04US2LAPXXX	BV3W04FS2LBPXXX	BV3W04US2LBPXXX
5	740	600*	BV3W05FS2LAPXXX	BV3W05US2LAPXXX	BV3W05FS2LBPXXX	BV3W05US2LBPXXX
6	1051	867*	BV3W06FS2LAPXXX	BV3W06US2LAPXXX	BV3W06FS2LBPXXX	BV3W06US2LBPXXX
8	1661	1424*	N/A	BV3W08US2LAPXXX	N/A	BV3W08US2LBPXXX
10	2439	2132*	N/A	BV3W10US2LAPXXX	N/A	BV3W10US2LBPXXX
12	3401	3019*	N/A	BV3W12US2LAPXXX	N/A	BV3W12US2LBPXXX
			Assembly C	Assembly C	Assembly D	Assembly D
2	58	54	BV3W02FS2LCPXXX	N/A	BV3W02FS2LDPXXX	N/A
2-1/2	135	114	BV3W25FS2LCPXXX	N/A	BV3W25FS2LDPXXX	N/A
3	165	148*	BV3W03FS2LCPXXX	N/A	BV3W03FS2LDPXXX	N/A
4	419	348*	BV3W04FS2LCPXXX	BV3W04US2LCPXXX	BV3W04FS2LDPXXX	BV3W04US2LDPXXX
5	740	600*	BV3W05FS2LCPXXX	BV3W05US2LCPXXX	BV3W05FS2LDPXXX	BV3W05US2LDPXXX
6	1051	867*	BV3W06FS2LCPXXX	BV3W06US2LCPXXX	BV3W06FS2LDPXXX	BV3W06US2LDPXXX
8	1661	1424*	N/A	BV3W08US2LCPXXX	N/A	BV3W08US2LDPXXX
10	2439	2132*	N/A	BV3W10US2LCPXXX	N/A	BV3W10US2LDPXXX
12	3401	3019*	N/A	BV3W12US2LCPXXX	N/A	BV3W12US2LDPXXX


*3- through 12-inch valves only rotate 70° max.

S6 actuator option also available. Assemblies E and F also available. Contact customer support for part numbers.

Three-Way Butterfly Actuators

2 to 12"

Pneumatic, Spring Return

2 to 12" 			Normally Open (Fail Open to Port B)		Normally Closed (Fail Closed to Port B)	
			150 psi Close-off	100 psi Close-off — 4-6 50 psi Close-off — 8-12	150 psi Close-off	100 psi Close-off — 4-6 50 psi Close-off — 8-12
Valve Size in.	Cv		Part No.	Part No.	Part No.	Part No.
	Run	Branch				
120 V E/P Valve						
			Assembly A	Assembly A	Assembly B	Assembly B
2	58	54	BV3W02FS2LATXXX	N/A	BV3W02FS2LBTXXX	N/A
2-1/2	135	114	BV3W25FS2LATXXX	N/A	BV3W25FS2LBTXXX	N/A
3	165	148*	BV3W03FS2LATXXX	N/A	BV3W03FS2LBTXXX	N/A
4	419	348*	BV3W04FS2LATXXX	BV3W04US2LATXXX	BV3W04FS2LBTXXX	BV3W04US2LBTXXX
5	740	600*	BV3W05FS2LATXXX	BV3W05US2LATXXX	BV3W05FS2LBTXXX	BV3W05US2LBTXXX
6	1051	867*	BV3W06FS2LATXXX	BV3W06US2LATXXX	BV3W06FS2LBTXXX	BV3W06US2LBTXXX
8	1661	1424*	N/A	BV3W08US2LATXXX	N/A	BV3W08US2LBTXXX
10	2439	2132*	N/A	BV3W10US2LATXXX	N/A	BV3W10US2LBTXXX
12	3401	3019*	N/A	BV3W12US2LATXXX	N/A	BV3W12US2LBTXXX
			Assembly C	Assembly C	Assembly D	Assembly D
2	58	54	BV3W02FS2LCTXXX	N/A	BV3W02FS2LDTXXX	N/A
2-1/2	135	114	BV3W25FS2LCTXXX	N/A	BV3W25FS2LDTXXX	N/A
3	165	148*	BV3W03FS2LCTXXX	N/A	BV3W03FS2LDTXXX	N/A
4	419	348*	BV3W04FS2LCTXXX	BV3W04US2LCTXXX	BV3W04FS2LDTXXX	BV3W04US2LDTXXX
5	740	600*	BV3W05FS2LCTXXX	BV3W05US2LCTXXX	BV3W05FS2LDTXXX	BV3W05US2LDTXXX
6	1051	867*	BV3W06FS2LCTXXX	BV3W06US2LCTXXX	BV3W06FS2LDTXXX	BV3W06US2LDTXXX
8	1661	1424*	N/A	BV3W08US2LCTXXX	N/A	BV3W08US2LDTXXX
10	2439	2132*	N/A	BV3W10US2LCTXXX	N/A	BV3W10US2LDTXXX
12	3401	3019*	N/A	BV3W12US2LCTXXX	N/A	BV3W12US2LDTXXX
24 V E/P Valve						
			Assembly A	Assembly A	Assembly B	Assembly B
2	58	54	BV3W02FS2LAUXXX	N/A	BV3W02FS2LBUXXX	N/A
2-1/2	135	114	BV3W25FS2LAUXXX	N/A	BV3W25FS2LBUXXX	N/A
3	165	148*	BV3W03FS2LAUXXX	N/A	BV3W03FS2LBUXXX	N/A
4	419	348*	BV3W04FS2LAUXXX	BV3W04US2LAUXXX	BV3W04FS2LBUXXX	BV3W04US2LBUXXX
5	740	600*	BV3W05FS2LAUXXX	BV3W05US2LAUXXX	BV3W05FS2LBUXXX	BV3W05US2LBUXXX
6	1051	867*	BV3W06FS2LAUXXX	BV3W06US2LAUXXX	BV3W06FS2LBUXXX	BV3W06US2LBUXXX
8	1661	1424*	N/A	BV3W08US2LAUXXX	N/A	BV3W08US2LBUXXX
10	2439	2132*	N/A	BV3W10US2LAUXXX	N/A	BV3W10US2LBUXXX
12	3401	3019*	N/A	BV3W12US2LAUXXX	N/A	BV3W12US2LBUXXX
			Assembly C	Assembly C	Assembly D	Assembly D
2	58	54	BV3W02FS2LCUXXX	N/A	BV3W02FS2LDUXXX	N/A
2-1/2	135	114	BV3W25FS2LCUXXX	N/A	BV3W25FS2LDUXXX	N/A
3	165	148*	BV3W03FS2LCUXXX	N/A	BV3W03FS2LDUXXX	N/A
4	419	348*	BV3W04FS2LCUXXX	BV3W04US2LCUXXX	BV3W04FS2LDUXXX	BV3W04US2LDUXXX
5	740	600*	BV3W05FS2LCUXXX	BV3W05US2LCUXXX	BV3W05FS2LDUXXX	BV3W05US2LDUXXX
6	1051	867*	BV3W06FS2LCUXXX	BV3W06US2LCUXXX	BV3W06FS2LDUXXX	BV3W06US2LDUXXX
8	1661	1424*	N/A	BV3W08US2LCUXXX	N/A	BV3W08US2LDUXXX
10	2439	2132*	N/A	BV3W10US2LCUXXX	N/A	BV3W10US2LDUXXX
12	3401	3019*	N/A	BV3W12US2LCUXXX	N/A	BV3W12US2LDUXXX


*3- through 12-inch valves only rotate 70° max.

Assemblies E and F also available. Contact customer support for part numbers.

Two-Way Butterfly Actuators

2 to 4"

Electronic, Spring Return

2 to 4"			
		Normally Open	Normally Closed
		100 psi Close-off	100 psi Close-off
Valve Size in.	Flow Rate Cv	Part No.	Part No.
120 Vac On/Off			
2	60	BV2W02UG1LOXXXX	BV2W02UG1LCXXXX
2-1/2	151	BV2W25UG1LOXXXX	BV2W25UG1LCXXXX
3	262	BV2W03UG1LOXXXX	BV2W03UG1LCXXXX
4	647	BV2W04UG1LOXXXX	BV2W04UG1LCXXXX
24 Vac On/Off			
2	60	BV2W02UG2LOXXXX	BV2W02UG2LCXXXX
2-1/2	151	BV2W25UG2LOXXXX	BV2W25UG2LCXXXX
3	262	BV2W03UG2LOXXXX	BV2W03UG2LCXXXX
4	647	BV2W04UG2LOXXXX	BV2W04UG2LCXXXX
24 Vac Floating			
2	60	BV2W02UG3LOXXXX	BV2W02UG3LCXXXX
2-1/2	151	BV2W25UG3LOXXXX	BV2W25UG3LCXXXX
3	262	BV2W03UG3LOXXXX	BV2W03UG3LCXXXX
4	647	BV2W04UG3LOXXXX	BV2W04UG3LCXXXX
24 Vac Modulating 0-10 V			
2	60	BV2W02UG4LOXXXX	BV2W02UG4LCXXXX
2-1/2	151	BV2W25UG4LOXXXX	BV2W25UG4LCXXXX
3	262	BV2W03UG4LOXXXX	BV2W03UG4LCXXXX
4	647	BV2W04UG4LOXXXX	BV2W04UG4LCXXXX
24 Vac Modulating 4-20 mA			
2	60	BV2W02UG5LOXXXX	BV2W02UG5LCXXXX
2-1/2	151	BV2W25UG5LOXXXX	BV2W25UG5LCXXXX
3	262	BV2W03UG5LOXXXX	BV2W03UG5LCXXXX
4	647	BV2W04UG5LOXXXX	BV2W04UG5LCXXXX

Three-Way Butterfly Actuators

2 to 4"


Electronic, Spring Return

2 to 4"			Normally Open (Fail Open to Port B)		Normally Closed (Fail Closed to Port B)	
Valve Size in.	Cv		100 psi Close-off	100 psi Close-off	100 psi Close-off	100 psi Close-off
	Run	Branch	Part No.	Part No.	Part No.	Part No.
120 Vac On/Off						
			Assembly A	Assembly C	Assembly B	Assembly D
2	58	54	BV3W02UG1LAXXXX	BV3W02UG1LCXXXX	BV3W02UG1LBXXXX	BV3W02UG1LDXXXX
2-1/2	135	114	BV3W25UG1LAXXXX	BV3W25UG1LCXXXX	BV3W25UG1LBXXXX	BV3W25UG1LDXXXX
3	229	188	BV3W03UG1LAXXXX	BV3W03UG1LCXXXX	BV3W03UG1LBXXXX	BV3W03UG1LDXXXX
4	511	385	BV3W04UG1LAXXXX	BV3W04UG1LCXXXX	BV3W04UG1LBXXXX	BV3W04UG1LDXXXX
24 Vac On/Off						
2	58	54	BV3W02UG2LAXXXX	BV3W02UG2LCXXXX	BV3W02UG2LBXXXX	BV3W02UG2LDXXXX
2-1/2	135	114	BV3W25UG2LAXXXX	BV3W25UG2LCXXXX	BV3W25UG2LBXXXX	BV3W25UG2LDXXXX
3	229	188	BV3W03UG2LAXXXX	BV3W03UG2LCXXXX	BV3W03UG2LBXXXX	BV3W03UG2LDXXXX
4	511	385	BV3W04UG2LAXXXX	BV3W04UG2LCXXXX	BV3W04UG2LBXXXX	BV3W04UG2LDXXXX
24 Vac Floating						
2	58	54	BV3W02UG3LAXXXX	BV3W02UG3LCXXXX	BV3W02UG3LBXXXX	BV3W02UG3LDXXXX
2-1/2	135	114	BV3W25UG3LAXXXX	BV3W25UG3LCXXXX	BV3W25UG3LBXXXX	BV3W25UG3LDXXXX
3	229	188	BV3W03UG3LAXXXX	BV3W03UG3LCXXXX	BV3W03UG3LBXXXX	BV3W03UG3LDXXXX
4	511	385	BV3W04UG3LAXXXX	BV3W04UG3LCXXXX	BV3W04UG3LBXXXX	BV3W04UG3LDXXXX
24 Vac Modulating 0-10 V						
2	58	54	BV3W02UG4LAXXXX	BV3W02UG4LCXXXX	BV3W02UG4LBXXXX	BV3W02UG4LDXXXX
2-1/2	135	114	BV3W25UG4LAXXXX	BV3W25UG4LCXXXX	BV3W25UG4LBXXXX	BV3W25UG4LDXXXX
3	229	188	BV3W03UG4LAXXXX	BV3W03UG4LCXXXX	BV3W03UG4LBXXXX	BV3W03UG4LDXXXX
4	511	385	BV3W04UG4LAXXXX	BV3W04UG4LCXXXX	BV3W04UG4LBXXXX	BV3W04UG4LDXXXX
24 Vac Modulating 4-20 mA						
2	58	54	BV3W02UG5LAXXXX	BV3W02UG5LCXXXX	BV3W02UG5LBXXXX	BV3W02UG5LDXXXX
2-1/2	135	114	BV3W25UG5LAXXXX	BV3W25UG5LCXXXX	BV3W25UG5LBXXXX	BV3W25UG5LDXXXX
3	229	188	BV3W03UG5LAXXXX	BV3W03UG5LCXXXX	BV3W03UG5LBXXXX	BV3W03UG5LDXXXX
4	511	385	BV3W04UG5LAXXXX	BV3W04UG5LCXXXX	BV3W04UG5LBXXXX	BV3W04UG5LDXXXX

Two-Way Butterfly Actuators

2 to 12"

Electronic, Non-Spring Return


2 to 12" 		Non-Spring Return Actuator		
		150 psi Close-off	100 psi Close-off	50 psi Close-off, 4-6" 100 psi Close-off, 8-12"
Valve Size in.	Flow Rate Cv	Part No.	Part No.	Part No.
Floating / 2-position				
2	60	BV2W02FE2LNXXX	BV2W02UG6LNXXX	—
2-1/2	151	BV2W25FE2LNXXX	BV2W25UG6LNXXX	—
3	262	BV2W03FE2LNXXX	BV2W03UG6LNXXX	—
4	647	BV2W04FE2LNXXX	BV2W04UG6LNXXX	BV2W04UE2LNXXX
5	1141	BV2W05FE2LNXXX	BV2W05UG6LNXXX	BV2W05UE2LNXXX
6	1580	BV2W06FE2LNXXX	BV2W06UG6LNXXX	BV2W06UE2LNXXX
8	2892	BV2W08FE2LNXXX	—	BV2W08UE2LNXXX
10	4593	BV2W10FE2LNXXX	—	BV2W10UE2LNXXX
12	6682	BV2W12FE2LNXXX	—	BV2W12UE2LNXXX
Modulating 0-10 V				
2	60	BV2W02FEMLNXXHX	BV2W02UG7LNXXX	—
2-1/2	151	BV2W25FEMLNXXHX	BV2W25UG7LNXXX	—
3	262	BV2W03FEMLNXXHX	BV2W03UG7LNXXX	—
4	647	BV2W04FEMLNXXHX	BV2W04UG7LNXXX	BV2W04UEMLNXXX
5	1141	BV2W05FEMLNXXHX	BV2W05UG7LNXXX	BV2W05UEMLNXXX
6	1580	BV2W06FEMLNXXHX	BV2W06UG7LNXXX	BV2W06UEMLNXXX
8	2892	BV2W08FEMLNXXHX	—	BV2W08UEMLNXXHX
10	4593	BV2W10FEMLNXXHX	—	BV2W10UEMLNXXHX
12	6682	BV2W12FEMLNXXHX	—	BV2W12UEMLNXXHX
Modulating 4-20 mA				
2	60	BV2W02FEPLNXXHX	BV2W02UG8LNXXX	—
2-1/2	151	BV2W25FEPLNXXHX	BV2W25UG8LNXXX	—
3	262	BV2W03FEPLNXXHX	BV2W03UG8LNXXX	—
4	647	BV2W04FEPLNXXHX	BV2W04UG8LNXXX	BV2W04UEPLNXXHX
5	1141	BV2W05FEPLNXXHX	BV2W05UG8LNXXX	BV2W05UEPLNXXHX
6	1580	BV2W06FEPLNXXHX	BV2W06UG8LNXXX	BV2W06UEPLNXXHX
8	2892	BV2W08FEPLNXXHX	—	BV2W08UEPLNXXHX
10	4593	BV2W10FEPLNXXHX	—	BV2W10UEPLNXXHX
12	6682	BV2W12FEPLNXXHX	—	BV2W12UEPLNXXHX

*6-inch 150 psi and 8-, 10- and 12-inch only rotate to 70° max.

Three-Way Butterfly Actuators

2 to 12"

Electronic, Non-Spring Return


2 to 12" 			Normally Open (Fail Open)		Normally Closed (Fail Closed)	
			150 psi Close-off	100 psi Close-off, 2-6" 50 psi Close-off, 8-12"	150 psi Close-off	100 psi Close-off, 2-6" 50 psi Close-off, 8-12"
Valve Size in.	Cv		Part No.	Part No.	Part No.	Part No.
	Run	Branch				
Floating 2-position						
			Assembly A	Assembly A	Assembly B	Assembly B
2	58	54	BV3W02FE2LAXXXX	BV3W02UG6LAXXXX	BV3W02FE2LBXXXX	BV3W02UG6LBXXXX
2-1/2	135	114	BV3W25FE2LAXXXX	BV3W25UG6LAXXXX	BV3W25FE2LBXXXX	BV3W25UG6LBXXXX
3	229	188	BV3W03FE2LAXXXX	BV3W03UG6LAXXXX	BV3W03FE2LBXXXX	BV3W03UG6LBXXXX
4	511	385	BV3W04FE2LAXXXX	BV3W04UG6LAXXXX	BV3W04FE2LBXXXX	BV3W04UG6LBXXXX
5	870	642	BV3W05FE2LAXXXX	BV3W05UG6LAXXXX	BV3W05FE2LBXXXX	BV3W05UG6LBXXXX
6	1242	935	BV3W06FE2LAXXXX	BV3W06UG6LAXXXX	BV3W06FE2LBXXXX	BV3W06UG6LBXXXX
8	2254	1688	BV3W08FE2LAXXXX	BV3W08UE2LAXXXX	BV3W08FE2LBXXXX	BV3W08UE2LBXXXX
10	3570	2667	BV3W10FE2LAXXXX	BV3W10UE2LAXXXX	BV3W10FE2LBXXXX	BV3W10UE2LBXXXX
12	5240	3938	BV3W12FE2LAXXXX	BV3W12UE2LAXXXX	BV3W12FE2LBXXXX	BV3W12UE2LBXXXX
			Assembly C	Assembly C	Assembly D	Assembly D
2	58	54	BV3W02FE2LCXXXX	BV3W02UG6LCXXXX	BV3W02FE2LDXXXX	BV3W02UG6LDXXXX
2-1/2	135	114	BV3W25FE2LCXXXX	BV3W25UG6LCXXXX	BV3W25FE2LDXXXX	BV3W25UG6LDXXXX
3	229	188	BV3W03FE2LCXXXX	BV3W03UG6LCXXXX	BV3W03FE2LDXXXX	BV3W03UG6LDXXXX
4	511	385	BV3W04FE2LCXXXX	BV3W04UG6LCXXXX	BV3W04FE2LDXXXX	BV3W04UG6LDXXXX
5	870	642	BV3W05FE2LCXXXX	BV3W05UG6LCXXXX	BV3W05FE2LDXXXX	BV3W05UG6LDXXXX
6	1242	935	BV3W06FE2LCXXXX	BV3W06UG6LCXXXX	BV3W06FE2LDXXXX	BV3W06UG6LDXXXX
8	2254	1688	BV3W08FE2LCXXXX	BV3W08UE2LCXXXX	BV3W08FE2LDXXXX	BV3W08UE2LDXXXX
10	3570	2667	BV3W10FE2LCXXXX	BV3W10UE2LCXXXX	BV3W10FE2LDXXXX	BV3W10UE2LDXXXX
12	5240	3938	BV3W12FE2LCXXXX	BV3W12UE2LCXXXX	BV3W12FE2LDXXXX	BV3W12UE2LDXXXX

4, 5, and 6" undercut with E2 actuators also available.
Assemblies E and F also available. Contact customer support for part numbers.

Three-Way Butterfly Actuators

2 to 12"

Electronic, Non-Spring Return

2 to 12" 			Normally Open		Normally Closed	
			150 psi Close-off	100 psi Close-off, 2-6" 50 psi Close-off, 8-12"	150 psi Close-off	100 psi Close-off, 2-6" 50 psi Close-off, 8-12"
Valve Size in.	Cv		Part No.	Part No.	Part No.	Part No.
	Run	Branch				
Modulating 0-10 V						
			Assembly A	Assembly A	Assembly B	Assembly B
2	58	54	BV3W02FEMLAXXHX	BV3W02UG7LAXXXX	BV3W02FEMLBXXHX	BV3W02UG7LBXXXX
2-1/2	135	114	BV3W25FEMLAXXHX	BV3W25UG7LAXXXX	BV3W25FEMLBXXHX	BV3W25UG7LBXXXX
3	229	188	BV3W03FEMLAXXHX	BV3W03UG7LAXXXX	BV3W03FEMLBXXHX	BV3W03UG7LBXXXX
4	511	385	BV3W04FEMLAXXHX	BV3W04UG7LAXXXX	BV3W04FEMLBXXHX	BV3W04UG7LBXXXX
5	870	642	BV3W05FEMLAXXHX	BV3W05UG7LAXXXX	BV3W05FEMLBXXHX	BV3W05UG7LBXXXX
6	1242	935	BV3W06FEMLAXXHX	BV3W06UG7LAXXXX	BV3W06FEMLBXXHX	BV3W06UG7LBXXXX
8	2254	1688	BV3W08FEMLAXXHX	BV3W08UEMLAXXHX	BV3W08FEMLBXXHX	BV3W08UEMLBXXHX
10	3570	2667	BV3W10FEMLAXXHX	BV3W10UEMLAXXHX	BV3W10FEMLBXXHX	BV3W10UEMLBXXHX
12	5240	3938	BV3W12FEMLAXXHX	BV3W12UEMLAXXHX	BV3W12FEMLBXXHX	BV3W12UEMLBXXHX
			Assembly C	Assembly C	Assembly D	Assembly D
2	58	54	BV3W02FEMLCXXHX	BV3W02UG7LCXXXX	BV3W02FEMLDXXHX	BV3W02UG7LDXXXX
2-1/2	135	114	BV3W25FEMLCXXHX	BV3W25UG7LCXXXX	BV3W25FEMLDXXHX	BV3W25UG7LDXXXX
3	229	188	BV3W03FEMLCXXHX	BV3W03UG7LCXXXX	BV3W03FEMLDXXHX	BV3W03UG7LDXXXX
4	511	385	BV3W04FEMLCXXHX	BV3W04UG7LCXXXX	BV3W04FEMLDXXHX	BV3W04UG7LDXXXX
5	870	642	BV3W05FEMLCXXHX	BV3W05UG7LCXXXX	BV3W05FEMLDXXHX	BV3W05UG7LDXXXX
6	1242	935	BV3W06FEMLCXXHX	BV3W06UG7LCXXXX	BV3W06FEMLDXXHX	BV3W06UG7LDXXXX
8	2254	1688	BV3W08FEMLCXXHX	BV3W08UEMLCXXHX	BV3W08FEMLDXXHX	BV3W08UEMLDXXHX
10	3570	2667	BV3W10FEMLCXXHX	BV3W10UEMLCXXHX	BV3W10FEMLDXXHX	BV3W10UEMLDXXHX
12	5240	3938	BV3W12FEMLCXXHX	BV3W12UEMLCXXHX	BV3W12FEMLDXXHX	BV3W12UEMLDXXHX
Modulating 4-20 mA						
			Assembly A	Assembly A	Assembly B	Assembly B
2	58	54	BV3W02FEPLAXXHX	BV3W02UG8LAXXXX	BV3W02FEPLBXXHX	BV3W02UG8LBXXXX
2-1/2	135	114	BV3W25FEPLAXXHX	BV3W25UG8LAXXXX	BV3W25FEPLBXXHX	BV3W25UG8LBXXXX
3	229	188	BV3W03FEPLAXXHX	BV3W03UG8LAXXXX	BV3W03FEPLBXXHX	BV3W03UG8LBXXXX
4	511	385	BV3W04FEPLAXXHX	BV3W04UG8LAXXXX	BV3W04FEPLBXXHX	BV3W04UG8LBXXXX
5	870	642	BV3W05FEPLAXXHX	N/A	BV3W05FEPLBXXHX	N/A
6	1242	935	BV3W06FEPLAXXHX	N/A	BV3W06FEPLBXXHX	N/A
8	2254	1688	BV3W08FEPLAXXHX	BV3W08UEPLAXXHX	BV3W08FEPLBXXHX	BV3W08UEPLBXXHX
10	3570	2667	BV3W10FEPLAXXHX	BV3W10UEPLAXXHX	BV3W10FEPLBXXHX	BV3W10UEPLBXXHX
12	5240	3938	BV3W12FEPLAXXHX	BV3W12UEPLAXXHX	BV3W12FEPLBXXHX	BV3W12UEPLBXXHX
			Assembly C	Assembly C	Assembly D	Assembly D
2	58	54	BV3W02FEPLCXXHX	BV3W02UG8LCXXXX	BV3W02FEPLDXXHX	BV3W02UG8LDXXXX
2-1/2	135	114	BV3W25FEPLCXXHX	BV3W25UG8LCXXXX	BV3W25FEPLDXXHX	BV3W25UG8LDXXXX
3	229	188	BV3W03FEPLCXXHX	BV3W03UG8LCXXXX	BV3W03FEPLDXXHX	BV3W03UG8LDXXXX
4	511	385	BV3W04FEPLCXXHX	BV3W04UG8LCXXXX	BV3W04FEPLDXXHX	BV3W04UG8LDXXXX
5	870	642	BV3W05FEPLCXXHX	N/A	BV3W05FEPLDXXHX	N/A
6	1242	935	BV3W06FEPLCXXHX	N/A	BV3W06FEPLDXXHX	N/A
8	2254	1688	BV3W08FEPLCXXHX	BV3W08UEPLCXXHX	BV3W08FEPLDXXHX	BV3W08UEPLDXXHX
10	3570	2667	BV3W10FEPLCXXHX	BV3W10UEPLCXXHX	BV3W10FEPLDXXHX	BV3W10UEPLDXXHX
12	5240	3938	BV3W12FEPLCXXHX	BV3W12UEPLCXXHX	BV3W12FEPLDXXHX	BV3W12UEPLDXXHX

4, 5, and 6" undercut with E2 actuators also available.
Assemblies E and F also available. Contact customer support for part numbers.

Featured Accessory

Universal Valve Retrofit Kit

Description

The Universal Valve Retrofit Kit allows you to install a state-of-the-art Siemens Flowrite Electronic Actuators, regardless of the valve's manufacturer. This kit contains the parts needed to adapt a valve to all Flowrite Pneumatic or SKB, SKC, SKD or SAX Actuators.

Kit includes: bonnet adapter, bonnet adapter insert, stem adapter jam nut and square head set screws.

Features

- Easy installation
- Works with electronic or pneumatic actuators
- Installs on most manufacturer's valves















Universal Valve Actuator Retrofit Kit.


















Assembling the Universal Valve Retrofit Kit is quick and easy.


Universal Valve Retrofit Kit Product Ordering

Brand	Valve Part No.	Kit Part No.
Siemens	658-XXXX and 339-XXXX	ARK10
	591-XXXX and 598-XXXX	ARK11
Honeywell	V3XXXX (2-1/2 and 3-in.)	ARK16
	V3XXXX (4 through 6-in.)	ARK18
	V501X (A, B, C, F, G, N) 1/2 through 3-in.	ARK17
	V501X (A, B, C) 4 through 6-in.	ARK21
Johnson Controls	VG2XXX	ARK12
	VG7XXX (1 thru 2-in.)	ARK13
	VG7XXX (1/2 to 3/4-in.)	ARK19
Siebe	VB7XXX and VB9XXX (threaded and flanged)	ARK14

	Description	Product Group	Quantity	Part No.
Zone Valves				
	Actuator Support Ring.	All Zone Valves	Package of 10	599-00599
	Weathershield for Zone & Powermite Valves.	All Zone Valves & Powermite Valves	1	599-10077
Powermite Valves				
	Adapter for 1/2" Conduit.	SQS	1	544-023
	Conduit Connectors.	SSA SSP SSB	1	ASY97
	Terminal Plug and Cover. Labeled Y1-G-Y2. (Cover not shown)	SSB81U SSA/P81U	1	ASY99
	Terminal Plug and Cover. Labeled G-G0-Y. (Cover not shown)	SSB61U SSA/SSP61U	1	ASY100
	Replacement Screws. For use with conduit or terminal connectors.	SSB/SSA/SSP	1	ASY98
	Protective Black Knob. Protects bonnet and threads.	MZ/MT	1	4 268 8895 0
	Cord and Plug.	SSB/SSA/SSP		
	<ul style="list-style-type: none"> • 4.9 ft. L (1.5 mL) • 14.8 ft. L (4.5 mL) 		1	ASY8L15
			1	ASY8L45
	Diaphragm Kit. Contains five diaphragms and mounting screws.	MT	Package of 5	656-736
	Powermite Male Union Connection Kits.	MT		
	<ul style="list-style-type: none"> • 1/2" • 3/4" 		1	599-02941
			1	599-02942
	Powermite Union Gasket Kit.	MT		
	<ul style="list-style-type: none"> • 1/2" • 3/4" 		25 Pieces	698-088
			25 Pieces	599-03394

	Description	Product Group	Quantity	Part No.
Powermite Valves				
	Service Kit. Includes terminal cover, cover screws (2), tail piece and screw, cable lock and terminal blocks (3). (current model)	SSC	1	411555648
	Weathershield for Zone & Powermite Valves.	All Zone Valves & Powermite Valves	1	599-10077
Ball Valves				
	Ball Valve Bracket Kit. Includes mounting screws.		1	599-10078
Flowrite Valves				
	Auxiliary Switch. Sends a signal to indicate that the valve is in the 0% stroke position; switching point is fixed at the 0% stroke position.	SKD62, SKB62/SKC62	1	ASC1.6
	Double Auxiliary Switch. Switch has adjustable cams that can be set to give a signal at a desired position. • SKB/C • SKD	SKD82, SKB82/C82	1	ASC9.3BCU
			1	ASC9.3DU
	Auxiliary Switch. Auxiliary switch ASC10.51 switches on or off when a certain position is reached. The switching point can lie between 0 to 100%.	SAX	1	ASC10.51
	Potentiometer. Potentiometer delivers a resistance value to the controller relative to the exact position of the actuator (continuous position feedback). • 1000 Ω • 200 Ω • 135 Ω	SAX81	1	ASZ7.5/1000
			1	ASZ7.5/200
			1	ASZ7.5/135
	Function Module • Changeover of acting direction • Connection terminals • Sequence control	SAX61	1	AZX61.1

	Description	Product Group	Quantity	Part No.
Flowrite Valves				
	Positioning Relay and Mounting Kit.	Flowrite		
	• 8-inch		1	599-00426
	• 12-inch		1	599-00423
	Adapter for 1/2" Conduit.	SKD & SKB/C	1	544-023
	Rack and Pinion/Bracket Only. Use with OpenAir on Flowrite 1/2-2" (20 mm) stroke valves.	Flowrite	1	599-03610
	Weathershield.	SKB/SKC	1	599-10065
	Weathershield.	SKD/SQX	1	599-10071
	Weathershield.	SAX	1	ASK39.1
	Universal Valve Retrofit Kit. Contains parts to adapt a valve to Siemens Flowrite 599 Series Actuators.	SKB/SKC, SKD, SQX	1	See table below
Brand	Valve and Product No.	Kit Part No.		
Siemens	658-XXXX and 339-XXXX	ARK10		
	591-XXXX and 598-XXXX	ARK11		
Honeywell	V3XXXX (2-1/2 and 3-in.)	ARK16		
	V3XXXX (4 thru 6-in.)	ARK18		
	V501X (A, B, C, F, G, N) 1/2 thru 3-in.	ARK17		
	V501X (A, B, C) 4 thru 6-in.	ARK21		
Johnson Controls	VG2XXX	ARK12		
	VG7XXX (1 thru 2-in.)	ARK13		
	VG7XXX (1/2 to 3/4-in.)	ARK19		
Siebe	VB7XXX and VB9XXX (threaded & flanged)	ARK14		

	Description	Product Group	Quantity	Part No.
Flowrite				
	1/2" to 2" 2-way Bronze Valve Body Rebuild/Repack Service Kits.	Flowrite	1	See table below

Valve Part No.				Model 1 Part No.	Model 2 Part No.
FxF	FxUF	UFxUF	FxUM		
599-03000	599-03009	—	599-03216	599-03300	—
599-03001	599-03010	—	599-03217	599-03301	—
599-03002	599-03011	—	599-03218	599-03302	—
599-03003	599-03012	—	599-03219	599-03303	—
599-03004	599-03013	—	599-03220	599-03304	—
599-03005	599-03014	—	599-03221	599-03305	—
599-03006	—	599-03015	—	599-03306	599-09201
599-03007	—	599-03016	—	599-03307	599-09202
599-03008	—	599-03017	—	599-03308	599-09203
599-03018	599-03027	—	599-03225	599-03309	—
599-03019	599-03028	—	599-03226	599-03310	—
599-03020	599-03029	—	599-03227	599-03311	—
599-03021	599-03030	—	599-03228	599-03312	—
599-03022	599-03031	—	599-03229	599-03313	—
599-03023	599-03032	—	599-03230	599-03314	—
599-03024	—	599-03033	—	599-03315	599-09213
599-03025	—	599-03034	—	599-03316	599-09214
599-03026	—	599-03035	—	599-03317	599-09215
599-03054	599-03063	—	599-03234	599-03318	—
599-03055	599-03064	—	599-03235	599-03319	—
599-03056	599-03065	—	599-03236	599-03320	—
599-03057	599-03066	—	599-03237	599-03321	—
599-03058	599-03067	—	599-03238	599-03322	—
599-03059	599-03068	—	599-03239	599-03323	—
599-03060	—	599-03069	—	599-03324	599-09204
599-03061	—	599-03070	—	599-03325	599-09205
599-03062	—	599-03071	—	599-03326	599-09206
599-03072	599-03081	—	599-03243	599-03327	—
599-03073	599-03082	—	599-03244	599-03328	—
599-03074	599-03083	—	599-03245	599-03329	—
599-03075	599-03084	—	599-03246	599-03330	—
599-03076	599-03085	—	599-03247	599-03331	—
599-03077	599-03086	—	599-03248	599-03332	—
599-03078	—	599-03087	—	599-03333	599-09216
599-03079	—	599-03088	—	599-03334	599-09217
599-03080	—	599-03089	—	599-03335	599-09218
599-03108	599-03117	—	599-03252	599-03336	—
599-03109	599-03118	—	599-03253	599-03337	—
599-03110	599-03119	—	599-03254	599-03338	—
599-03111	599-03120	—	599-03255	599-03339	—
599-03112	599-03121	—	599-03256	599-03340	—
599-03113	599-03122	—	599-03257	599-03341	—
599-03114	—	599-03123	—	599-03342	599-09207
599-03115	—	599-03124	—	599-03343	599-09208
599-03116	—	599-03125	—	599-03344	599-09209

Note:




The model (M), year (Y) and week (W) of original manufacture of the valve is stamped on the valve tag in MM/YY/WW format.


Key:

F Female NPT **UF** Union Female
AF Angle Female **UM** Union Male

Continued...



Continued...

		Description	Product Group	Quantity	Part No.																																																																																																																																																																														
Flowrite																																																																																																																																																																																			
		1/2 to 2" 2-way Bronze Valve Body Rebuild/Repack Service Kits.	Flowrite	1	See table below																																																																																																																																																																														
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599-03134	—	599-03143	—	599-03353	599-09221																																																																																																																																																																														
599-03162	599-03171	—	599-03270	599-03354	—																																																																																																																																																																														
599-03163	599-03172	—	599-03271	599-03355	—																																																																																																																																																																														
599-03164	599-03173	—	599-03272	599-03356	—																																																																																																																																																																														
599-03165	599-03174	—	599-03273	599-03357	—																																																																																																																																																																														
599-03166	599-03175	—	599-03274	599-03358	—																																																																																																																																																																														
599-03167	599-03176	—	599-03275	599-03359	—																																																																																																																																																																														
599-03168	—	599-03177	599-03276	599-03360	599-09210																																																																																																																																																																														
599-03169	—	599-03178	—	599-03361	599-09211																																																																																																																																																																														
599-03170	—	599-03179	—	599-03362	599-09212																																																																																																																																																																														
599-03180	599-03189	—	599-03279	599-03363	—																																																																																																																																																																														
599-03181	599-03190	—	599-03280	599-03364	—																																																																																																																																																																														
599-03182	599-03191	—	599-03281	599-03365	—																																																																																																																																																																														
599-03183	599-03192	—	599-03282	599-03366	—																																																																																																																																																																														
599-03184	599-03193	—	599-03283	599-03367	—																																																																																																																																																																														
599-03185	599-03194	—	599-03284	599-03368	—																																																																																																																																																																														
599-03186	—	599-03195	—	599-03369	599-09222																																																																																																																																																																														
599-03187	—	599-03196	—	599-03370	599-09223																																																																																																																																																																														
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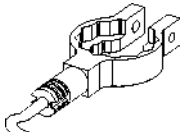



	Description	Product Group	Quantity	Part No.	
<p>Flowrite</p>  <p>2-1/2 to 6" 2-way Flanged Iron Valve Body Rebuild/Repack Service Kits.</p>		Flowrite	1	See table below	
		Valve Part No.	Kit Part No.		
		599-05920	599-10130		
		599-05921	599-10131		
		599-05922	599-10132		
		599-05923	599-10133		
		599-05924	599-10134		
		599-05930	599-10140		
		599-05931	599-10141		
		599-05932	599-10142		
		599-05933	599-10143		
		599-05934	599-10144		
		599-05940	599-10135		
		599-05941	599-10136		
		599-05942	599-10137		
		599-05943	599-10138		
		599-05944	599-10139		
		599-05950	599-10145		
		599-05951	599-10146		
		599-05952	599-10147		
		599-05953	599-10148		
		599-05954	599-10149		
		599-05960	599-10130		
		599-05961	599-10131		
		599-05962	599-10132		
		599-05963	599-10133		
		599-05964	599-10134		
		599-05970	599-10140		
		599-05971	599-10141		
		599-05972	599-10142		
		599-05973	599-10143		
		599-05974	599-10144		
		599-05980	599-10135		
		599-05981	599-10136		
		599-05982	599-10137		
		599-05983	599-10138		
		599-05984	599-10139		
		599-05990	599-10145		
		599-05991	599-10146		
		599-05992	599-10147		
		599-05993	599-10148		
		599-05994	599-10149		
		599-06040	599-10110		
		599-06041	599-10111		
		599-06042	599-10112		
		599-06043	599-10113		
		599-06044	599-10114		
		599-06050	599-10115		
		599-06051	599-10116		
		599-06052	599-10117		
		599-06053	599-10118		
		599-06054	599-10119		
		599-06060	599-10100		
		599-06061	599-10101		
		599-06062	599-10102		
		599-06063	599-10103		
		599-06064	599-10104		
		599-06070	599-10105		
		599-06071	599-10106		
		599-06072	599-10107		
		599-06073	599-10108		
		599-06074	599-10109		

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	Description	Product Group	Quantity	Part No.
Flowrite				
	2-1/2 to 6" High Close Off Rebuild/Repack Service Kits (ANSI 125 & 250)	Flowrite	1	See table below
	2-1/2 to 6" Flanged Iron Valve Body Repack Kit (14 mm dia.). (Cartridge)	Flowrite		
	<ul style="list-style-type: none"> • Normal Duty 		1	599-08020
	<ul style="list-style-type: none"> • Steam 		1	599-08021
 <p>8" Shown</p>	Diaphragm Replacement Kits.	Flowrite		
	<ul style="list-style-type: none"> • 4-inch Normal Duty 		1	599-01093
	<ul style="list-style-type: none"> • 8-inch Normal Duty 		1	599-01060
	<ul style="list-style-type: none"> • 8-inch High Temperature 		1	599-01061
	<ul style="list-style-type: none"> • 12-inch Normal Duty 		1	599-01070
	Stem Retainer Kit. With interface nut and stem retainer ring. For 8-inch, 12-inch and SKB/C actuators.	Flowrite		
	<ul style="list-style-type: none"> • 10 mm 		1	599-10048
	<ul style="list-style-type: none"> • 14 mm 		1	599-10049
	Circuit Board Replacement.			
	<ul style="list-style-type: none"> • Date codes After 030215 • All date codes 	SQX62	1	466856668
		SQX82	1	466856418
	Plastic Wiring Compartment Cover.	SQX	1	410455758
	Circuit Board Replacement.	SKB/SKC SKD62U	1	466857488
		SKB/C/D62UA	1	466857518

	Description	Product Group	Quantity	Part No.
Flowrite				
	Plastic Wiring Compartment Cover.	SKD	1	410456348
		SKB/SKC	1	410455828
	Manual Override Crank Assembly.	SKB/C	1	426855108
		SKD	1	426855048
	Packing Heating Element.	SKB/C	1	599-00418
	Packing Heating Element.	SKD	1	599-00417
	Stem Heater	SAX	1	ASZ6.6
	Stroke Inverter. 1/2" - 2.5" valves with .75" max. stroke.	SKD	1	ASK50
		SKB	1	ASK51
	Retainer Clamp Kit.	SKB/C	1	599-10200
		8 & 12" pneu	1	599-00436
	3-way Valve Service Flanges. Allows easy access to the stem and plug assembly without removing the valve.	Flowrite	1	See table below
	Flange Bolts and Gasket Service Kit. For lower bypass port of 3-way valves. Includes one gasket and the number and size of bolts needed for the replacement.	Flowrite	1	See table below

Valve Size	ANSI Class 125	ANSI Class 250
2-1/2"	599-05011	599-05016
3"	599-05012	599-05017
4"	599-05013	599-05018
5"	599-05014	599-05019
6"	599-05015	599-05020

Valve Size	ANSI Class 125	ANSI Class 250
2-1/2"	599-09236	599-09241
3"	599-09237	599-09242
4"	599-09238	599-09243
5"	599-09239	599-09244
6"	599-09240	599-09245

	Description	Product Group	Quantity	Part No.	Part No.	
Flowrite						
	Lower Seat Tools for Valve Size:	Flowrite				
	• 2-1/2"		1	599-09144	—	
	• 3"		1	599-09145	—	
	• 4"		1	599-09146	—	
	• 5"		1	599-09147	—	
	• 6"		1	599-09148	—	
	Flowrite Union Kits.	Flowrite		Female	Male	
	• 1/2" (15 mm)		1	599-09185	599-09181	
	• 3/4" (20 mm)		1	599-09186	599-09182	
	• 1" (25 mm)		1	599-09187	599-09183	
	• 1-1/4" (32 mm)		1	599-09188	599-09184	
	• 1-1/2" (40 mm)		1	599-09189	—	
	• 2" (50 mm)		1	599-09190	—	
	Flowrite Union Gasket Kits.	Flowrite			—	
	• 1/2" NPT		25 Pieces	599-03394	—	
	• 3/4" NPT		25 Pieces	599-03395	—	
	• 1" NPT		25 Pieces	599-03396	—	
	• 1-1/4" NPT		25 Pieces	599-03387	—	
	• 1-1/2" NPT		25 Pieces	599-03388	—	
	• 2" NPT		25 Pieces	599-03389	—	
Magnetic						
	Control Signal Module w/ Feedback, 0-2".	MX..	1		ZM150	
	Control Signal Module w/ Feedback, 3-4".	MX..	1		ZM250	
	Terminal Housing. Converts 0 to 10 Vdc input to 0 to 20 Vdc phase cut output.					
	• up to 40W, IP30 rated housing	M3P	1		ZM100/A	
	• up to 40W, IP54 rated housing	M3P	1		ZM101/A	
	• up to 120W, IP30 rated housing	M3P	1		ZM200/A	
	Terminal Housing. For straight through 0 to 20 Vdc electrical housing only.					
	• to 40W, IP54 rated housing	M3P	1		ZM111	
	• up to 120W, IP30 rated housing	M3P	1		ZM210	
	Terminal Housing. Converts 0 to 20 mA/24 Vdc input to 0 to 20 Vdc phase cut output.					
	• up to 40W, IP30 rated housing	M3P	1		ZM120/A	
	• to 40W, IP54 rated housing	M3P	1		ZM121/A	
	• up to 120W, IP30 rated housing	M3P	1		ZM220/A	
Blanking Flange.	M3P					
• 3"		1		Z155/80		
• 4"		1		Z155/100		

	Description	Product Group	Quantity	Part No.
Magnetic				
	580 PSI Weld Neck Adaptor Flange.	MX../M3P/MV..		
	• 1/2"		1	Z205/15
	• 3/4"		1	Z205/20
	• 1"		1	Z205/25
	• 1-1/4"		1	Z205/32
	• 1-1/2"		1	Z205/40
	• 2"		1	Z205/50
	• 2-1/2"		1	Z205/65
	• 3"		1	Z205/80
• 4"		1	Z205/100	
	230 PSI Weld Neck Adaptor Flange.	MX../M3P		
	• 4"		1	Z56/100
	580 PSI NPT Adaptor Flange.	MX../M3P/MV..		
	• 1/2"		1	Z206/15
	• 3/4"		1	Z206/20
	• 1"		1	Z206/25
	• 1-1/4"		1	Z206/32
	• 1-1/2"		1	Z206/40
• 2"		1	Z206/50	
	Replacement Circuit Board.	MVF461H/ MXG461B	1	ASE12
	Repair Module.			
	• 1/2" to 1-1/4"	MXG461	1	ASE1
	• 1-1/2" to 2-1/2"	MXG461/ MXF461	1	ASE2
	Phase Cut to 0 to 10 Vdc Signal Converter.	MX../M3P/MV..	1	SEZ91.6

Control Valve Sizing and Selection

Selecting Globe and Ball Valves

The control valve is the most important single element in any fluid handling system, because it regulates the flow of fluid to the process. To properly select a control valve, a general knowledge of the process and components is usually necessary. This reference section can help you select and size the control valve that most closely matches the process requirements.

The sizing of a valve is very important if it is to render good service. If it is undersized, it will not have sufficient capacity. If it is oversized, the controlled variable may cycle, and the seat, and plug will be subject to wire drawing because of the restricted opening.

Systems are designed for the most adverse conditions expected (i.e., coldest weather, greatest load, etc.). In addition, system components (boiler, chiller, pumps, coils, etc.) are limited to sizes available and frequently have a greater capacity than system requirements. Correct sizing of the control valve for actual expected conditions is considered essential for good control.

A basic rule of control valve sizing is:

The higher the percentage of drop across the wide open valve in relation to the percentage of pressure drop through the line and process coil, the better the control.

Technical Comparison Between Globe and Ball Valves

Technically, the globe valve has a stem and plug, which strokes linearly, commonly referred to as "stroke" valves. The ball valve has a stem and ball, which turns horizontally, commonly referred to as "rotational" valves.

Early ball valves used a full port opening, allowing large amounts of water to pass through the valve. This gave HVAC controls contractors the ability to select a ball valve two to three pipe sizes smaller than the piping line size. Compared to traditional globe valves that would be only one pipe size smaller than the line

size, this was often a more cost-effective device-level solution. In addition, the ball valve could be actuated by a damper actuator, rather than expensive box-style "Mod" motors.

Pricing Comparison

Today, with equivalent pricing between ball and globe valves, the full port ball valve is falling out of favor for most HVAC control applications. This is also due to its poor installed flow characteristic that leads to its inability to maintain proper control. New "flow optimized" or characterized ball valves, specifically designed for modulating applications, have been developed. Characterized ball valves are sized the same way as globe valves. They provide an equal percentage flow characteristic, enabling stable control of fluids. Additionally, there are more cost-effective valve actuators now available for globe valves. Better control and more-competitive pricing now puts globe valves on the same playing field as characterized ball valves.

Selection Guidelines

Globe Valve

- High differential pressure across valve
- Rebuilding of the valve is desired
- Better control performance
- Better low flow (partial load) performance
- Use for steam, water or water/glycol media
- Smaller physical profile than a comparable ball valve

Characterized Ball Valve

- Tight shutoff or high close offs of around 100 psi* are required
- Isolation or two position control**
- Use for water or water/glycol solution only

* This equates to a pump head pressure of approximately 230 ft. Not very common HVAC applications.

** Valve can be line sized to minimize pressure losses; butterfly valves are also used for these applications.

Control Valve Sizing and Selection

Sizing Valves

Pressure Drop for Water Flow

A pressure drop must exist across a control valve if flow is to occur. The greater the drop, the greater the flow at any fixed opening. The pressure drop across a valve also varies with plug position — from minimum when fully open, to 100% of the system drop when fully closed.

To size a valve properly, it is necessary to know the full flow pressure drop across it. The pressure drop across a valve is the difference in pressure between the inlet and outlet under flow conditions. When it is specified by the engineer and the required flow is known, the selection of a valve is simplified. When this pressure drop is not known, it must be computed or assumed.

If the pressure drop across the valve when fully open is not a large enough percentage of the total system drop, there will be little change in fluid flow until the valve actually closes, forcing the valve's characteristic toward a quick opening form.

Figure 1 shows flow-lift curves for a linear valve with various percentages of design pressure drop. Note the improved characteristic as pressure drop approaches 100% of system pressure drop at full flow.

It is important to realize that the flow characteristic for any particular valve, such as the linear characteristic shown in **Figure 1** is applicable only if the pressure drop remains nearly constant across the valve for full stem travel. In most systems, however, it is impractical to take 100% of the system drop across the valve.

A good working rule is, "at maximum flow, 25 to 50% of the total system pressure drop should be absorbed by the control valve." Although this generally results in larger pump sizes, it should be pointed out that the initial equipment cost is offset by a reduction in control valve size, and results in improved controllability of the system. Reasonably good control can be accomplished with pressure drops of 15 to 30% of total system pressures. A drop of 15% can be used if the variation in flow is small.

Recommended Pressure Drops for Valve Sizing — Water

1. With a differential pressure less than 20 psi, use a pressure drop equal to 5 psi.
2. With a differential pressure greater than 20 psi, use a pressure drop equal to 25% of total system pressure drop (maximum pump head), but not exceeding the maximum rating of the valve.

Pressure Drop for Steam

The same methodology should be applied for selecting a valve for steam with the most important consideration is the pressure drop.

First, the correct maximum capacity of the coil must be determined. Ideally, there should be no safety factor in this determination and it should be based on the actual BTU heating requirements. The valve size must be based on the actual supply pressure at the valve. When the valve is fully open, the outlet pressure will assume a valve such that the valve capacity and coil condensing rate are in balance. If this outlet valve pressure is relatively large (small pressure drop), then as the valve closes, there will be no appreciable reduction in flow until the valve is nearly closed. To achieve better controllability, the smallest valve (largest pressure drop) should be selected. With the valve outlet pressure much less than the inlet pressure, a large pressure drop results. There will now be an immediate reduction in capacity as the valve throttles. For steam valves, generally the largest possible pressure drop should be taken, without exceeding the critical pressure ratio. Therefore, the steam pressure drop should approach 80% of the system differential pressure.

Examining the pressure drops under "Recommended Pressure Drops for Valve Sizing — Steam", you might be concerned about the steam entering the coil at 0 psi when a large drop is taken across the control valve. Steam flow through the coil will still drop to vacuum pressures due to condensation of the steam. Consequently, a pressure differential will still exist. In this case, proper steam trapping and condensation piping is essential.

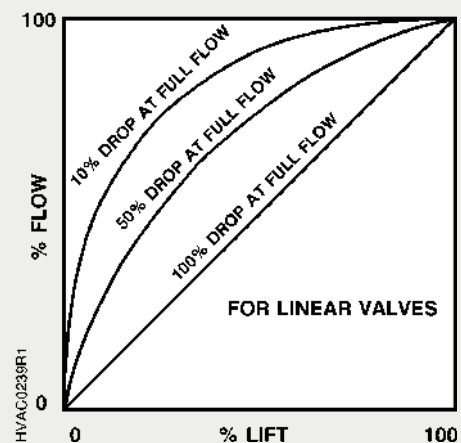


Figure 1.

Recommended Pressure Drops for Valve Sizing — Steam

1. With gravity flow condensate removal and inlet pressure less than 15 psi, use a pressure drop equal to the inlet gauge pressure.
2. With vacuum return system up to 7" Hg vacuum and an inlet pressure less than 2 psi, a pressure drop of 2 psi should be used. With an inlet pressure of 2 to 15 psi, use a pressure drop equal to the inlet gauge pressure.
3. With an inlet pressure greater than 15 psi, use a pressure drop equal to 80% of system differential pressure. Example: Inlet pressure is 20 psig (35 psia) and a gravity return at atmospheric pressure 0 psig (14.7 psia), use a pressure drop of 16 psi.
4. When a coil size is selected on the basis that line pressure and temperature is available in the coil of a heating and ventilating application, a very minimum pressure drop is desired. In this case, use the following: pressure drop:

Initial Pressure	Pressure Drop
15 psi	5 psi
50 psi	7.5 psi
100 psi	10 psi
Over 100 psi	10% of line pressure

(typically on/off applications)

The Most Important Variables to Consider When Sizing a Valve:

1. What medium will the valve control? Water? Air? Steam? What effects will specific gravity and viscosity have on the valve size?
2. What will the inlet pressure be under maximum load demand? What is the inlet temperature?
3. What pressure drop (differential) will exist across the valve under maximum load demand?
4. What maximum capacity should the valve handle?
5. What is the maximum pressure differential the valve top must close against?

When these are known, a valve can be selected by formula (Cv method) or water and steam capacities tables which can be found in the Valves section, pages D-7 through D-10. The valve size should not exceed the line size.

Valve Sizing and Selection Example

Select a valve to control a chilled water coil that must have a flow of 35 GPM with a valve differential pressure (ΔP) of 5 psi.

Determine the valve Cv using the formula for liquids.

$$C_v = Q \sqrt{\frac{S}{P}} = 35 \text{ GPM} \quad \sqrt{\frac{1}{5 \text{ psi}}} = 15.6$$

Select a valve that is suitable for this application and has a Cv as close as possible to the calculated value.

One choice is 277-03186: a 1-1/4" NC valve with a Cv of 16. Refer to Flowrite Valves Reference section.

Valve Selection Criteria

1. Flow characteristic — Modified Equal Percentage which provides good control for a water coil.
2. Body rating and material — Suitable for water.
3. Valve type and action — A single seat NC valve with an adjustable spring range which can be sequenced with a NO valve used for heating.
4. Valve actuator — Actuator close-off rating is higher than the system differential pressure.
5. Valve line size — Its Cv is close to and slightly larger than the calculated Cv (15.6).
6. For Ball Valves — use the same selection criteria.

Control Valve Sizing and Selection

Valve Body Rating

The temperature-pressure ratings for ANSI Classes 125 and 250 valve bodies made of bronze or cast iron are shown below.

Description	Temperature	Pressure	
		ANSI Class 125	ANSI Class 250
Bronze Screwed Bodies Specification #B16.15-1978 ANSI Amer. Std.; USA; ASME	-20 to + 150°F (-30 to + 66°C)	200 psi (1378 kPa)	400 psi (2758 kPa)
	-20 to + 200°F (-30 to + 93°C)	190 psi (1310 kPa)	385 psi (2655 kPa)
	-20 to + 250°F (-30 to + 121°C)	180 psi (1241 kPa)	365 psi (2586 kPa)
	-20 to + 300°F (-30 to + 149°C)	165 psi (1138 kPa)	335 psi (2300 kPa)
	-20 to + 350°F (-30 to + 177°C)	150 psi (1034 kPa)	300 psi (2068 kPa)
	-20 to + 400°F (-30 to + 204°C)	125 psi (862 kPa)	250 psi (1724 kPa)
Cast Iron Flanged Bodies Class B-sizes 1 to 12 Specification #B16.1 1975 ANSI Amer. Std.; USA; ASME	-20 to + 150°F (-30 to + 66°C)	200 psi (1378 kPa)	500 psi (3445 kPa)
	-20 to + 200°F (-30 to + 93°C)	190 psi (1310 kPa)	460 psi (3169 kPa)
	-20 to + 225°F (-30 to + 106°C)	180 psi (1241 kPa)	440 psi (3032 kPa)
	-20 to + 250°F (-30 to + 121°C)	175 psi (1206 kPa)	415 psi (2859 kPa)
	-20 to + 275°F (-30 to + 135°C)	170 psi (1171 kPa)	395 psi (2722 kPa)
	-20 to + 300°F (-30 to + 149°C)	165 psi (1138 kPa)	375 psi (2584 kPa)
	-20 to + 325°F (-30 to + 163°C)	155 psi (1069 kPa)	355 psi (2448 kPa)
	-20 to + 350°F (-30 to + 177°C)	150 psi (1034 kPa)	335 psi (2308 kPa)
	-20 to + 375°F (-30 to + 191°C)	145 psi (1000 kPa)	315 psi (2170 kPa)
	-20 to + 400°F (-30 to + 204°C)	140 psi (965 kPa)	290 psi (1998 kPa)
	-20 to + 425°F (-30 to + 218°C)	130 psi (896 kPa)	270 psi (1860 kPa)
	-20 to + 450°F (-30 to + 232°C)	125 psi (862 kPa)	250 psi (1734 kPa)

Valve Sizing Formulas

The following definitions apply in the following formulas:

Cv	Valve flow coefficient, U.S. GPM with P = 1 psi
P ₁	Inlet pressure at maximum flow, psia (abs.)
P ₂	Outlet pressure at maximum flow, psia (abs.) P ₁ — P ₂ at maximum flow, psi
Q	Fluid flow, U.S. GPM
Qa	Air or gas flow, standard cubic feet per hour (SCFH) at 14.7 psi and 60°F
W	Steam flow, pounds per hour (lb./hr.)
S	Specific gravity of fluid relative to water @ 60°F
G	Specific gravity of gas relative to air at 14.7 psi and 60°F
T	Flowing air or gas temperature (°F)
K	1 + (0.0007 x °F superheat), for steam
V ₂	Specific volume, cubic feet per pound, at outlet pressure P ₂ and absolute temperature (T + 460)
K _v	Viscosity correction factor for fluids (See Page I-4)

Formulas:	Remarks:
<p>1. For liquids (water, oil, etc.):</p> $Cv=Q \sqrt{\frac{S}{\Delta P}}$ $Cv=K_v Q \sqrt{\frac{S}{\Delta P}}$	<p>Specific gravity correction is negligible for water below 200°F (use S=1.0). Use actual specific gravity S of other liquids at actual flow temperature.</p> <p>Use this for fluids with viscosity correction fact. Use actual specific gravity S for fluids at actual flow temperature.</p>
<p>2. For gases (air, natural gas, propane, etc.):</p> $Cv= \frac{Qa \sqrt{G(T+460)}}{1360 \sqrt{\Delta P(P_2)}}$ $Cv= \frac{Qa \sqrt{G(T+460)}}{660 P_1}$	<p>Use this when P₂ is <i>greater</i> than 1/2P₁.</p> <p>Use this when P₂ is <i>less than</i> or <i>equal to</i> 1/2P₁.</p>
<p>3. For steam (saturated or superheated):</p> $Cv= \frac{WK}{2.1 \sqrt{\Delta P (P_1 + P_2)}}$ $Cv= \frac{WK}{1.82 P_1}$	<p>Use this when P₂ is <i>greater</i> than 1/2P₁.</p> <p>Use this when P₂ is <i>less than</i> or <i>equal to</i> 1/2P₁.</p>
<p>4. For vapors other than steam:</p> $Cv= \frac{WK}{63.4} \sqrt{\frac{V_2}{\Delta P}}$	<p>When P₂ is <i>less than</i> or <i>equal to</i> 1/2P₁, use the value of 1/2P₁ in place of P and use P₂ corresponding to 1/2P₁ when determining specific volume V₂.</p>

Control Valve Sizing Formulas and Tables

Viscosity Factors

The relationship between kinematic and absolute viscosity:

$$\text{Centistoke} = \frac{\text{Centipoise}}{\text{Specific Gravity}}$$

Saybolt* Univ. second (SUS) (K _v)	Engler Time Seconds	Kinematic Viscosity	Cv Correction Factors
46,350	—	10,000	—
37,080	—	8,000	—
27,810	—	6,000	—
18,540	—	4,000	—
13,900	—	3,000	—
11,590	—	2,500	—
9,270	—	2,000	1.93
6,950	10,800	1,500	1.90
4,635	7,100	1,000	1.82
3,708	5,700	800	1.78
2,781	4,250	600	1.74
1,854	2,820	400	1.67
1,390	2,120	300	1.63
1,159	1,760	250	1.61
927	1,400	200	1.57
695	1,050	150	1.43
464	700	100	1.45
371	555	80	1.42
278	420	60	1.37
186	290	40	1.30
141	225	30	1.25
119	191	25	1.22
97.8	157	20	1.20
77.4	127	15	1.16
58.9	97	10	1.11
52.1	85.5	8	1.08
45.6	76.0	6	1.07
39.1	67.5	4	1.05
36.0	62.5	3	1.03
32.6	58.0	2	—
31.6	55.5	1.5	—
31.3 ← PURE WATER AT 60°F → 1.1			—

Chart Note:

*Redwood time (seconds) approximately same as SUS.

Specific Gravity of Water

Temp T (°F)	Absolute Pressure	Specific Gravity — S (W=62.4 lb./ft. ³ @ 60°F)	\sqrt{S}
60	—	1.000	1.000
100	—	0.993	0.999
150	—	0.981	0.985
200	—	0.963	0.981
250	30	0.942	0.971
300	67	0.920	0.959
350	135	0.891	0.944
400	247	0.860	0.927
450	423	0.827	0.910

Process Formulas

For Heating or Cooling Water:

$$\text{GPM} = \frac{\text{Btu/hr.}}{(\text{°F water temp. rise or drop} \times 500)}$$

$$\text{GPM} = \frac{\text{CFM} \times .009 \times H}{\text{°F water temperature change}}$$

(H = change in enthalpy of air expressed in Btu/lb. of air)

For Heating Water with Steam:

$$\text{lbs. steam/hr.} = 0.50 \times \text{GPM} \times (\text{°F water temp. rise})$$

For Heating or Cooling Water:

$$\text{GPM}_1 = \text{GPM}_2 \times \frac{(\text{°F water}_2 \text{ temp. rise or drop})}{\text{°F water}_1 \text{ temp. drop}}$$

For Heating Air with Steam Coils:

$$\text{lbs. steam/hr.} = 1.08 \times (\text{°F air temp. rise}) \times \frac{\text{CFM}}{1000}$$

For Heating Air with Water Coils:

$$\text{GPM} = 2.16 \times \frac{\text{CFM} \times (\text{°F air temp. rise})}{1000 \times (\text{°F water}_1 \text{ temp. drop})}$$

For Radiation:

$$\text{lbs. steam/hr.} = 0.24 \times \text{ft.}^2 \text{ EDR (Low pressure steam)}$$

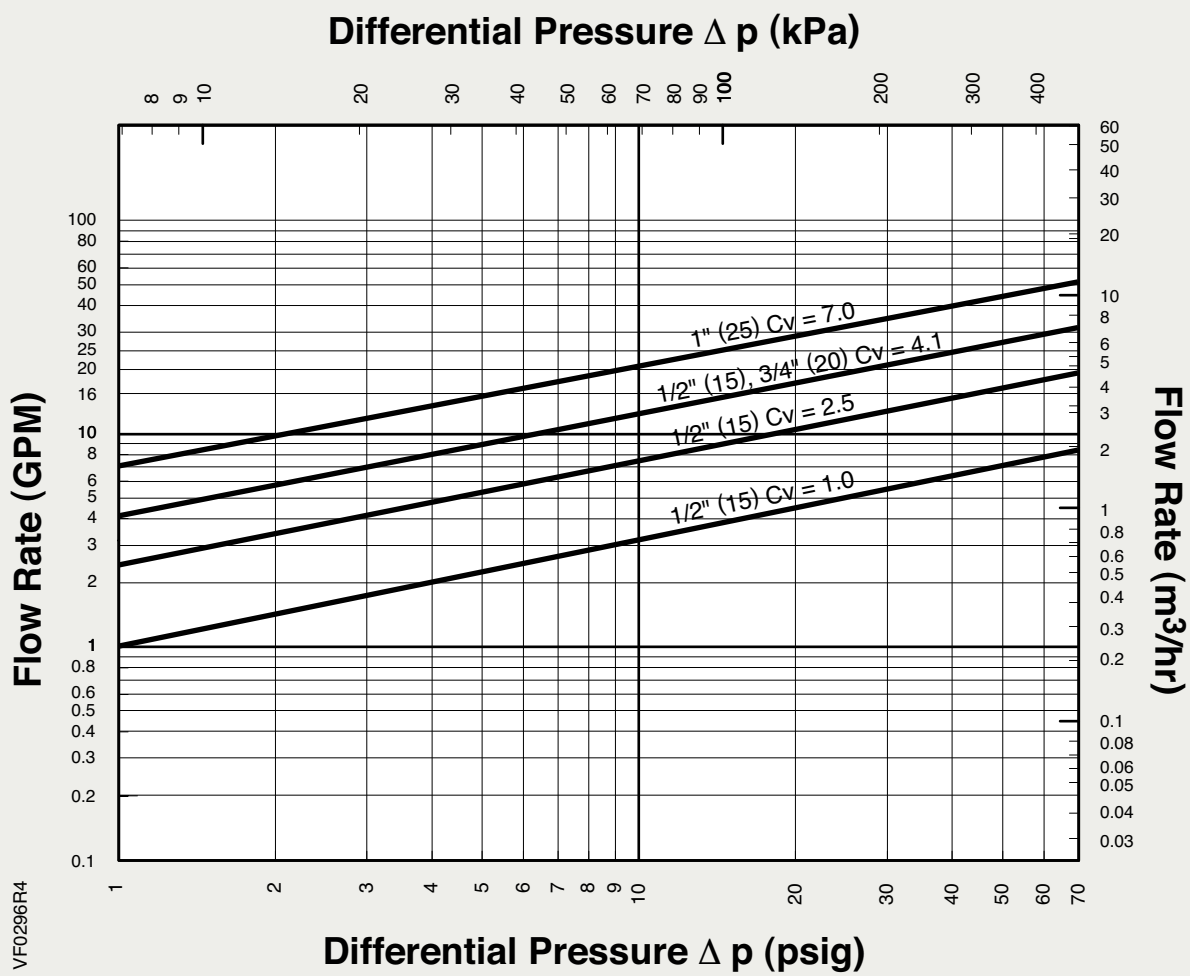
EDR = Equivalent Direct Radiation

1 EDR (steam) = 240 BTU/Hr. (Coil Temp. = 215°F)

1 EDR (water) = 200 BTU/Hr. (Coil Temp. = 197°F)

$$\text{GPM} = \frac{\text{ft.}^2 \text{ EDR}}{50} \quad (\text{Assume } 20\text{°F water TD})$$

Water Capacity Graph for Zone Valves



Control Valve Sizing and Selection

Water Capacity Tables for Zone Valves

Valve Size Inches	Pressure Differential — psi English (AB→A)															
	Cv\1	2	3	4	5	6	8	10	15	20	25	30	40	50	60	75
1/2	1.0	14	1.7	2.0	2.2	2.4	2.8	3.2	3.9	4.4	5.0	5.5	6.3	7.1	7.7	8.7
1/2	2.5	3.5	4.3	5.0	5.6	6.1	7.1	7.9	9.7	11.2	12.5	13.7	15.8	17.7	19.4	22.0
1/2	4.1	5.7	7.1	8.2	9.2	10.0	11.6	13.0	15.9	18.3	20.5	22.4	25.9	29.0	31.8	35.5
1	7.0	9.9	12.1	14.0	15.6	17.1	19.8	22.1	27.1	31.3	35.0	38.3	44.3	49.5	54.2	60.6

Table is expressed in U.S. Gallons per minute (GPM).

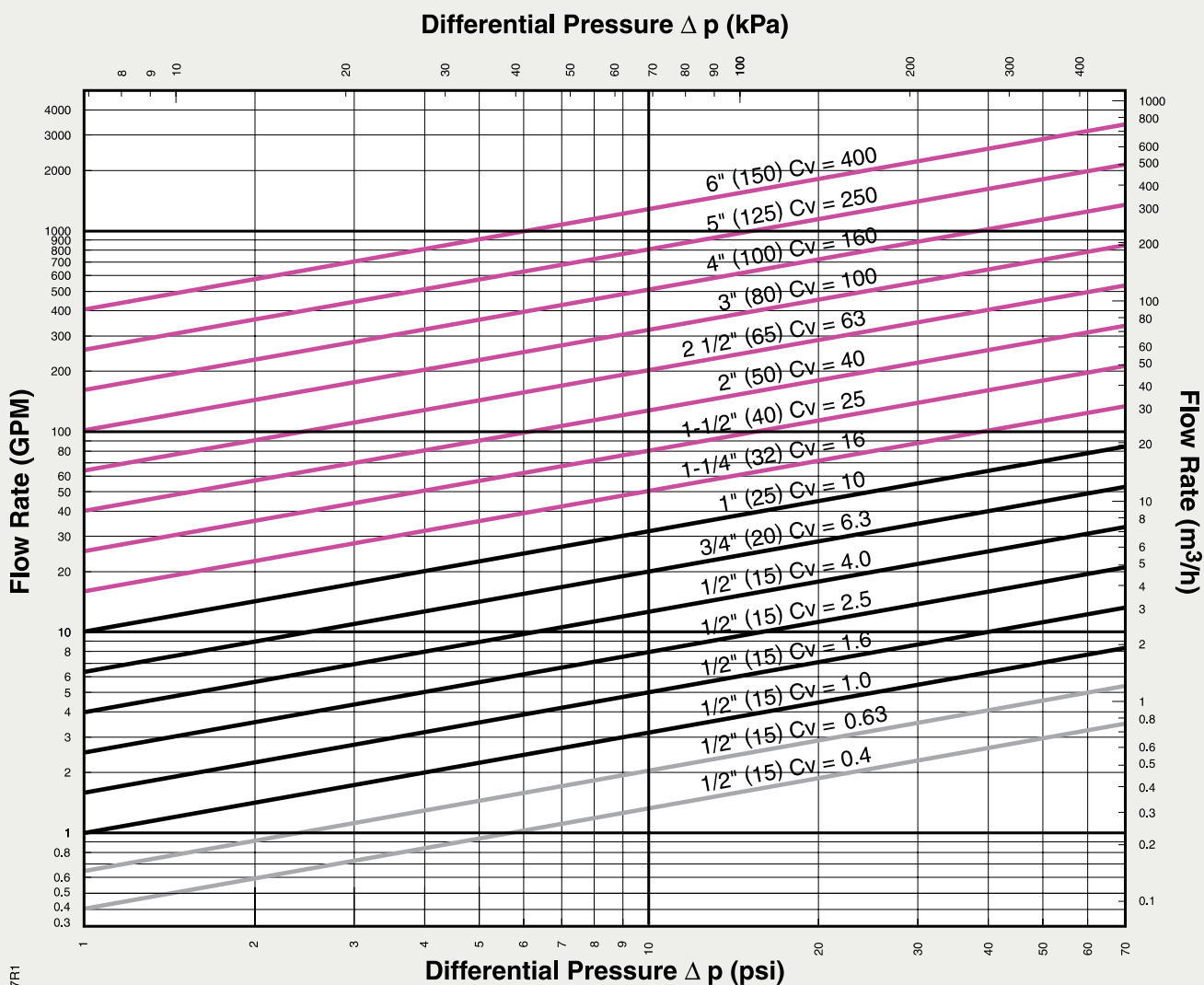
Valve Size mm	Pressure Differential — psi Metric (AB→A)													
	1	10	20	30	40	50	60	80	100 (Kvs)	150	200	300	400	500
15	0.09	0.27	0.38	0.47	0.54	0.60	0.66	0.76	0.85	1.04	1.20	1.47	1.70	1.90
15	0.22	0.68	0.96	1.18	1.36	1.52	1.67	1.92	2.15	2.63	3.04	3.72	4.30	4.81
15/20	0.35	1.11	1.57	1.92	2.21	2.47	2.71	3.13	3.50	4.29	4.95	6.06	7.00	7.83
25	0.60	1.90	2.68	3.29	3.79	4.24	4.65	5.37	6.00	7.35	8.49	10.39	12.00	13.42

Table expressed in Cubic Meters per Hour (m³/hr).

Close-off Pressures for Zone Valves

Bronze			
Valve Size		Pressure	
Inch	(mm)	psi	(KPa)
1/2	(15)	44	(303)
3/4	(20)	44	(303)
1	(25)	22	(152)

Water Capacity Graph for Globe Valves



37R1

Key

- Flowrite 599 Series
- Powermite or Flowrite 599 Series
- Powermite 599 Series

For more precise Valve Sizing, use the Water Capacity tables on the next page.

Control Valve Sizing and Selection

Water Capacity Tables for Globe Valves

Valve Size Inches	English Pressure Differential															
	Cv/1	2 psi	3 psi	4 psi	5 psi	6 psi	8 psi	10 psi	15 psi	20 psi	25 psi	30 psi	40 psi	50 psi	60 psi	75 psi
1/2"	0.4	0.6	0.7	0.8	0.9	1.0	1.1	1.3	1.5	1.8	2.0	2.2	2.5	2.8	3.1	3.5
1/2"	0.63	0.9	1.1	1.3	1.4	1.5	1.8	2.0	2.4	2.8	3.2	3.5	4.0	4.5	4.9	5.5
1/2"	1.0	1.4	1.7	2.0	2.2	2.5	2.8	3.2	3.9	4.5	5.0	5.5	6.3	7.1	7.8	8.7
1/2"	1.6	2.3	2.8	3.2	3.6	3.9	4.5	5.1	6.2	7.2	8.0	8.8	10.1	11.3	12.4	13.9
1/2"	2.5	3.5	4.3	5.0	5.6	6.1	7.1	7.9	9.7	11.2	12.5	13.7	15.8	17.7	19.4	22
1/2"	4	5.7	7	8.0	8.9	10	11.3	12.6	15.5	17.9	20.0	21.9	25	28	31	35
3/4"	6.3	8.9	10.9	12.6	14.1	15.4	17.8	20	24	28	32	35	40	45	49	55
1"	10	14.1	17.3	20	22	24	28	32	39	45	50	55	63	71	77	87
1-1/4"	16	23	28	32	36	39	45	51	62	72	80	88	101	113	124	139
1-1/2"	25	35	43	50	56	61	71	79	97	112	125	137	158	177	194	217
2"	40	57	69	80	89	98	113	126	155	179	200	219	253	283	310	346
2-1/2"	63	89	109	126	141	154	178	199	244	282	315	345	398	445	488	546
3"	100	141	173	200	224	245	283	316	387	447	500	548	632	707	775	866
4"	160	226	277	320	358	392	453	506	620	716	800	876	1012	1131	1239	1386
5"	250	354	433	500	559	612	707	791	968	1118	1250	1369	1581	1768	1936	2165
6"	400	566	693	800	894	980	1131	1265	1549	1789	2000	2191	2530	2828	3098	3464

Table is expressed in U.S. gallons per minute (GPM).

Valve Size mm	Metric Pressure Differential														
	1 kPa	10 kPa	20 kPa	30 kPa	40 kPa	50 kPa	60 kPa	80 kPa	100 (Kvs)	150 kPa	200 kPa	300 kPa	400 kPa	500 kPa	
15	0.03	0.11	0.15	0.19	0.22	0.24	0.26	0.30	0.34	0.42	0.48	0.59	0.68	0.76	
15	0.05	0.17	0.24	0.30	0.34	0.38	0.42	0.48	0.54	0.66	0.76	0.94	1.08	1.21	
15	0.09	0.27	0.38	0.47	0.54	0.60	0.66	0.76	0.85	1.0	1.2	1.5	1.7	1.9	
15	0.14	0.43	0.61	0.75	0.87	0.97	1.06	1.23	1.37	1.7	1.9	2.4	2.7	3.1	
15	0.21	0.68	0.96	1.17	1.35	1.51	1.66	1.91	2.15	2.6	3.0	3.7	4.3	4.8	
15	0.34	1.1	1.5	1.9	2.2	2.4	2.7	3.1	3.4	4.2	4.9	6.0	6.9	7.7	
20	0.54	1.7	2.4	3.0	3.4	3.8	4.2	4.9	5.4	6.7	7.7	9.4	10.9	12.1	
25	0.86	2.7	3.8	4.7	5.4	6.1	6.7	7.7	8.6	10.5	12.2	14.9	17.2	19.2	
32	1.4	4.4	6.2	7.6	8.7	9.8	10.7	12.3	13.8	16.9	19.5	23.9	27.6	30.9	
40	2.2	6.8	9.6	11.8	13.6	15.2	16.7	19.2	22	26	30	37	43	48	
50	3.4	10.9	15.4	18.8	22	24	27	31	34	42	49	60	69	77	
65	5.4	17.1	24	30	34	38	42	48	54	66	76	94	108	121	
80	8.5	27	38	47	54	60	66	76	85	104	120	147	170	190	
100	14	43	61	75	87	97	106	123	137	168	194	237	274	306	
125	21	68	96	117	135	151	166	191	214	262	303	371	428	479	
150	34	108	153	187	216	242	265	306	342	419	484	592	684	765	

Table expressed in Cubic Meters per Hour (m³/hr).

Table Note:

Cv values of 0.4 to 10 are Powermite globe valves; Cv values of 1.0 to 400 are Flowrite globe valves.

Maximum Steam Capacity at Various Pressure Differentials for Globe Valves

Valve Size Inches	English Inlet Pressure								
	2 psi			5 psi			10 psi		
	Cv	Pressure Differential		Pressure Differential		Pressure Differential		Pressure Differential	
	1 psi	2 psi	3 psi	4 psi	5 psi	6 psi	8 psi	10 psi	
1/2"	0.4	4.78	6.66	8.78	10	11	14	15	17
1/2"	0.63	7.53	11	14	16	17	21	24	26
1/2"	1	12	17	22	25	28	34	38	42
1/2"	1.6	19	27	35	40	44	54	61	67
1/2"	2.5	30	42	55	62	69	85	96	104
1/2"	4	48	67	88	100	110	136	153	167
3/4"	6.3	75	105	138	157	174	214	241	263
1"	10	120	166	219	250	275	339	382	417
1-1/4"	16	191	266	351	400	441	542	611	667
1-1/2"	25	299	416	549	625	689	847	955	1042
2"	40	478	666	878	1000	1102	1356	1529	1667
2-1/2"	63	753	1048	1383	1574	1735	2135	2408	2626
3"	100	1195	1664	2194	2499	2754	3389	3822	4168
4"	160	1913	2663	3511	3998	4407	5422	6115	6669
5"	250	2988	4160	5486	6247	6885	8472	9554	10421
6"	400	4781	6657	8778	9996	11017	13555	15287	16674

Table is expressed in pounds per hour (lbs./hr.).

Valve Size mm.	Kvs	Metric Inlet Pressure														
		100 kPa			150 kPa			200 kPa			500 kPa			1000 kPa		
		10 kPa	20 kPa	50 kPa	15 kPa	30 kPa	75 kPa	20 kPa	40 kPa	100 kPa	50 kPa	100 kPa	250 kPa	100 kPa	200 kPa	500 kPa
15 mm	0.34	2.42	3.42	5.40	3.63	5.13	8.12	4.84	6.85	11	12	17	27	24	34	54
15 mm	0.54	3.80	5.38	8.51	5.72	8.08	13	7.63	11	17	19	27	43	38	54	85
15 mm	0.86	6.04	8.54	14	9.07	13	20	12	17	27	30	43	68	61	86	136
15 mm	1.37	10	14	22	15	21	32	19	27	43	49	69	108	97	137	217
15 mm	2.14	15	21	34	23	32	51	30	43	68	76	107	169	152	214	339
15 mm	3.43	24	34	54	36	51	81	48	69	108	121	172	271	243	343	543
20 mm	5.40	38	54	85	57	81	128	76	108	171	191	270	427	382	541	855
25 mm	9	60	85	135	91	128	203	121	171	271	303	429	678	607	858	1357
32 mm	14	97	137	216	145	205	325	194	274	433	485	686	1085	971	1373	2171
40 mm	21	151	214	338	227	321	507	303	428	677	758	1072	1695	1517	2145	3391
50 mm	34	242	342	540	363	513	812	484	685	1083	1213	1715	2712	2427	3432	5426
65 mm	54	380	538	851	572	808	1278	763	1079	1706	1910	2701	4271	3822	5405	8546
80 mm	86	604	854	1350	907	1283	2029	1211	1713	2708	3032	4288	6779	6067	8580	13566
100 mm	137	966	1367	2161	1452	2053	3247	1938	2740	4332	4851	6860	10847	9707	13728	21705
125 mm	214	1510	2135	3376	2269	3208	5073	3027	4281	6769	7580	10719	16949	15167	21449	33914
150 mm	343	2416	3416	5402	3630	5133	8116	4844	6850	10831	12128	17151	27118	24267	34319	54263

Table is expressed in kilograms per hour (kg/hr).

Control Valve Sizing and Selection

Globe Valve Close-off Pressures — MZ Series

Valve Size	Electronic	
	2-Way	3-Way
	Normally Open	
1/2", Cv ≤ 1.6	60 psi (414 kPa)	25 psi (172 kPa)
1/2", Cv ≤ 4	35 psi (241 kPa)	15 psi (103 kPa)
3/4 to 1", Cv ≤ 10	30 psi (207 kPa)	10 psi (69 kPa)
	Normally Closed	
1/2", Cv ≤ 1.6	70 psi (482 kPa)	70 psi (482 kPa)
1/2", Cv ≤ 4	40 psi (276 kPa)	40 psi (276 kPa)
3/4 to 1", Cv ≤ 10	30 psi (207 kPa)	30 psi (207 kPa)

Table Note:

For 3-Way valve close-offs, use this chart to determine upper port (NC) and bottom port (NO).

Globe Valve Close-off Pressures — MT Series

2-Way Valve Size	Pneumatic			Electronic	
	599-01088			SQS	SSC
	3-8 psi	8-13 psi	10-15 psi		
	Normally Open				
1/2", Cv ≤ 1.6	95 psi (655 kPa)	45 psi (310 kPa)	20 psi (138 kPa)	160 psi (1103 kPa)	120 psi (868 kPa)
1/2", Cv ≤ 4	45 psi (310 kPa)	25 psi (172 kPa)	15 psi (103 kPa)	85 psi (586 kPa)	65 psi (448 kPa)
3/4 to 1", Cv ≤ 10	35 psi (241 kPa)	10 psi (69 kPa)	—	70 psi (482 kPa)	55 psi (379 kPa)
	Normally Closed				
1/2", Cv ≤ 1.6	40 psi (276 kPa)	95 psi (655 kPa)	95 psi (655 kPa)	95 psi (655 kPa)	95 psi (655 kPa)
1/2", Cv ≤ 4	28 psi (193 kPa)	50 psi (345 kPa)	50 psi (345 kPa)	50 psi (345 kPa)	50 psi (345 kPa)
3/4 to 1", Cv ≤ 10	18 psi (124 kPa)	40 psi (276 kPa)	40 psi (276 kPa)	40 psi (276 kPa)	40 psi (276 kPa)

3-Way Valve Size	Pneumatic			Electronic	
	599-01088			SQS	SSC
	3-8 psi	8-13 psi	10-15 psi		
	Normally Open				
1/2", Cv ≤ 1.6	95 psi (655 kPa)	45 psi (310 kPa)	20 psi (138 kPa)	160 psi (1103 kPa)	95 psi (655 kPa)
1/2", Cv ≤ 4	45 psi (310 kPa)	25 psi (172 kPa)	15 psi (103 kPa)	85 psi (586 kPa)	50 psi (379 kPa)
3/4 to 1", Cv ≤ 10	35 psi (241 kPa)	10 psi (69 kPa)	—	70 psi (482 kPa)	40 psi (276 kPa)
	Normally Closed				
1/2", Cv ≤ 1.6	40 psi (276 kPa)	95 psi (655 kPa)	120 psi (827 kPa)	95 psi (655 kPa)	95 psi (655 kPa)
1/2", Cv ≤ 4	28 psi (193 kPa)	50 psi (345 kPa)	65 psi (448 kPa)	50 psi (345 kPa)	50 psi (345 kPa)
3/4 to 1", Cv ≤ 10	18 psi (124 kPa)	40 psi (276 kPa)	50 psi (345 kPa)	40 psi (276 kPa)	40 psi (276 kPa)

Table Notes:

For 3-Way valve close-offs, use this chart to determine upper (NC) and bottom port (NO).

Normally open close-off pressures are at 20 psi actuator pressure.

Normally closed close-off pressures are at 0 psi actuator pressure.

Globe Valve Close-off Pressures — Pneumatic

Valve Size in. (mm)	Spring Range							
	3 to 8 psi (21 to 55 kPa)					10 to 15 psi (69 to 103 kPa)		
	4" Actuator	8" Actuator		12" Actuator		4" Actuator	8" Actuator	12" Actuator
	15 psi (103 kPa)	15 psi (103 kPa)	30 psi (207 kPa)	15 psi (103 kPa)	30 psi (207 kPa)	0 psi (0 kPa)	0 psi (0 kPa)	0 psi (0 kPa)
Normally Open					Normally Closed			
1/2 (15)	142 (979)	250 (1724)	250 (1724)	—	—	236 (1627)	250 (1724)	—
3/4 (20)	80 (552)	231 (1593)	250 (1724)	—	—	155 (1069)	250 (1724)	—
1 (25)	52 (359)	150 (1034)	250 (1724)	250 (1724)	250 (1724)	91 (627)	250 (1724)	250 (1724)
1-1/4 (32)	32 (221)	93 (641)	250 (1724)	250 (1724)	250 (1724)	52 (359)	148 (1020)	250 (1724)
1-1/2 (40)	20 (138)	60 (414)	198 (1365)	205 (1413)	250 (1724)	32 (331)	92 (634)	250 (1724)
2 (50)	12 (83)	37 (255)	123 (848)	130 (896)	250 (1724)	20 (138)	55 (379)	185 (1275)
2-1/2 (65)	—	31 (213)	100 (689)	95 (655)	250 (1724)	—	36 (248)	114 (786)
3 (80)	—	20 (138)	66 (444)	63 (434)	200 (1378)	—	23 (158)	74 (610)
4 (100)	—	—	—	40 (275)	129 (889)	—	—	46 (317)
5 (125)	—	—	—	26 (179)	82 (565)	—	—	29 (199)
6 (150)	—	—	—	18 (124)	57 (393)	—	—	20 (137)

Table Notes:

All values within table are in psi (kPa) unless otherwise indicated.

For 3-Way valve close-offs, use this chart to determine upper port (NC) and bottom port (NO).

Normally open close-off pressures are at 15 psi actuator pressure.

Normally closed close-off pressures are at 0 psi actuator pressure.

Globe Valve Close-off Pressures — Pneumatic High-Pressure

Valve Size in. (mm)	Spring Range			
	3 to 8 psi (21 to 55 kPa)		10 to 15 psi (69 to 103 kPa)	
	8" Actuator	12" Actuator	8" Actuator	12" Actuator
	Normally Open		Normally Closed	
2-1/2 (65)	200 (1378)	—	200 (1378)	—
3 (80)	200 (1378)	—	200 (1378)	—
4 (100)	—	200 (1378)	—	200 (1378)
5 (125)	—	200 (1378)	—	200 (1378)
6 (150)	—	200 (1378)	—	200 (1378)

Table Notes:

All values within table are in psi (kPa) unless otherwise indicated.

Control Valve Sizing and Selection

Close-off Pressures for Electronic Globe Valves

Valve Size		SAX NSR APC 371/373	Rack & Pinion SR APC 298, 299	SKD APC 274-276	SKB APC 289-291	SKC APC 292-294
in.	(mm)					
1/2	(15)	250 (1724)	250 (1724)	250 (1724)	250 (1724)	—
3/4	(20)	211 (1456)	211 (1456)	250 (1724)	250 (1724)	—
1	(25)	137 (945)	137 (945)	201 (1386)	250 (1724)	—
1-1/4	(32)	85 (586)	85 (586)	124 (855)	250 (1724)	—
1-1/2	(40)	55 (379)	55 (379)	80 (552)	250 (1724)	—
2	(50)	34 (235)	34 (235)	49 (338)	201 (1386)	—
2-1/2	(65)	26 (179)	26 (179)	38 (262)	153 (518)	—
3	(80)	17 (117)	17 (117)	25 (172)	101 (342)	—
4	(100)	—	—	—	—	65 (448)
5	(125)	—	—	—	—	42 (289)
6	(150)	—	—	—	—	29 (199)
1/2	(15)	250 (1724)	250 (1724)	250 (1724)	250 (1724)	—
3/4	(20)	250 (1724)	250 (1724)	250 (1724)	250 (1724)	—
1	(25)	159 (1097)	159 (1097)	203 (1400)	250 (1724)	—
1-1/4	(32)	92 (634)	92 (634)	117 (807)	250 (1724)	—
1-1/2	(40)	57 (393)	57 (393)	73 (503)	208 (1434)	—
2	(50)	35 (241)	35 (241)	44 (303)	126 (869)	—
2-1/2	(65)	26 (179)	26 (179)	34 (234)	97 (668)	—
3	(80)	17 (117)	17 (117)	22 (152)	63 (434)	—
4	(100)	—	—	—	—	39 (268)
5	(125)	—	—	—	—	25 (172)
6	(150)	—	—	—	—	17 (117)

Close-off Pressures for Electronic High-Pressure Globe Valves

Valve Size		Electro-Hydraulic 24 VAC	
		SKD	SKC
in.	(mm)	Normally Open	
2-1/2	(65)	200 (1378)	—
3	(80)	200 (1378)	—
4	(100)	—	200 (1378)
5	(125)	—	200 (1378)
6	(150)	—	200 (1378)
		Normally Closed	
2-1/2	(65)	200 (1378)	—
3	(80)	200 (1378)	—
4	(100)	—	200 (1378)
5	(125)	—	200 (1378)
6	(150)	—	200 (1378)

Table Notes:

All values within table are in psi (kPa) unless otherwise indicated.

Close-off Pressures for Electronic Ball Valves

2-Way Valve Body Part No.	Valve Size in.	Flow Rate Cv	Close Off psi
599-10300 / 599-10300S	1/2	0.4	200
599-10301 / 599-10301S		0.63	200
599-10302 / 599-10302S		1.0	200
599-10303 / 599-10303S		1.6	200
599-10304 / 599-10304S		2.5	200
599-10305 / 599-10305S		4.0	200
599-10306 / 599-10306S		6.3	200
599-10307* / 599-10307S*		10	200
599-10308 / 599-10308S		3/4	6.3	200
599-10309 / 599-10309S	10		200
599-10310 / 599-10310S	16		200
599-10311* / 599-10311S*	25		200
599-10312 / 599-10312S	1	10	200
599-10313 / 599-10313S		16	200
599-10314 / 599-10314S		25	200
599-10315 / 599-10315S		40	200
599-10316* / 599-10316S*		63	200
599-10317 / 599-10317S		1-1/4	16	200
599-10318 / 599-10318S	25		200
599-10319 / 599-10319S	40		200
599-10320 / 599-10320S	63		200
599-10321* / 599-10321S*	100		200
599-10322 / 599-10322S	1-1/2	25	200
599-10323 / 599-10323S		40	200
599-10324 / 599-10324S		63	200
599-10325 / 599-10325S		100	200
599-10326* / 599-10326S*		160	200
599-10327 / 599-10327S	2	40	200
599-10328 / 599-10328S		63	200
599-10329* / 599-10329S*		100	200
599-10330 / 599-10330S		160	200

* Denotes a full-port valve with no flow optimizer insert.

3-Way Valve Body Part No.	Valve Size in.	Flow Rate Cv	Close Off psi
599-10250	1/2	0.4	50
599-10251		0.63	50
599-10252		1.0	50
599-10253		2.5	50
599-10254		4.0	50
599-10255		10	50
599-10256		3/4	16	50
599-10257	1	10	50
599-10258		16	50
599-10259*		25	50
599-10260	1-1/4	16	40
599-10261		40	40
599-10262	1-1/2	16	40
599-10263		25	40
599-10264*		63	40
599-10265	2	25	40
599-10266*		40	40
599-10267		100	40

* Denotes a full-port valve with no flow optimizer insert.

Control Valve Sizing and Selection

✂ Flow Coefficients for 2-Way, Full-Port (no flow optimizer) Ball Valves

Valve Size in. (mm)	Valve Part No.	Effective (Installed) Cv (Kvs)							
		Supply Line Size in Inches (mm)							
		1/2 (13)	3/4 (20)	1 (25)	1-1/4 (32)	1-1/2 (38)	2 (51)	2-1/2 (63)	3 (76)
1/2 (15)	599-10307 or 599-10307S	10.0 (8.62)	6.94 (5.93)	6.19 (5.29)					
3/4 (20)	599-10311 or 599-10311S		25.00 (21.55)	18.66 (15.99)	15.35 (13.12)				
1 (25)	599-10316 or 599-10316S			63.00 (54.31)	39.78 (34.00)	33.56 (28.69)			
1-1/4 (30)	599-10321 or 599-10321S				100.00 (86.21)	69.19 (5.13)	51.45 (43.98)		
1-1/2 (40)	599-10326 or 599-10326S					160.00 (137.93)	93.80 (80.17)	76.34 (65.25)	
2 (50)	599-10329 or 599-10329S						100.00 (86.21)	94.30 (80.60)	86.12 (73.61)

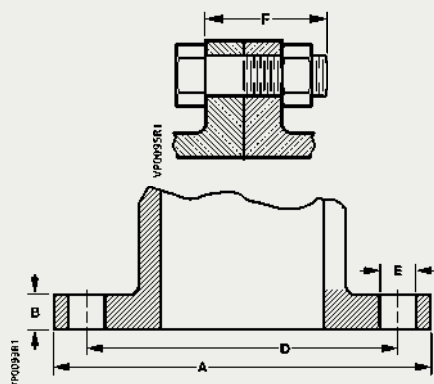
✂ Flow Coefficients for 3-Way, Full-Port (no flow optimizer) Ball Valves

Valve Size in. (mm)	Ball Size in. (mm)	Valve Part No.	Effective (Installed) Cv (Kvs)							
			Supply Line Size in Inches (mm)							
			1/2 (13)	3/4 (20)	1 (25)	1-1/4 (32)	1-1/2 (38)	2 (51)	2-1/2 (63)	3 (76)
1/2 (15)	3/4 (20)	599-10255	10.0 (8.62)	6.94 (5.93)	6.19 (5.29)					
3/4 (20)	3/4 (20)	599-10256		16.00 (13.79)	13.9 (11.98)	12.4 (10.69)				
1 (25)	1-1/4 (30)	599-10259			25.00 (21.55)	22.5 (19.4)	21.2 (18.27)			
1-1/4 (30)	1-1/4 (30)	599-10261				40.00 (34.48)	36.9 (31.81)	33.3 (28.70)		
1-1/2 (40)	1-1/2 (40)	599-10264					63.00 (54.31)	55.3 (47.67)	51.00 (43.96)	
2 (50)	2 (50)	599-10267						100 (86.21)	94.3 (81.29)	86.1 (74.23)

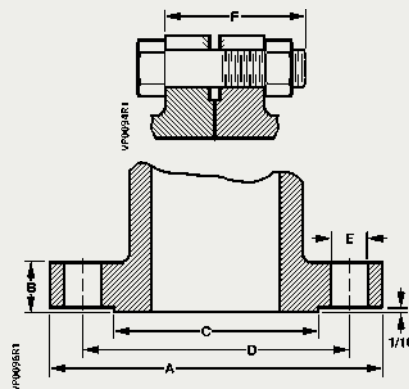
Key Valve may be oversized Optimal valve size Valve may be undersized

Dimensions for Cast Iron Flanges

2-1/2 to 8-inch Cast Iron Flange Dimensions (as defined by ANSI standard B16.1)



ANSI Class 125.



ANSI Class 250.

ANSI Class 125

Nominal Pipe Size	Flanges		Drilling		Bolting		Length of Machine Bolts
	Flange Diameter	Flange Thickness	Diameter of Bolt Circle	Diameter of Bolt Holes	Number of Bolts	Diameter of Bolts	
	A	B	D	E			F
2-1/2"	7"	11/16"	5-1/2"	3/4"	4	5/8"	2-1/2"
3"	7-1/2"	3/4"	6"	3/4"	4	5/8"	2-1/2"
4"	9"	15/16"	7-1/2"	3/4"	8	5/8"	3"
5"	10"	15/16"	8-1/2"	7/8"	8	3/4"	3"
6"	11"	1"	9-1/2"	7/8"	8	3/4"	3-1/4"
8"	13-1/2"	1-1/8"	11-3/4"	7/8"	8	7/8"	3-1/2"

ANSI Class 250

Nominal Pipe Size	Flanges			Drilling		Bolting		Length of Machine Bolts
	Flange Diameter	Flange Thickness	Diameter of Raised Face	Diameter of Bolt Circle	Diameter of Bolt Holes	Number of Bolts	Diameter of Bolts	
	A	B	C	D	E			F
2-1/2"	7-1/2"	1"	4-15/16"	5-7/8"	7/8"	8	3/4"	3-1/4"
3"	8-1/4"	1-1/8"	5-11/16"	6-5/8"	7/8"	8	3/4"	3-1/5"
4"	10"	1-1/4"	6-15/16"	7-7/8"	7/8"	8	3/4"	3-3/4"
5"	11"	1-3/8"	8-5/16"	9-1/4"	7/8"	8	3/4"	4"
6"	12-1/2"	1-7/16"	9-11/16"	10-5/8"	7/8"	12	3/4"	4"
8"	15"	1-5/8"	11-15/16"	13"	1"	12	7/8"	4-1/2"

Control Valve Sizing and Selection

Steam Saturation Pressure / Temperature Table

Vacuum Inches Hg	Absolute Pressure psi	Temperature degrees Fahrenheit
29.74	0.0886	32
29.67	0.1217	40
29.56	0.1780	50
29.40	0.2562	60
29.18	0.3626	70
28.89	0.505	80
28.50	0.696	90
28.00	0.946	100.00
27.88	1	101.83
25.85	2	126.15
23.81	3	141.52
21.78	4	153.01
19.74	5	162.28
17.70	6	170.06
15.67	7	176.85
13.63	8	182.86
11.60	9	188.27
9.56	10	193.22
7.52	11	197.75
5.49	12	201.96
3.45	13	205.87
1.42	14	209.55

Gauge Pressure psi	Absolute Pressure psi	Temperature degrees Fahrenheit
0.0	14.70	212.0
0.3	15	213.0
1.3	16	216.3
2.3	17	219.4
3.3	18	222.4
4.3	19	225.2
5.3	20	228.0
6.3	21	230.6
7.3	22	233.1
8.3	23	235.5
9.3	24	237.8
10.3	25	240.1
11.3	26	242.2
12.3	27	244.4
13.3	28	246.4
14.3	29	248.4
15.3	30	250.3
16.3	31	252.2
17.3	32	254.1
18.3	33	255.8
19.3	34	257.6
20.3	35	259.3
21.3	36	261.0
22.3	37	262.6
23.3	38	264.2
24.3	39	265.8
25.3	40	267.3
26.3	41	268.7
27.3	42	270.2
28.3	43	271.7
29.3	44	273.1

Gauge Pressure psi	Absolute Pressure psi	Temperature degrees Fahrenheit
30.3	45	274.5
31.3	46	275.8
32.3	47	277.2
33.3	48	278.5
34.3	49	279.8
35.3	50	281.0
36.3	51	282.3
37.3	52	283.5
38.3	53	284.7
39.3	54	285.9
40.3	55	287.1
41.3	56	288.2
42.3	57	289.4
43.3	58	290.5
44.3	59	291.6
45.3	60	292.7
46.3	61	293.8
47.3	62	294.9
48.3	63	295.9
49.3	64	297.0
50.3	65	298.0
51.3	66	299.0
52.3	67	300.0
53.3	68	301.0
54.3	69	302.0
55.3	70	302.9
56.3	71	303.9
57.3	72	304.8
58.3	73	305.8
59.3	74	306.7
60.3	75	307.6
61.3	76	308.5
62.3	77	309.4
63.3	78	310.3
64.3	79	311.2
65.3	80	312.0
66.3	81	312.9
67.3	82	313.8
68.3	83	314.6
69.3	84	315.4
70.3	85	316.3
71.6	86	317.1
72.3	87	317.9
73.3	88	318.7
74.3	89	319.5
75.3	90	320.3
76.3	91	321.1
77.3	92	321.8
78.3	93	322.6
79.3	94	323.4
80.3	95	324.1
81.3	96	324.9
82.3	97	325.6
83.3	98	326.4
84.3	99	327.1
85.3	100	327.8
87.3	102	329.3
89.3	104	330.7
91.3	106	332.0
93.3	108	333.4
95.3	110	334.8

Gauge Pressure psi	Absolute Pressure psi	Temperature degrees Fahrenheit
97.3	112	336.1
99.3	114	337.4
101.3	116	338.7
103.3	118	340.0
105.3	120	341.3
107.3	122	342.5
109.3	124	343.8
111.3	126	345.0
113.3	128	346.2
115.3	130	347.4
117.3	132	348.5
119.3	134	349.7
121.3	136	350.8
123.3	138	352.0
125.3	140	353.1
127.3	142	354.2
129.3	144	355.3
131.3	146	356.3
133.3	148	357.4
135.3	150	358.5
137.3	152	359.5
139.3	154	360.5
141.3	156	361.6
143.3	158	362.6
145.3	160	363.6
147.3	162	364.6
149.3	164	365.6
151.3	166	366.5
153.3	168	367.5
155.3	170	368.5
157.3	172	369.4
159.3	174	370.4
161.3	175	371.3
163.3	178	372.2
165.3	180	373.1
167.3	182	374.0
169.3	184	374.9
171.3	186	375.8
173.3	188	376.7
175.3	190	377.6
177.3	192	378.5
179.3	194	379.3
181.3	196	380.2
183.3	198	381.0
185.3	200	381.9
190.3	205	384.0
195.3	210	386.0
200.3	215	388.0
205.3	220	389.9
210.3	225	391.9
215.3	230	393.8
220.3	235	395.6
225.3	240	397.4
230.3	245	399.3
235.3	250	401.1
245.3	260	404.5
255.3	270	407.9
265.3	280	411.2
275.3	290	414.4
285.3	300	417.5

Butterfly Valve Selection and Sizing

Introduction

When selecting a butterfly valve for water applications you must first determine the requirements of the valve assembly. The first question to ask is, "Will the valve be used for "Isolation" or "Proportional Control" of the fluid?" and "Does the application require a 2-way or 3-way assembly?"

2-way and 3-way Isolation Valves

When selecting a valve for isolation purposes, it is seldom necessary to calculate flow requirements beyond the published Cvs (flow coefficients)* of the valve. These valves are typically line size and require the lowest pressure drop available in the full open position. It may be possible to supply a valve smaller than the actual line size and still obtain a low-pressure drop. However, the cost of reducing flanges will typically offset any savings incurred by reducing the valve size. The 2- and 3-way Flow Coefficient charts, below and on I-16, provide Cv values for Siemens butterfly valves.

2-way and 3-way Proportional Control Valves

Control Valves are the most important element of a fluid handling system and proper selection of these valves is crucial for efficient operation of the process. When sizing butterfly valves for control, it is imperative to have certain requirements of the system.

You must have:

- **Maximum flow requirement:** This would be equivalent to the design flow and provided or converted to gallons per minute.
- **Maximum pressure drop allowed:** The Consulting Engineer usually provides this factor and are typically 3 to 5 psi max. However, the pressure drop should never exceed one half of the inlet pressure.

Without these two factors, selection of a control valve would be simply a guess.

2-way Flow Coefficients (Cvs)

Size	Degrees Open								
	10°	20°	30°	40°	50°	60°	70°	80°	90°
2"	0	1.3	5	14	26	40	52	59	60
2-1/2"	0	1.4	6	21	44	74	107	138	151
3"	0.7	1.5	8	29	67	115	175	234	262
4"	1.7	15	48	107	196	318	463	589	647
5"	3	32	99	206	362	579	832	1045	1141
6"	4	47	145	295	510	810	1160	1450	1580
8"	6	84	239	450	751	1190	1754	2385	2892
10"	9	133	360	652	1064	1683	2524	3596	4593
12"	12	192	509	899	1449	2288	3470	5085	6682
14"	75	340	770	1400	2200	3400	5600	7900	10000
16"	100	440	1000	1800	2800	4500	7400	10800	13000
18"	130	570	1300	2300	3600	5800	9600	15000	18000
20"	150	710	1600	2900	4600	7200	12000	18400	22000

Table Note:

Flow Coefficients (Cv) = The amount of water in gallons per minute, at 60°F that will pass through a given orifice with a one pound pressure drop.

Butterfly Valve Selection and Sizing

3- way Flow Coefficients (Cvs)

	Degrees Open									
	0°	10°	20°	30°	40°	50°	60°	70°	80°	90°
	90°	80°	70°	60°	50°	40°	30°	20°	10°	0°
2"	54	53	49	43	38	40	44	52	57	58
2-1/2"	114	108	93	74	52	64	78	102	126	135
3"	188	178	148	114	55	95	120	165	210	229
4"	385	374	348	313	150	295	345	419	482	511
5"	642	627	600	563	270	549	630	740	829	870
6"	935	909	867	809	483	780	895	1051	1180	1242
8"	1688	1573	1424	1271	796	1175	1367	1661	1994	2254
10"	2667	2430	2132	1856	1142	1685	1971	2439	3046	3570
12"	3938	3531	3019	2579	1629	2312	2715	3401	4368	5240
14"	5109	4825	4416	3719	2433	3514	3992	5259	6342	7173
16"	6735	6462	5832	4904	3213	4498	5265	6943	8567	9410
18"	9060	8724	7650	6372	4433	5778	6815	9056	11695	12785
20"	11229	10799	9545	7901	5619	7339	8449	11309	14423	15770

Table Notes:

Three-way valve assemblies Cvs are corrected from published two-way Cvs to account for line losses generated by the tee, and are calculated values only. The pipe friction losses are a function of fluid velocity through the pipe and the three-way Cvs listed are apparent for full flow through the pipe. Operation at less than full capacity (lower velocity) will increase the actual Cvs

Sizing Example

With this information and assuming the media is water or a similar media (glycol/water mix), a control valve can be properly sized for the application by following these steps:

1. **Calculate the required Cv:** Using the following formula and the information required above, you could calculate the flow coefficient (Cv) of the control valve.

$$Cv = \frac{\text{GPM}}{\sqrt{\Delta P}}$$

Whereas: GPM = The maximum flow requirement
P = The max. pressure drop (5 psi)

Example

The line size is 6" and the required flow is 600 GPM with a maximum pressure drop of 5 psi. The square root of 5 is equal to 2.236. When divided into 600, the required Cv for this application is: 268.336.

2. **Select your valve size:** Using the Flow Coefficients (Cvs), select the appropriate valve size. If your required Cv is in between valve sizes, choose the larger size valve. When selecting a 3-way assembly, the Cv of the run should be selected.

Example

The line size is 6" and the calculated required Cv is 268.336. The valve selected is a 4" with a rated Cv of 647.

Butterfly valves are high capacity valves and require very little pressure drop to control flow, which allows for reduction from the line size when sizing valves. This pipe reduction affects the flow characteristics and will reduce the effective Cv of the valve. This phenomenon is known as the piping geometry factor (Fp), which brings us to the final step in valves sizing.

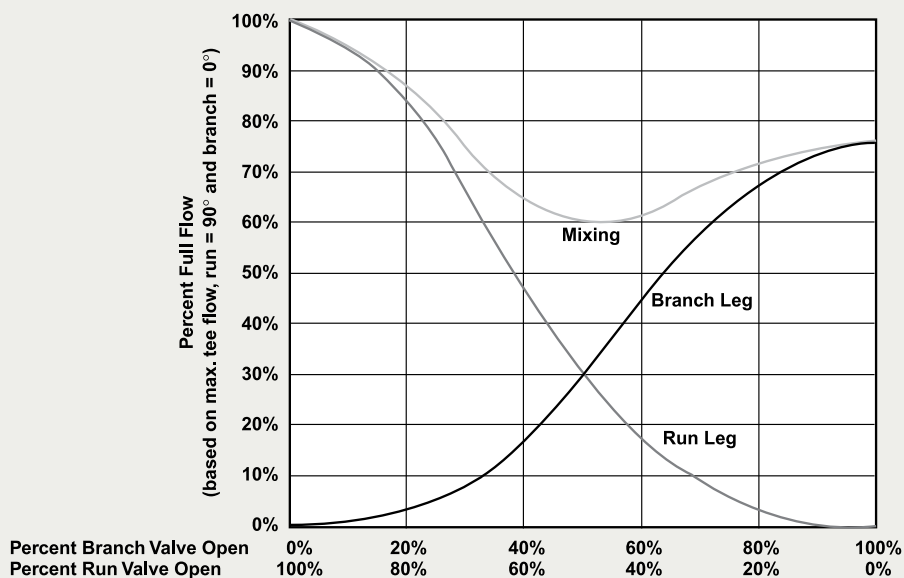
3. Piping Geometry Factor: Reducing pipe sizes for installation of a smaller than pipe size valves will reduce the effective Cv of the valve. The greater the pipe reduction, the greater loss of Cv. Using the Adjusted Cvs for Piping Geometry Factors chart, verify that the corrected Cv, for the valve size selected, meets or exceeds the required Cv calculated in step 2.

Note: 3-way Cvs have already been adjusted.

Adjusted Cvs for Piping Geometry Factors

Size	Pipe Size													
	2-1/2"	3"	4"	5"	6"	8"	10"	12"	14"	16"	18"	20"	22"	24"
2"	47	38												
2-1/2"		125	79											
3"			189	149										
4"				505	408									
5"					947	685								
6"						1138	916							
8"							2256	1822						
10"								3812	3123					
12"									5747	4811				
14"										8900	7600			
16"											11830	10140		
18"												16560	14580	
20"													20460	18260

6-inch 3-way Assembly at Constant Valve Differential Pressure (corrected for tee loss)



Terminology

Absolute Pressure — Absolute pressure is referenced to a theoretical perfect vacuum. At standard atmospheric pressure, absolute pressure may be calculated by adding 14.7 psi to the observed gauge pressure.

Ambient Temperature Rating — Ambient temperature refers to the temperature of the air surrounding the device.

Angled Body — A two way valve body that has connection points at right angles to each other.

Butterfly Valve — A valve utilizing a disk rotating on a shaft to provide control and close off. Alternately, a check valve utilizing two semi-circular hinged plates to permit flow in one direction only.

Booster Pump — A pump used in secondary loops of hydronic systems to provide additional flow for that section of the system.

Cavitation — The forming and imploding of cavities in a liquid due to rapid pressure changes, producing shock waves and cyclic stresses that can lead to undesirable noise and/or surface fatigue damage.

Close-off Rating — The maximum differential pressure, inlet to outlet, that a valve will close off against while fluid is flowing to a given leakage rate (tightness) criteria. In a stroke valve, the primary determinants are the force available from the actuator, the diameter of the plug, and the valve design. In a rotary valve, such as a ball valve, the primary determinant is typically the seal design as the torque of the actuator has little effect.

Close-off Rating of Three Way Valves — The maximum pressure difference between either of the two inlet ports and the outlet port for mixing valves, or the pressure difference between the inlet port and either of the two outlet ports for diverting valves.

Contoured Plug — In a globe valve, a contoured plug uses its peripheral shape to affect a desired flow characteristic. This is typically linear, equal percentage, or a modification of these. These are differentiated from V-plugs, basket plugs, cage plugs, and the like by the fact that the media flows around the plug and not through it.

Controlled Medium — The controlled medium is the material that is being conveyed and controlled through the device. In typical HVAC systems this includes air, water, and/or steam. It may also include fuel oil, natural gas, refrigerants, etc.

Critical Pressure Drop — The maximum pressure drop across a valve at which gasses and vapors will follow standard flow calculations. Pressure drops greater than this produced what is known as “choked flow” and sizing criteria will no longer accurately predict the volumetric flow.

Design Conditions — The assumed environmental variables that define the performance limits required of a HVAC system. This may include maximum and minimum outside air temperatures, expected solar and other thermal loads, occupancy levels, etc.

Direction of Flow — The flow of a controlled fluid through the valve is usually represented by an arrow on the valve body. If the flow of the fluid goes against the indicated direction, the disk can slam into the seat as it approaches the closed position. The result is excessive wear, hammering, and oscillations. Additionally the actuator must work harder to reopen the closed valve since it must overcome the pressure exerted by the fluid on top of the disc, rather than have the fluid assist in opening the valve by exerting pressure under the disc.

Diverting Valve — A three way valve that has one inlet and two outlets. Water entering the inlet port is diverted to either of the two outlet ports in any proportion desired by moving the valve stem. These valves are not commonly used in modern control loops.

End Fitting — The part of the valve body that connects to the piping. Union, screwed, flared, sweat and flanged are typical examples of end fittings.

Equalinear Flow — Valve Cv vs travel position is approximately mid-way between that of linear and equal percentage.

Equal Percentage Flow Characteristic — An equal percentage flow characteristic is one in which a flow rate change is proportional to the flow rate just prior to the change in valve position. Equal increments of valve travel result in equal percentage changes to the existing flow rate. Flow capacity increases exponentially with valve stem travel.

Flanged End Connections — A valve that connects to a pipe by bolting a flange on the valve to a flange on the pipe. Flanged connections are often used on larger valves, typically over 2”.

Flashing — In the context of control valves, flashing is related to cavitation, but the mechanics are slightly different. Flashing occurs when a liquid’s environment causes a rapid phase change from liquid to gaseous phases. With flashing, the volume of vapor is much greater than the volume of liquid, and rapidly accelerates the remaining liquid droplets, which forcefully impact the mechanical components of the valve and pipes, causing damage. This situation can be calculated by knowing the pressures and temperatures involved, as well as the vapor pressure of the liquid at those temperatures. Cavitation often occurs in environments that have not yet reached the point of flashing, due to fluid flow dynamics and velocities.

Flow Characteristic — The relation between volumetric flow and valve position.

Flow Coefficient — The flow coefficient is the constant that relates volumetric flow, differential pressure, and specific gravity of a fluid through a metering device. C_v is the flow coefficient in imperial units. For liquids through a standard orifice it is calculated to be equal to the volumetric flow in gallons per minute times the square root of the specific gravity divided by the square root of the differential pressure in psi. For water systems the specific gravity can be assumed to be 1, therefore it is often simplified to GPM divided by the square root of ΔP . For HVAC applications, a control valve closely follows this orifice model.

Flow Rate — The volume of media conveyed per unit of time. Typical US units are gallons per minute (GPM) for water and pounds per hour (#/hr) for steam.

FPM — Feet per minute.

Full Port — Maximum flow capacity possible for a particular ball valve orifice. In a ball valve, this typically refers to a valve with no flow characterizer or restrictor.

Gauge Pressure — Pounds per square inch (PSI) as read on a gauge face. This differs from Absolute Pressure in that it is relative to the current ambient pressure, not a fixed reference such as absolute vacuum. Gauge pressure, therefore, uses the local ambient pressure as its zero point (14.7 psia at sea level and standard conditions).

GPM — Gallons per minute.

Incompressible — Description of liquids, because their change in volume due to pressure is negligible.

Laminar Flow — Also known as viscous or streamlined flow. A non-turbulent flow regime in which the stream filaments glide along the pipe axially with essentially no transverse mixing. This is usually associated with viscous liquids. The area inside a valve is typically turbulent — the opposite of laminar.

Load — A demand on the mechanical equipment in an HVAC system.

Load Change — A change in the building cooling or heating requirements as a result of air temperature variations, caused by wind, occupants, lights, machinery, solar effect, etc.

Mixing Valve — A three way valve having two inlets and one outlet. The proportion of fluid entering each of the two inlets can be varied by moving the valve stem. These valves are typically not suitable for diverting applications.

Normally Closed (N.C.) — Condition of the valve upon loss of power or control signal to the actuator. Also as relates to a stroke valve body that has been manufactured as a N.C. valve body. In stroke valves, this is typically the valve's state when the stem is in the "up" position.

Normally Open (N.O.) — Condition of the valve upon loss of power or control signal to the actuator. Also as relates to a stroke valve body that has been manufactured as a N.O. valve body. In stroke valves, this is typically the valve's state when the stem is in the "up" position.

NPT — A pipe thread standard describing tapered pipe threads, common in North America (National Pipe thread – Tapered).

Packing — Seals used around the valve stem so that the controlled medium will not leak outside the valve.

Port — Opening (inlet or outlet) that allows flow through a valve body.

Positive Positioner — A device that eliminates the actuator shaft positioning error due to load on the valve body. This device is closed loop, and applies the necessary force required to positively position the valve stem to a referenced (commanded) position.

Pressure Drop — The difference in pressure between the inlet and outlet ports of the control valve, commonly referred to as ΔP (delta P).

PSI — Pounds per square inch.

PSIA — Pounds per square inch absolute.
(Also see Absolute Pressure.)

PSIG — Pounds per square inch gauge.
(Also see Gauge Pressure.)

Rangeability — The ratio of the maximum controllable flow to the minimum controllable flow. As an example, a valve with a rangeability of 50 to 1 having a total flow capacity of 100 GPM, fully open, will be able to control flow accurately down to 2 GPM.

Reduced port — A smaller flow capacity that is possible for the particular end fitting.

Reducer — A pipe fitting that is used to couple a pipe of one size to a pipe of a different size. An increaser may be used when the pipe sizes are reversed.

Saturated Steam — Steam which is at its lowest possible temperature at a given pressure without a phase change to liquid.

Terminology

Screwed- end connection — A valve body with a threaded pipe connection, usually female NPT threads, in valve bodies through 2”.

Seat — The stationary portion of the valve which seals the valve, thus prevents flow, when in full contact with the movable ball, plug or disc.

Static Pressure rating — The maximum pressure that the valve body will tolerate per a defined standard. The standards may define the pressure at temperatures other than that observed, so one must understand the standard to understand the actual pressure rating for the given application. Common pressure standards for HVAC valves in North America include ANSI (125, 250) and WOG (300, 600), but others such as CWP are sometimes used.

Stem — The cylindrical shaft of a control valve moved by an actuator, to which the throttling plug, ball or wafer disc is attached.

Stroke — The total distance that a linear valve stem travels or moves. It is also known as lift.

Superheated Steam — Steam at a temperature higher than saturation temperature at the given pressure.

System Pressure Drop — The sum of all pressure drops in a Hydronic system.

Three Way Valve — A valve body with one inlet and two outlets or two inlets and one outlet.

Tight Shut-off — A valve body with no flow or leakage in a closed position. This is relative to the defined tightness of the seal, usually defined by a measurement standard. The most common standard is ANSI/FCI 70 -2, which classifies “tightness” from Class I to Class VI. Class I is non-defined leakage, Class II through Class IV are descriptive based on leakage as a percent of total capacity, and Class V and Class VI are descriptive based on leakage as a finite rate per inch of orifice diameter. Since the criteria and testing method for Class II – IV are significantly different than Class V – VI, these groups cannot be directly compared.

Trim — All parts of the valve which are in contact with the flowing media, but are not part of the valve shell or casting. Ball, stem, disc, plug, and seat are all considered trim components.

Turndown — Ratio between the maximum usable flow and the minimum controllable flow. Turndown is usually less than Rangeability, and cannot be applied to a valve exclusive of the specific application it is placed in, It is a function of the valve, actuator, piping, coil, and all other system parameters that determine the maximum usable flow. Since the valve only has reasonable control over one part of the ratio, the minimum controllable flow, this is not a good criteria for evaluating valve quality.

Two-way Valve — A valve body with a single flow path — one inlet and one outlet.

Valve — A control device which will vary the rate of flow of a medium such as water or steam.

Valve Actuator — A device that uses a source of power to position or operate a valve, sometimes also called a valve operator. The source of power may be anything, examples include manual (via a hand wheel), pneumatic, or electronic.

Valve Body — The portion of the valve casting through which a controlled medium flows.

Valve Disc — The movable part of a butterfly valve which makes contact with the seat when the valve is closed.

Valve Flow Characteristic — The relationship between the stem travel, expressed in percent of travel, and the flow of the fluid through the valve, expressed in percent of full flow or gallons per minute.

Valve Guide — The part of a globe valve throttling plug that keeps the disc aligned with the valve seat.

Velocity — The rate of movement for air or water, distance per unit time.

Viscous — Having a relatively high resistance to flow.

Volumetric Air Flow — Area x Velocity.

Wire Draw — The process where high velocity media erodes a path across the mechanical components of a valve. This typically occurs in a stroke valve when the valve is operated primarily with the plug very close to the seat, causing very high velocities of media across the plug and seat. The damage appears as if a wire has been drawn across the components. This differs from the other typical valve mechanical damage modes – cavitation and flashing – where the surface appears to have been pulled away as or struck by very small particles, respectively.

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