

Two-way and Three-way Ball Valves

24 Vac Proportional Control



2-way Ball Valve and Actuator.



3-way Ball Valve and Actuator.

Description

Designed to provide excellent equal percentage flow control, the 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

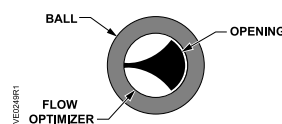
- Universal mounting plate accommodates different actuator sizes
- Variety of ball sizes and flow coefficients minimizes the need for downsizing pipes
- Industry leading shutoff accurately controls fluid through coils
- Actuator and plate can be rotated to facilitate installation and wiring
- Standoffs provide a thermal barrier between the actuator and the mounting plate
- 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

Applications

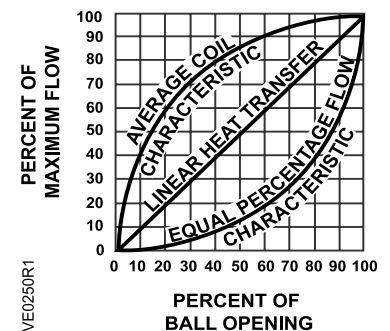
Ball Valves can control hot or chilled water and up to 50% glycol solution in convectors, fan coil units, unit conditioners, radiation, and reheat coils.

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.



Flow Optimizer



Ball Valve Equal Percentage Flow Control.

Two-way and Three-way Ball Valve Specifications

Static Pressure/Temp.360 psi/250°F (600 WOG)
 Controlled MediumWater, glycol solutions up to 50%
 Media Temperature 35 to 250°F (2 to 121°C)
Materials
 BodyForged Brass ASTM B283
 BallNickel-plated Brass ball
 Ball SealsReinforced Teflon® seals with EPDM O-Rings
 Flow OptimizerGlass-filled polymer
 StemBrass
 Stem Seals..... EDPM O-rings
End Connections NPT Female
Angle of Rotation0 to 90 degrees

Ball Valve Assemblies Product Ordering


NO 1/2 to 2"			Non-Spring Return 			
			Floating		0 to 10 Vdc	
2-way Ball Valve Part No.	Flow Rate Cv (Kvs)	Valve Size in. (mm)	Assemblies with 3-Ft. (.9m) Wires	Assemblies with Conduit Adapter & 6-Ft. (1.8m) Wires	Assemblies with 3-Ft. (.9m) Wires	Assemblies with Conduit Adapter & 6-Ft. (1.8m) Wires
			171A (GDE131.1P) and 171B (GLB131.1P)	173A (GDE131.1Q) and 173B (GLB131.1Q)	171C (GDE161.1P) and 171D (GLB161.1P)	173C (GDE161.1Q) and 173D (GLB161.1Q)
599-10203	0.4 (0.34)	1/2 (15)	171A-10203	173A-10203	171C-10203	173C-10203
599-10204	0.63 (0.54)	1/2 (15)	171A-10204	173A-10204	171C-10204	173C-10204
599-10205	1.6 (1.4)	1/2 (15)	171A-10205	173A-10205	171C-10205	173C-10205
599-10206	2.5 (2.2)	1/2 (15)	171A-10206	173A-10206	171C-10206	173C-10206
599-10207	4 (3.5)	1/2 (15)	171A-10207	173A-10207	171C-10207	173C-10207
599-10208*	10 (8.6)	1/2 (15)	171A-10208	173A-10208	171C-10208	173C-10208
599-10209	10 (8.6)	3/4 (20)	171A-10209	173A-10209	171C-10209	173C-10209
599-10210*	25 (22)	3/4 (20)	171A-10210	173A-10210	171C-10210	173C-10210
599-10211	10 (8.6)	1 (25)	171A-10211	173A-10211	171C-10211	173C-10211
599-10212	25 (22)	1 (25)	171A-10212	173A-10212	171C-10212	173C-10212
599-10213	16 (14)	1 (25)	171A-10213	173A-10213	171C-10213	173C-10213
599-10214*	63 (54)	1 (25)	171A-10214	173A-10214	171C-10214	173C-10214
599-10215	16 (14)	1-1/4 (30)	171A-10215	173A-10215	171C-10215	173C-10215
599-10216	40 (35)	1-1/4 (30)	171A-10216	173A-10216	171C-10216	173C-10216
599-10217*	100 (86)	1-1/4 (30)	171A-10217	173A-10217	171C-10217	173C-10217
599-10218	25 (22)	1-1/2 (40)	171B-10218	173B-10218	171D-10218	173D-10218
599-10219*	63 (54)	1-1/2 (40)	171B-10219	173B-10219	171D-10219	173D-10219
599-10220	40 (35)	1-1/2 (40)	171B-10220	173B-10220	171D-10220	173D-10220
599-10221*	160 (138)	1-1/2 (40)	171B-10221	173B-10221	171D-10221	173D-10221
599-10222	40 (35)	2 (50)	171B-10222	173B-10222	171D-10222	173D-10222
599-10223*	100 (86)	2 (50)	171B-10223	173B-10223	171D-10223	173D-10223
599-10224	63 (54)	2 (50)	171B-10224	173B-10224	171D-10224	173D-10224
599-10225*	250 (214)	2 (50)	171B-10225	173B-10225	171D-10225	173D-10225

Table Note:

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




Part No. in black box Ships same day when requested through Rapid Response™ shipping. See inside back cover for details.

SIEMENS

D-166

Valves

Ball Valve Assemblies Product Ordering

NO/NC 1/2 to 2"			Spring Return 					
2-way Ball Valve Part No.	Flow Rate Cv (Kvs)	Valve Size in. (mm)	2-position		Floating		0 to 10 Vdc	
			GMA121.1P		GMA131.1P		GMA161.1P	
			NO	NC	NO	NC	NO	NC
599-10203	0.4 (0.34)	1/2 (15)	171E-10203	172E-10203	171F-10203	172F-10203	171G-10203	172G-10203
599-10204	0.63 (0.54)	1/2 (15)	171E-10204	172E-10204	171F-10204	172F-10204	171G-10204	172G-10204
599-10205	1.6 (1.4)	1/2 (15)	171E-10205	172E-10205	171F-10205	172F-10205	171G-10205	172G-10205
599-10206	2.5 (2.2)	1/2 (15)	171E-10206	172E-10206	171F-10206	172F-10206	171G-10206	172G-10206
599-10207	4 (3.5)	1/2 (15)	171E-10207	172E-10207	171F-10207	172F-10207	171G-10207	172G-10207
599-10208*	10 (8.6)	1/2 (15)	171E-10208	172E-10208	171F-10208	172F-10208	171G-10208	172G-10208
599-10209	10 (8.6)	3/4 (20)	171E-10209	172E-10209	171F-10209	172F-10209	171G-10209	172G-10209
599-10210*	25 (22)	3/4 (20)	171E-10210	172E-10210	171F-10210	172F-10210	171G-10210	172G-10210
599-10211	10 (8.6)	1 (25)	171E-10211	172E-10211	171F-10211	172F-10211	171G-10211	172G-10211
599-10212	25 (22)	1 (25)	171E-10212	172E-10212	171F-10212	172F-10212	171G-10212	172G-10212
599-10213	16 (14)	1 (25)	171E-10213	172E-10213	171F-10213	172F-10213	171G-10213	172G-10213
599-10214*	63 (54)	1 (25)	171E-10214	172E-10214	171F-10214	172F-10214	171G-10214	172G-10214
599-10215	16 (14)	1-1/4 (30)	171E-10215	172E-10215	171F-10215	172F-10215	171G-10215	172G-10215
599-10216	40 (35)	1-1/4 (30)	171E-10216	172E-10216	171F-10216	172F-10216	171G-10216	172G-10216
599-10217*	100 (86)	1-1/4 (30)	171E-10217	172E-10217	171F-10217	172F-10217	171G-10217	172G-10217
599-10218	25 (22)	1-1/2 (40)	171E-10218	172E-10218	171F-10218	172F-10218	171G-10218	172G-10218
599-10219*	63 (54)	1-1/2 (40)	171E-10219	172E-10219	171F-10219	172F-10219	171G-10219	172G-10219
599-10220	40 (35)	1-1/2 (40)	171E-10220	172E-10220	171F-10220	172F-10220	171G-10220	172G-10220
599-10221*	160 (138)	1-1/2 (40)	171E-10221	172E-10221	171F-10221	172F-10221	171G-10221	172G-10221
599-10222	40 (35)	2 (50)	171E-10222	172E-10222	171F-10222	172F-10222	171G-10222	172G-10222
599-10223*	100 (86)	2 (50)	171E-10223	172E-10223	171F-10223	172F-10223	171G-10223	172G-10223
599-10224	63 (54)	2 (50)	171E-10224	172E-10224	171F-10224	172F-10224	171G-10224	172G-10224
599-10225*	250 (214)	2 (50)	171E-10225	172E-10225	171F-10225	172F-10225	171G-10225	172G-10225

Ordering Note

When ordered as an assembly, the OpenAir actuator comes with 3 ft. wires.



Table Note:

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

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Valves



Ball Valve Assemblies Product Ordering


Mixing 1/2 to 2"			Non-Spring Return Actuator 			
			Floating		0 to 10 Vdc	
3-way Ball Valve Part No.	Flow Rate Cv (Kvs)	Valve Size in. (mm)	Assemblies with 3-Ft. (.9m) Wires	Assemblies with Conduit Adapter & 6-Ft. (1.8m) Wires	Assemblies with 3-Ft. (.9m) Wires	Assemblies with Conduit Adapter & 6-Ft. (1.8m) Wires
			171A (GDE131.1P) and 171B (GLB131.1P)	173A (GDE131.1Q) and 173B (GLB131.1Q)	171C (GDE161.1P) and 171D (GLB161.1P)	173C (GDE161.1Q) and 173D (GLB161.1Q)
599-10250	0.4 (34)	1/2 (15)	171A-10250	173A-10250	171C-10250	173C-10250
599-10251	0.63 (0.54)	1/2 (15)	171A-10251	173A-10251	171C-10251	173C-10251
599-10252	1.0 (0.86)	1/2 (15)	171A-10252	173A-10252	171C-10252	173C-10252
599-10253	2.5 (2.2)	1/2 (15)	171A-10253	173A-10253	171C-10253	173C-10253
599-10254	4 (3.5)	1/2 (15)	171A-10254	173A-10254	171C-10254	173C-10254
599-10255*	10 (8.6)	1/2 (15)	171A-10255	173A-10255	171C-10255	173C-10255
599-10256*	16 (14)	3/4 (20)	171A-10256	173A-10256	171C-10256	173C-10256
599-10257	10 (8.6)	1 (25)	171A-10257	173A-10257	171C-10257	173C-10257
599-10258	16 (14)	1 (25)	171A-10258	173A-10258	171C-10258	173C-10258
599-10259*	25 (22)	1 (25)	171A-10259	173A-10259	171C-10259	173C-10259
599-10260	16 (14)	1-1/4 (30)	171A-10260	173A-10260	171C-10260	173C-10260
599-10261*	40 (35)	1-1/4 (30)	171A-10261	173A-10261	171C-10261	173C-10261
599-10262	16 (14)	1-1/2 (40)	171B-10262	173B-10262	171D-10262	173D-10262
599-10263	25 (22)	1-1/2 (40)	171B-10263	173B-10263	171D-10263	173D-10263
599-10264*	63 (54)	1-1/2 (40)	171B-10264	173B-10264	171D-10264	173D-10264
599-10265	25 (22)	2 (50)	171B-10265	173B-10265	171D-10265	173D-10265
599-10266	40 (35)	2 (50)	171B-10266	173B-10266	171D-10266	173D-10266
599-10267*	100 (86)	2 (50)	171B-10267	173B-10267	171D-10267	173D-10267

Table Note:

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

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Valves

Ball Valve Assemblies Product Ordering


Mixing 1/2 to 2"			Spring Return Actuator 		
3-way Ball Valve Part No.	Flow Rate Cv (Kvs)	Valve Size in. (mm)	2-position	Floating	0 to 10 Vdc
			Assemblies with 3-Ft. (.9m) Wires		
			GMA121.1P	GMA131.1P	GMA161.1P
599-10250	0.4 (34)	1/2 (15)	171E-10250	171F-10250	171G-10250
599-10251	0.63 (0.54)	1/2 (15)	171E-10251	171F-10251	171G-10251
599-10252	1.0 (0.86)	1/2 (15)	171E-10252	171F-10252	171G-10252
599-10253	2.5 (2.2)	1/2 (15)	171E-10253	171F-10253	171G-10253
599-10254	4 (3.5)	1/2 (15)	171E-10254	171F-10254	171G-10254
599-10255*	10 (8.6)	1/2 (15)	171E-10255	171F-10255	171G-10255
599-10256*	16 (14)	3/4 (20)	171E-10256	171F-10256	171G-10256
599-10257	10 (8.6)	1 (25)	171E-10257	171F-10257	171G-10257
599-10258	16 (14)	1 (25)	171E-10258	171F-10258	171G-10258
599-10259*	25 (22)	1 (25)	171E-10259	171F-10259	171G-10259
599-10260	16 (14)	1-1/4 (30)	171E-10260	171F-10260	171G-10260
599-10261*	40 (35)	1-1/4 (30)	171E-10261	171F-10261	171G-10261
599-10262	16 (14)	1-1/2 (40)	171E-10262	171F-10262	171G-10262
599-10263	25 (22)	1-1/2 (40)	171E-10263	171F-10263	171G-10263
599-10264*	63 (54)	1-1/2 (40)	171E-10264	171F-10264	171G-10264
599-10265	25 (22)	2 (50)	171E-10265	171F-10265	171G-10265
599-10266	40 (35)	2 (50)	171E-10266	171F-10266	171G-10266
599-10267*	100 (86)	2 (50)	171E-10267	171F-10267	171G-10267

Table Note:

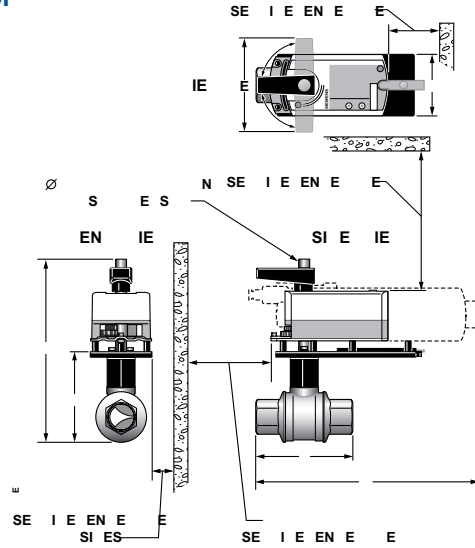
*Denotes a full-port valve with no flow optimizer insert.

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Valves

Dimensions and Weights

Two-way Ball Valve and Actuator



Dimensions shown in inches (mm).

D-170

Valves

Valve Size	Ball Size	Part No.	A Length	C Length* Codes 171A-D	C Length* Codes 171E-G & 172E-G	B Height	F Height	Weight
1/2" (15 mm)	1/2" (15 mm)	599-10203 to 10208	2-3/8" (60 mm)	6-7/16" (163 mm)	7-1/16" (179 mm)	3-7/16" (87 mm)	8-1/8" (206 mm)	1.0 lb. (0.45 kg)
3/4" (20 mm)	3/4" (20 mm)	599-10209 599-10210	2-3/8" (60 mm)	6-7/16" (163 mm)	7-1/16" (179 mm)	3-11/16" (94 mm)	8-5/16" (211 mm)	1.0 lb. (0.45 kg)
1" (25 mm)	3/4" (20 mm)	599-10211	2-3/4" (70 mm)	6-5/8" (167 mm)	7-1/4" (184 mm)	3-11/16" (94 mm)	8-5/16" (211 mm)	1.0 lb. (0.45 kg)
1" (25 mm)	1" (25 mm)	599-10213 to 10214	3" (77 mm)	6-3/4" (171 mm)	7-3/8" (187 mm)	4" (100 mm)	8-11/16" (220 mm)	1.4 lb. (0.64 kg)
1" (25 mm)	1-1/4" (30 mm)	599-10212	4-1/4" (109 mm)	7-7/16" (189 mm)	8-1/16" (205 mm)	4-1/2" (113 mm)	8-7/8" (226 mm)	2.4 lb. (1.1 kg)
1-1/4" (30 mm)	1" (25 mm)	599-10215	3" (76 mm)	6-3/4" (171 mm)	7-3/8" (187 mm)	4" (100 mm)	8-11/16" (220 mm)	1.4 lb. (0.64 kg)
1-1/4" (30 mm)	1-1/4" (30 mm)	599-10216 599-10217	3-1/16" (81 mm)	6-13/16" (173 mm)	7-7/16" (189 mm)	4-1/2" (113 mm)	9-1/8" (231 mm)	2.4 lb. (1.1 kg)
1-1/2" (40 mm)	1-1/4" (30 mm)	599-10218 599-10219	3-7/16" (87 mm)	6-15/16" (176 mm)	7-9/16" (192 mm)	4" (100 mm)	9-1/8" (231 mm)	2.4 lb. (1.1 kg)
1-1/2" (40 mm)	1-1/2" (40 mm)	599-10220 599-10221	3-3/4" (94 mm)	7-1/16" (179 mm)	7-11/16" (195 mm)	5-3/16" (132 mm)	8-7/8" (226 mm)	3.2 lb. (1.5 kg)
2" (50 mm)	1-1/2" (40 mm)	599-10222 599-10223	4" (101 mm)	7-1/8" (183 mm)	7-3/4" (196 mm)	5-3/16" (132 mm)	8-7/8" (226 mm)	3.2 lb. (1.5 kg)
2" (50 mm)	2" (50 mm)	599-10224 599-10225	4-7/16" (112 mm)	7-7/16" (189 mm)	8-1/16" (205 mm)	5-3/4" (146 mm)	10-1/2" (266 mm)	5.0 lb. (2.3 kg)

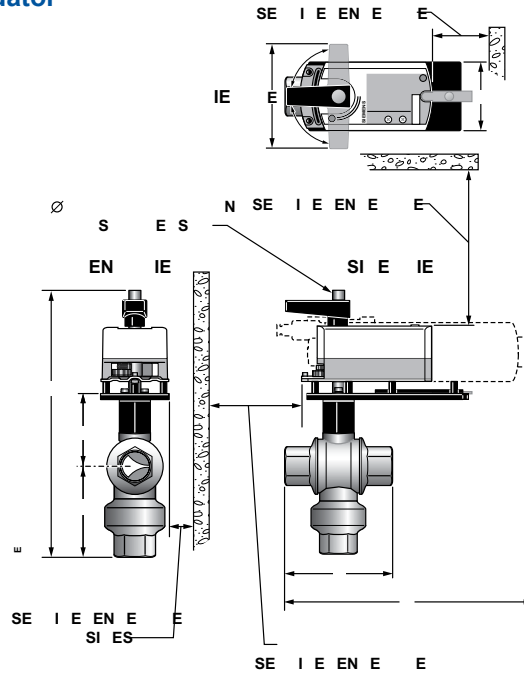
Table Notes:

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

1. Stamping on valve body indicates the ball size, not necessarily the line fitting size.
2. All dimensions are in inches (mm) and weights are in pounds (kg).
3. Dimension "D", Depth, is 3 inches (76 mm).
4. Dimension "E", Handle, is 4 inches (102 mm).

Dimensions and Weights

Three-way Ball Valve and Actuator



D-171

Valves

Valve Size	Ball Size	Part No.	A Length	C Length* Codes 171A-D	C Length* Codes 171E-G	B Height	G Height	F Depth	Weight
1/2" (15 mm)	3/4" (20 mm)	599-10250 to 599-10255	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)
3/4" (20 mm)	3/4" (20 mm)	599-10256	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)
1" (25 mm)	1" (25 mm)	599-10257	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)
1" (25 mm)	1-1/4" (30 mm)	599-10258	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)
1-1/4" (30 mm)	1-1/4" (30 mm)	599-10259	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)
1-1/4" (30 mm)	1-1/4" (30 mm)	599-10260	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)
1-1/4" (30 mm)	1-1/4" (30 mm)	599-10261	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)
1-1/2" (40 mm)	1-1/4" (30 mm)	599-10262	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)
1-1/2" (40 mm)	1-1/2" (40 mm)	599-10263	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)
1-1/2" (40 mm)	1-1/2" (40 mm)	599-10264	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)
2" (50 mm)	1-1/2" (40 mm)	599-10265	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)
2" (50 mm)	2" (50 mm)	599-10266	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)
2" (50 mm)	2" (50 mm)	599-10267	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. Stamping on valve body indicates the ball size, not necessarily the line fitting size.
2. All dimensions are in inches (mm) and weights are in pounds (kg).
3. Dimension "D", Depth, is 3 inches (76 mm).
4. Dimension "E", Handle, is 4 inches (102 mm).