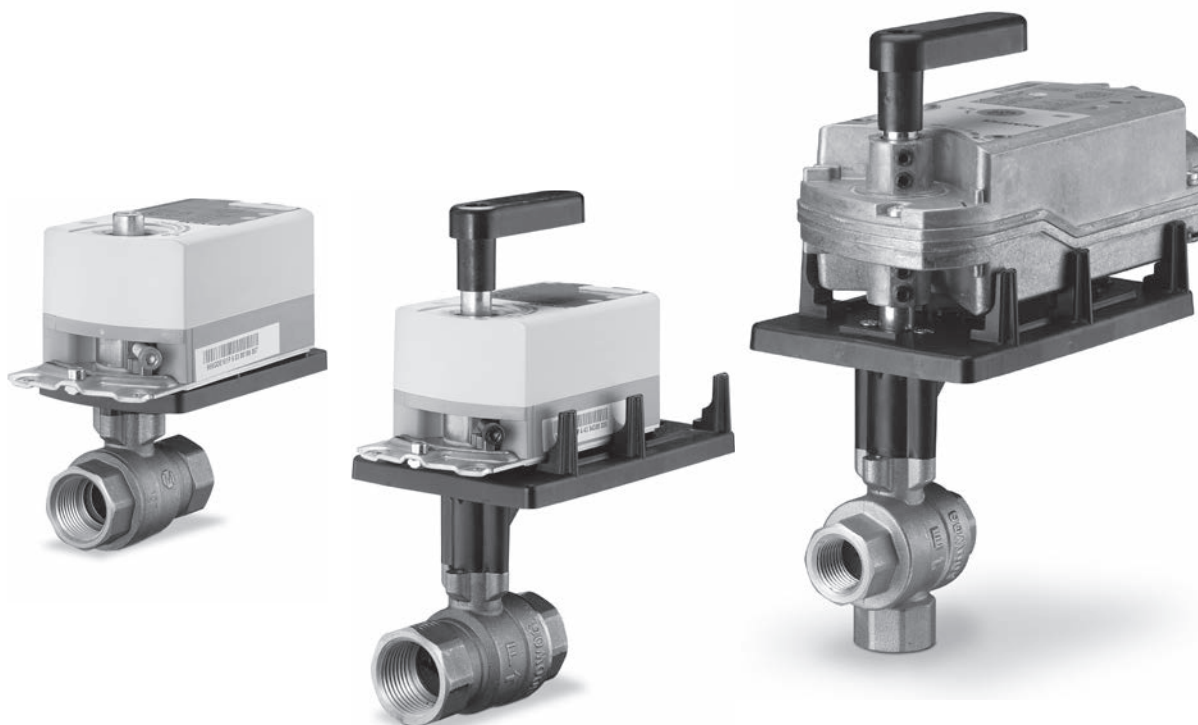


599 Series Two-Way and Three-Way Ball Valves



A-209

Valves

Siemens 599 Series characterized ball valves and valve actuators deliver comprehensive control solutions. Available in spring return, non-spring return, 2-position, floating, and proportional control to suit a wide variety of control specifications and strategies, Siemens electronic actuators are known for their reliability. They require no special programming or tools, saving on installation time and delivering immediate results.

Designed to provide excellent equal percentage flow control and so much more:

- Two- and three-way valves available with chrome-plated brass ball and brass stem or stainless steel ball and stem to withstand harsh conditions
- Equal percentage flow characteristic
- 0.4 to 160 Cv range enables better sizing of valves to the job requirements
- 200 PSI close-off
- 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
- Universal actuator mounting bracket with standoffs provides a thermal barrier between the actuator and the mounting plate
- For tight spaces, a low profile bracket holds a GDE/GLB Series Non-Spring Return Actuator or GQD Series Spring Return Actuator to a 1/2- or 3/4-inch Two-Way Ball Valve

For more information on Electronic Damper Actuators, refer to Section B.





Siemens offers a 5-year warranty on valves and actuators.

A-210



Get the job done with ball valves

With line sizes ranging from 1/2" to 2" size (Cv ranging from 0.4 to 250), Siemens ball valves and valve actuators deliver comprehensive control solutions. We have the highest close-off in the industry and the largest selection of valve trim finishes for chrome plated brass and 316 stainless steel. Our premium grade materials and construction includes a better design blowout proof stem that withstands high pressure and a double O-ring stem packing.

Visit usa.siemens.com/valves to learn more.



75+ Years
Innovating
control valves



Fast and Easy
Product selection



Quality
Siemens standards



100%
Factory tested



Up to 5 Million
Repositions
for longer life



Up to 100 Thousand
Full strokes

SIEMENS

Two-Way Ball Valves

24 Vac, On/Off, Floating or Proportional Control

1/2 to 2-inch

Chrome-plated Ball & Brass Stem or Stainless Steel Ball & Stem

Spring Return or Non-Spring Return



2-Way Ball Valve and Actuator
with Low Profile Bracket



2-Way Ball Valve and Actuator
with Standard Bracket

A-211

Description

Designed to provide excellent equal percentage flow control, two-way 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 actuator.

Features

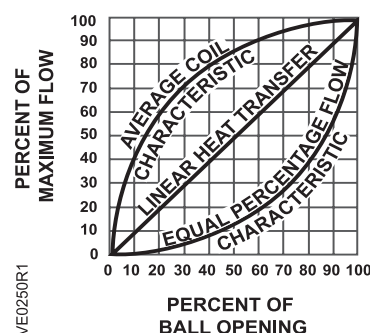
- Universal mounting plate accommodates different actuator sizes
- Variety of ball sizes and flow coefficients minimizes the need for downsizing pipes and accurately controls fluid through coils
- Industry leading close-off
- Actuator and plate can be rotated to facilitate installation and wiring
- Standoffs and mounting plate provide a thermal barrier between the actuator and valve
- Low profile bracket holds a GQD Series Spring Return or GDE/GLB Series Non-Spring Return Actuator to a 1/2- or 3/4-inch Two-Way Ball Valve in tight spaces
- 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 control
- Spring return or non-spring return
- On/off with dual auxiliary switches available on full port valves with stainless steel ball and stem

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.

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



Specifications

Pressure ClassANSI 250 (600 WOG)

Static Pressure/Temp. 360 psig/250°F

Controlled Medium Water, Glycol Solutions up to 50%

Media Temperature 0° to 250°F (-18° to 121°C)

Materials

Body Forged 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 EPDM O-rings

End Connections Internal NPT

Angle of Rotation 0 to 90 Degrees

A-212

Valves

Two-Way Ball Valve Body Product Ordering

Valve Size in. (mm)	Flow Rate Cv (Kvs)	Chrome-Plated Brass Ball and Stem Part No.	Stainless Steel Ball and Stem Part No.
1/2 (15)	0.4 (0.34)	599-10300	599-10300S
	0.63 (0.54)	599-10301	599-10301S
	1.0 (0.9)	599-10302	599-10302S
	1.6 (1.4)	599-10303	599-10303S
	2.5 (2.2)	599-10304	599-10304S
	4 (3.4)	599-10305	599-10305S
	6.3 (5.4)	599-10306	599-10306S
	10 (8.6)	599-10307*	599-10307S*
3/4 (20)	6.3 (5.4)	599-10308	599-10308S
	10 (8.6)	599-10309	599-10309S
	16 (14)	599-10310	599-10310S
	25 (22)	599-10311*	599-10311S*
1 (25)	10 (8.6)	599-10312	599-10312S
	16 (14)	599-10313	599-10313S
	25 (22)	599-10314	599-10314S
	40 (34)	599-10315	599-10315S
	63 (54)	599-10316*	599-10316S*
1-1/4 (32)	16 (14)	599-10317	599-10317S
	25 (22)	599-10318	599-10318S
	40 (34)	599-10319	599-10319S
	63 (54)	599-10320	599-10320S
	100 (90)	599-10321*	599-10321S*
1-1/2 (40)	25 (22)	599-10322	599-10322S
	40 (34)	599-10323	599-10323S
	63 (54)	599-10324	599-10324S
	100 (90)	599-10325	599-10325S
	160 (140)	599-10326*	599-10326S*
2 (50)	40 (34)	599-10327	599-10327S
	63 (54)	599-10328	599-10328S
	100 (90)	599-10329*	599-10329S*
	160 (140)	599-10330*	599-10330S*

Ordering Notes:

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

Two-Way Ball Valve Actuator Product Ordering

Description			Part No.	Actuator Prefix Code
	Electronic	Floating, Fail-in-place	GDE131.1P	171A
		Floating, Fail-in-place	GLB131.1P	171B
		0 to 10 Vdc, Fail-in-place	GDE161.1P	171C
		0 to 10 Vdc, Fail-in-place	GLB161.1P	171D
	Electronic	2-Position, Fail-safe, Normally Open	GMA121.1P	171E
		Floating, Fail-safe, Normally Open	GMA131.1P	171F
		0 to 10 Vdc, Fail-safe, Normally Open	GMA161.1P	171G
	Electronic	2-Position, Fail-safe, Normally Open	GQD121.1P	171H
		Floating, Fail-safe, Normally Open	GQD131.1P	171J
		2 to 10 Vdc, Fail-safe, Normally Open	GQD151.1P	171K
		120V, 2-Position, Fail-safe, Normally Open	GQD221.1U	171L
	Electronic	120V, 2-Position, Fail-safe, Normally Open	GMA221.1U	171M
	Electronic	2-Position, Fail-safe, Normally Open, Dual Auxiliary Switches	GQD126.1P	171N
	Electronic	2-Position, Fail-safe, Normally Open, Dual Auxiliary Switches	GMA126.1P	171P
		2-Position, Fail-safe, Normally Closed	GMA121.1P	172E
		0 to 10 Vdc, Fail-safe, Normally Closed	GMA161.1P	172G
	Electronic	2-position, Fail-safe, Normally Closed	GQD121.1P	172H
		Floating, Fail-safe, Normally Closed	GQD131.1P	172J
		2 to 10 Vdc, Fail-safe, Normally Closed	GQD151.1P	172K
		120V, 2-Position, Fail-safe, Normally Closed	GQD221.1U	172L
	Electronic	120V, 2-Position, Fail-safe, Normally Closed	GMA221.1U	172M
	Electronic	2-position, Fail-Safe, Normally Closed, Dual Auxiliary Switches	GQD126.1P	172N
	Electronic	2-position, Fail-Safe, Normally Closed, Dual Auxiliary Switches	GMA126.1P	172P

Ordering Notes:

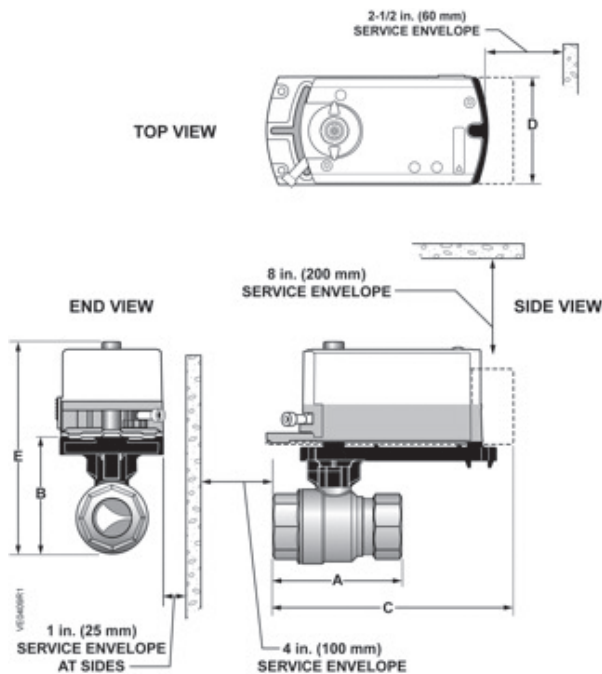
*When ordered as an assembly, the actuator is provided with 3-foot (.9 m) wires.
Actuator used in assemblies having prefix 171A-D is provided with conduit adapter

A-213

Valves

Dimensions and Weights

1/2 & 3/4-inch Two-Way Ball Valves Dimensions with Service Envelope

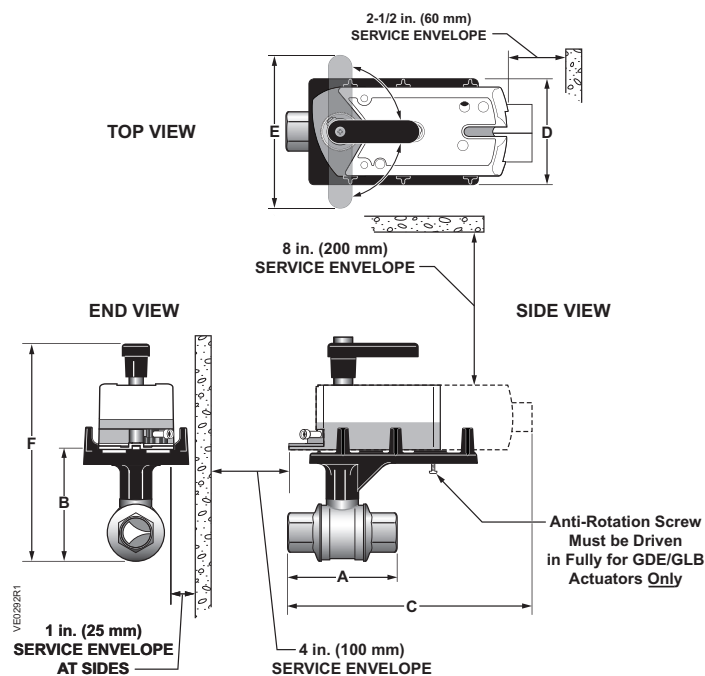


Dimensions shown in inches (mm)

Line Size in. (mm)	Cv Range	A Length	B Height	C Length Actuator Codes		D Width	E Height	Valve and Bracket Weight lbs (kg)
				GDE	GQD			
				171A-D	171H, J, K, L, N			
1/2 (15)	0.4 to 10	2-7/16 (61)	2-1/4 (57)	5-3/4 (146)	5-1/4 (133)	2-3/4 (70)	4-13/16 (123)	1 (0.45)
3/4 (20)	6.3 to 25	2-3/4 (70)	2-5/8 (67)	6 (153)	5-3/8 (136)		5-1/4 (133)	1.3 (0.60)

Dimensions and Weights

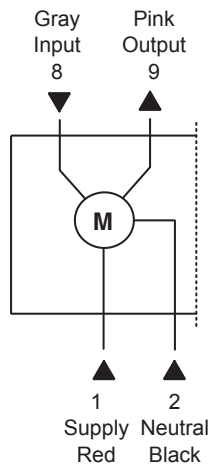
1 to 2-inch Two-Way Ball Valves Dimensions with Service Envelope



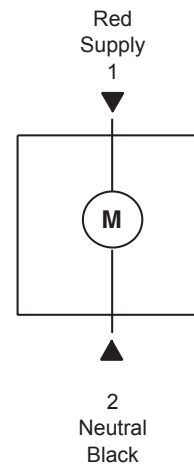
Dimensions shown in inches (mm)

Line Size in. (mm)	Cv Range	A Length	C Length * Actuator Codes			F Height	Valve and Bracket Weight lbs (kg)
			171A-D	171H, J, K, L, N	171E, G, M, P 172E, G, M, P Fail-Safe		
			GDE/GLB	GQD	GMA		
1 (25)	10	3 (77)	6-11/16 (170)	—	8 (203)	8 (203)	1.6 (0.73)
	16, 40, 63	3-1/4 (82)	6-11/16 (170)	—	8-3/8 (213)	8-5/16 (212)	1.8 (0.82)
	25	3-7/8 (98)	7 (178)	—	8-11/16 (221)	8-13/16 (223)	1.8 (0.82)
1-1/4 (32)	16	3-3/8 (86)	6-11/16 (170)	—	8-7/16 (214)	8-3/8 (213)	2.0 (0.91)
	25 to 100	3-11/16 (94)	6-15/16 (176)	—	8-11/16 (221)	8-13/16 (223)	2.5 (1.1)
1-1/2 (40)	25, 63	3-5/8 (92)	6-15/16 (176)	—	8-7/16 (214)	8-13/16 (223)	1.8 (0.82)
	40, 100, 160	3-15/16 (100)	7-1/16 (180)	—	8-3/4 (223)	9-1/4 (235)	3.3 (1.50)
2 (50)	40, 100	4 (102)	7-1/16 (180)	—	8-3/4 (223)	9-3/8 (238)	3.1 (1.41)
	63	4-5/8 (118)	7-1/2 (190)	—	9-1/8 (223)	10-1/16 (255)	5.25 (2.38)
	160	4-5/8 (118)	7-1/2 (190)	—	9-1/8 (223)	10-1/16 (255)	5.3 (2.40)

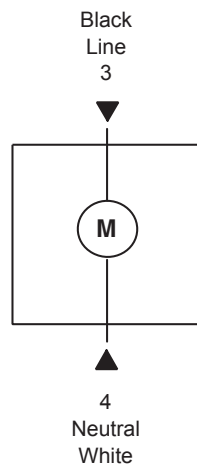
Table Notes:
*Dimension "C" is maximum length, measured from the actuator, end fitting, or mounting plate, whichever extends the furthest.



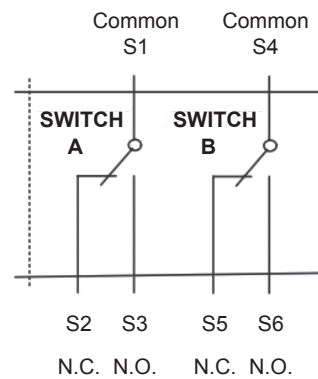
Modulating (0 to 10 Vdc), 24 Vac
(Applies to all)



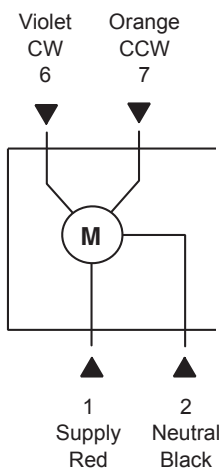
2-position, 24 Vac
(GMA, QQD 2-position)



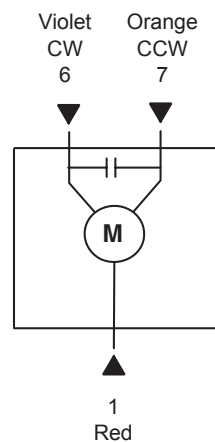
2-position, 120 Vac
(GMA, QQD)



Dual Auxiliary Switches
(QQDxx6)



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



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

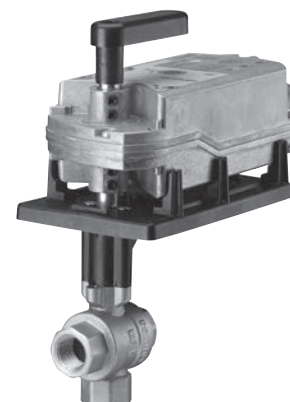
Three-Way Ball Valves

24 Vac, On/Off, Floating or Proportional Control

1/2 to 2-inch

Chrome-plated Ball & Brass Stem or Stainless Steel Ball & Stem

Spring Return or Non-Spring Return



3-Way Ball Valve and Actuator

A-217

Valves

Description

Designed to provide excellent equal percentage flow control, Three-way 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 actuator.

Features

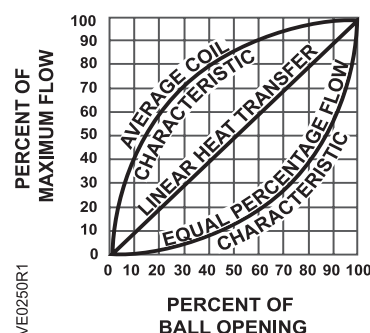
- Universal mounting plate accommodates different actuator sizes
- Variety of ball sizes and flow coefficients minimizes the need for downsizing pipes and accurately controls fluid through coils
- Industry leading close-off
- Actuator and plate can be rotated to facilitate installation and wiring
- Standoffs 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 control
- Spring return or non-spring return

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.

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

Specifications

Pressure ClassANSI 250 (600 WOG)

Static Pressure/Temp. 360 psig/250°F

Controlled Medium Water, Glycol Solutions up to 50%

Media Temperature

1/2 to 1-1/4" 0° to 250°F (-18° to 121°C)

1-1/2 to 2" 0° to 230°F (-18° to 110°C)

Materials

Body Forged 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 EPDM O-rings

End Connections Internal NPT

Angle of Rotation 0 to 90 Degrees

Maximum Operating Differential Pressure

1/2 to 1-1/2" 60 PSI

2" 35 PSI

Close-off Ratings (per ANSI/FCI 70-2)

For A → AB ANSI Class IV (0.01%)

For B → AB ANSI Class III (0.1%)

A-218

Valves

Three-Way Ball Valve Body Product Ordering

Valve Size in. (mm)	Flow Rate Cv (Kvs)	Chrome-Plated Brass Ball and Stem Part No.	Stainless Steel Ball and Stem Part No.
1/2 (15)	0.4 (0.34)	599-10350	599-10350S
	0.63 (0.54)	599-10351	599-10351S
	1.0 (0.9)	599-10352	599-10352S
	1.6 (1.4)	599-10353	599-10353S
	2.5 (2.2)	599-10354	599-10354S
	4 (3.4)	599-10355	599-10355S
	6.3 (5.4)	599-10356	599-10356S
	10 (8.6)	599-10357*	599-10357S*
3/4 (20)	6.3 (5.4)	599-10358	599-10358S
	10 (8.6)	599-10359	599-10359S
	16 (14)	599-10360*	599-10360S*
1 (25)	10 (8.6)	599-10361	599-10361S
	16 (14)	599-10362	599-10362S
	25 (22)	599-10363*	599-10363S*
1-1/4 (32)	16 (14)	599-10364	599-10364S
	25 (22)	599-10365	599-10365S
	40 (34)	599-10366	599-10366S
1-1/2 (40)	25 (22)	599-10367	599-10367S
	40 (34)	599-10368	599-10368S
	63 (54)	599-10369	599-10369S
2 (50)	40 (34)	599-10370	599-10370S
	63 (54)	599-10371	599-10371S
	100 (90)	599-10372*	599-10372S*

Ordering Notes:

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

Three-Way Ball Valve Actuator Product Ordering

Description			Part No.	Actuator Prefix Code
	Electronic	3-Position, Fail-in-place	GDE131.1P	171A
		3-Position, Fail-in-place	GLB131.1P	171B
		0 to 10 Vdc, Fail-in-place	GDE161.1P	171C
		0 to 10 Vdc, Fail-in-place	GLB161.1P	171D
	Electronic	2-Position, Fail-safe, Normally Open	GMA121.1P**	171E
		3-Position, Fail-safe, Normally Open	GMA131.1P**	171F
		0 to 10 Vdc, Fail-safe, Normally Open	GMA161.1P**	171G

Ordering Notes:

When ordered as an assembly, the actuator is provided with 3-foot (.9m) wires.

** Fails with A→AB open.

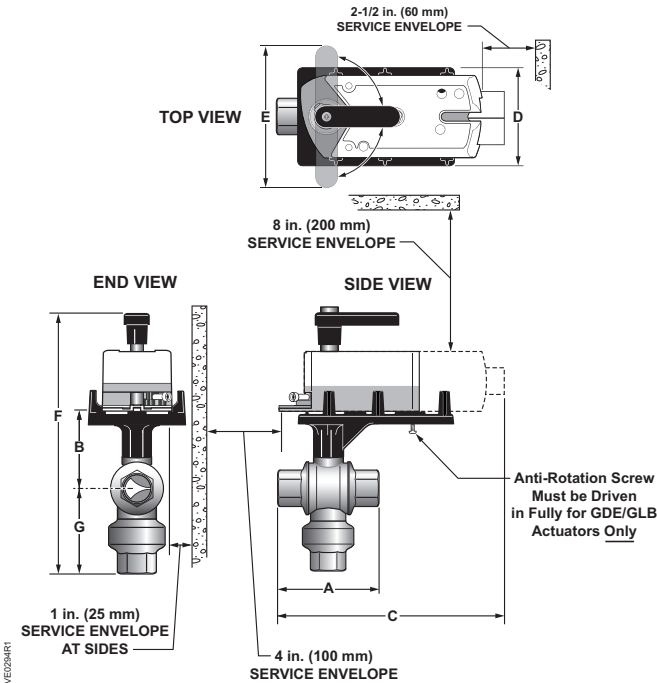
Actuator used in assemblies having prefix 171A-D is provided with conduit adapter

A-219

Valves

Dimensions and Weights

Three-Way Ball Valves with Actuator Dimensions and Service Envelope



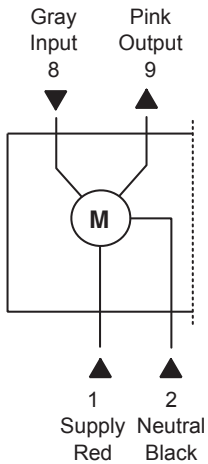
Line Size in. (mm)	A	C	C	B	G	F	Weight lbs (kg)
	Length	Length* Actuator Codes 171A-D, 173A-D	Length* Actuator Codes 171E-G	Height	Height	Height	
1/2 (15)	2-9/16 (65)	6-11/16 (170)	8-3/8 (213)	3-1/4 (83)	1-3/8 (35)	8-5/8 (219)	1.50 (0.68)
3/4 (20)	2-3/4 (70)	6-11/16 (170)	8-3/8 (213)	3-1/4 (83)	1-3/8 (35)	8-5/8 (219)	1.60 (0.73)
	3-1/8 (79)	6-11/16 (170)	8-3/8 (213)	3-1/4 (83)	1-11/16 (43)	8-5/8 (219)	2.20 (1.00)
1 (25)	3-1/4 (83)	6-11/16 (170)	8-3/8 (213)	3-3/4 (95)	1-11/16 (43)	9-1/8 (232)	2.37 (1.08)
	3-13/16 (77)	6-15/16 (176)	8-5/8 (219)	4 (102)	2 (51)	9-5/8 (244)	2.74 (1.24)
1-1/4 (32)	3-5/8 (92)	6-7/8 (174)	8-9/16 (217)	4 (102)	2-1/8 (54)	9-3/4 (248)	2.85 (1.29)
	3-15/16 (100)	7 (178)	8-11/16 (221)	4 (102)	2-5/16 (59)	10-1/4 (260)	4.30 (1.95)
1-1/2 (40)	3-15/16 (100)	7 (178)	8-11/16 (221)	4 (102)	2-5/16 (59)	10-1/4 (260)	3.90 (1.61)
	4-5/8 (117)	7-1/4 (184)	7-7/8 (200)	4-1/2 (114)	2-13/16 (71)	11 (279)	7.83 (17.16)
2 (50)	4-5/8 (117)	7-1/4 (184)	8-11/16 (221)	4-1/2 (114)	2-7/8 (73)	10-3/8 (264)	6.70 (3.04)
	4-5/8 (117)	7-1/4 (184)	9-1/16 (230)	5-3/4 (146)	2-7/8 (73)	11-3/16 (284)	6.70 (3.04)

Table Notes:

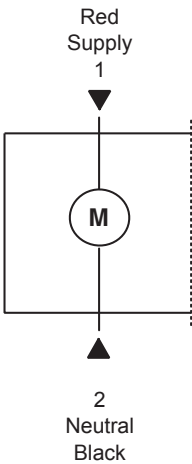
*Dimension "C" is maximum length, measured from the actuator, end fitting, or mounting plate, whichever extends the furthest.

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).

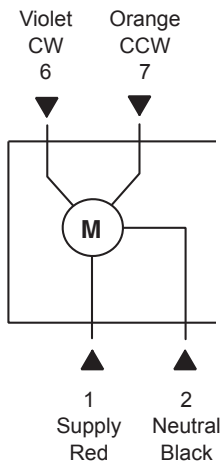
Wiring Diagrams



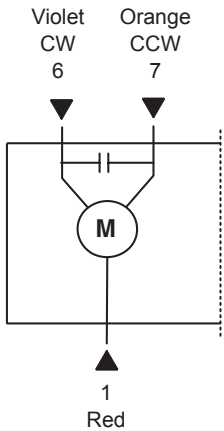
Modulating (0 to 10 Vdc), 24 Vac
(Applies to all)



2-position, 24 Vac
(GMA)



3-position, 24 Vac-SR
(GMA)



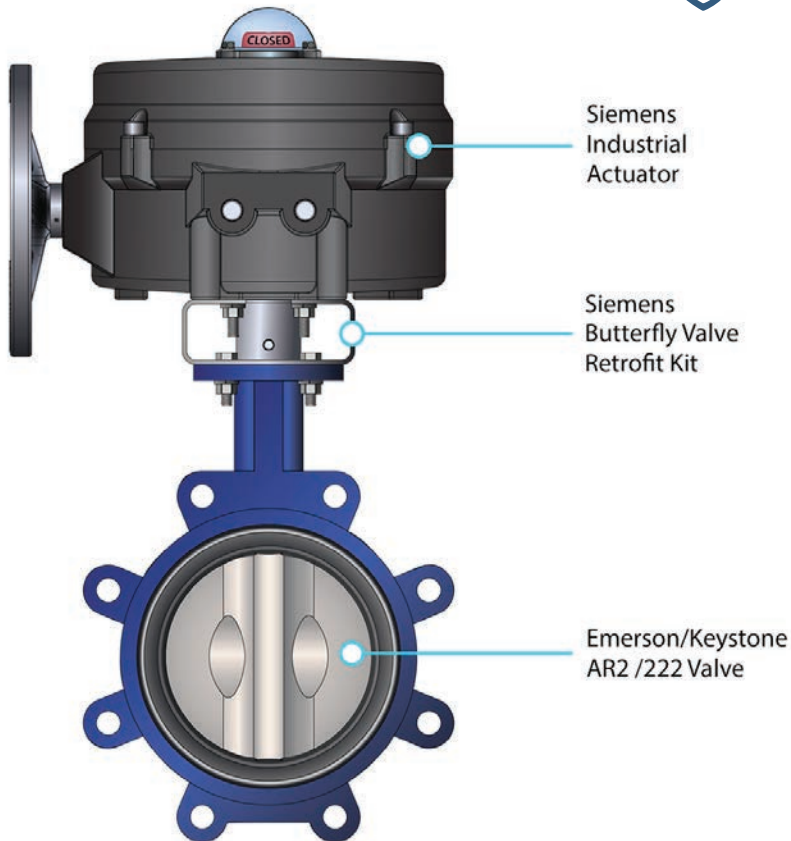
3-position, 24 Vac-NSR
(GDE/GLB)

A-221

Valves



Siemens offers a 5-year warranty on valves and actuators.



A-222

Replace Emerson/Keystone EPI2 actuators with Siemens butterfly valve retrofit kits

Retrofit kits are a quick, easy, and cost-effective solution to replacing failed Emerson/Keystone EPI2 actuators. The kits are available to retrofit 2-way valves, sizes 2-12" and enable field assembly of Siemens actuators onto Emerson valves.

Visit usa.siemens.com/valves to learn more.

SIEMENS