

## 599 Series 3-Way Ball Valves

### Description

The 599 Series three-way Ball Valves are coupled with OpenAir™ actuators to provide equal percentage flow control in either mixing or diverting applications. The Ball Valves are 1/4-turn rotary control valves and are available in 1/2-inch to 2-inch line sizes.


### Product Numbers

Use the product numbers in Table 1 or Table 2 to order the valve and the actuator assembled together. The product number consists of a 4-digit prefix code, a hyphen, and a 5- or 6-digit suffix code. The prefix specifies an actuator. The suffix specifies the valve body.

### Features

- ANSI 250 valve body rating.
- Available in either chrome-plated brass ball/brass stem or stainless steel ball and stem
- May be used as either mixing or diverting valves
- Shutoff up to 200 psi
- Universal mounting plate
- Blow-out proof stem withstands high pressure
- Actuator and plate can be rotated
- Standoffs provide a thermal barrier between the actuator and the mounting plate
- Operating handle can manually operate valve

Table 1. Product Numbers for Fail-In- Place Assemblies.

Valve Body Product Number *	Valve Size Inches (mm)	Close-Off ΔP in psi (kPa)	Flow Rate Cv (Kvs)	Fail-in-Place			
							
				Control & Actuator Prefix Code			
				3-Position		0 to 10 Vdc,	
GDE131.1P 171A	GLB131.1P 171B	GDE131.1Q 173A	GLB131.1Q 173B	GDE161.1P 171C	GLB161.1P 171D	GDE161.1Q 173C	GLB161.1Q 173D
3-foot (.9 m) Wires		Conduit Adapter & 6-ft (1.8 m) Wires		3-foot (.9 m) Wires		Conduit Adapter & 6-ft (1.8 m) Wires	
599-10350(S)	1/2 (15)	200 (1379)	0.4 (0.34)	171A-10350(S)	173A-10350(S)	171C-10350(S)	173C-10350(S)
599-10351(S)			0.63 (0.54)	171A-10351(S)	173A-10351(S)	171C-10351(S)	173C-10351(S)
599-10352(S)			1.0 (0.86)	171A-10352(S)	173A-10352(S)	171C-10352(S)	173C-10352(S)
599-10353(S)			1.6 (1.4)	171A-10353(S)	173A-10353(S)	171C-10353(S)	173C-10353(S)
599-10354(S)			2.5 (2.2)	171A-10354(S)	173A-10354(S)	171C-10354(S)	173C-10354(S)
599-10355(S)			4 (3.5)	171A-10355(S)	173A-10355(S)	171C-10355(S)	173C-10355(S)
599-10356(S)			6.3 (5.5)	171A-10356(S)	173A-10356(S)	171C-10356(S)	173C-10356(S)
599-10357(S)*			10 (8.6)	171A-10357(S)*	173A-10357(S)*	171C-10357(S)*	173C-10357(S)*
599-10358(S)	3/4 (20)	200 (1379)	6.3 (5.5)	171A-10358(S)	173A-10358(S)	171C-10358(S)	173C-10358(S)
599-10359(S)			10 (8.6)	171A-10359(S)	173A-10359(S)	171C-10359(S)	173C-10359(S)
599-10360(S)*			16 (14)	171A-10360(S)*	173A-10360(S)*	171C-10360(S)*	173C-10360(S)*
599-10361(S)	1 (25)	200 (1379)	10 (8.6)	171A-10361(S)	173A-10361(S)	171C-10361(S)	173C-10361(S)
599-10362(S)			16 (14)	171A-10362(S)	173A-10362(S)	171C-10362(S)	173C-10362(S)
599-10363(S)*			25 (22)	171A-10363(S)*	173A-10363(S)*	171C-10363(S)*	173C-10363(S)*
599-10364(S)	1-1/4 (32)	200 (1379)	16 (14)	171A-10364(S)	173A-10364(S)	171C-10364(S)	173C-10364(S)
599-10365(S)			25 (22)	171A-10365(S)	173A-10365(S)	171C-10365(S)	173C-10365(S)
599-10366(S)*			40 (35)	171A-10366(S)*	173A-10366(S)*	171C-10366(S)*	173C-10366(S)*
599-10367(S)	1-1/2 (40)	200 (1379)	25 (22)	171B-10367(S)	173B-10367(S)	171D-10367(S)	173D-10367(S)
599-10368(S)			40 (35)	171B-10368(S)	173B-10368(S)	171D-10368(S)	173D-10368(S)
599-10369(S)*			63 (54)	171B-10369(S)*	173B-10369(S)*	171D-10369(S)*	173D-10369(S)*
599-10370(S)	2 (50)	200 (1379)	40 (35)	171B-10370(S)	173B-10370(S)	171D-10370(S)	173D-10370(S)
599-10371(S)			63 (54)	171B-10371(S)	173B-10371(S)	171D-10371(S)	173D-10371(S)
599-10372(S)*			100 (86)	171B-10372(S)*	173B-10372(S)*	171D-10372(S)*	173D-10372(S)*

\* Denotes a full-port valve without flow optimizer insert.

S – Suffix denotes stainless steel ball and stem

**NOTE:** Maximum operating differential pressure = 60 psi for 1/2" to 1-1/2"; 35 psi for 2".


## Typical Specifications

Ball valves shall have female NPT type fittings and shall be 1/2 to 2-inch (15 to 50-mm) line and ball sizes. The valves shall have a forged brass body, chrome-plated brass or stainless steel ball, and EPDM O-ring seals. Valves may contain a glass-filled polymer flow optimizer to provide an equal percentage control characteristic. This flow optimizer should be an integral part of the ball assembly. Ball valves shall utilize a 90-degree rotation for control. They shall provide automated flow control of hot or chilled water and up to 50% glycol solution for HVAC control applications.

## Technical Data

<b>Valve Body Rating</b>	ANSI 250/600 WOG
<b>Static Pressure</b>	360 psi (2482 kPa)
<b>Maximum Operating Differential Pressure</b>	60 psi (414 kPa) for 1/2" to 1-1/2" valves 35 psi (345 kPa) for 2" valves
<b>Controlled Media</b>	Water, glycol solutions to 50%
<b>Media Temperature</b>	
1/2-inch to 1-1/4 inch	35°F to 250°F (2°C to 121°C)
1-1/2 inch and 2-inch	35°F to 230°F (2°C to 110°C)
<b>Body</b>	Forged Brass ASTM B283
<b>Flow Optimizer</b>	Glass-filled polymer
<b>Ball</b>	Chrome-plated brass or stainless steel
<b>Stem</b>	Brass or stainless steel
<b>Ball Seals</b>	Reinforced PTFE seals with EPDM O-rings
<b>Stem Seals</b>	EPDM O-rings
<b>Angle of Rotation</b>	0 to 90°

**Table 2. Product Numbers for Fail-Safe Assemblies.**

Valve Body Product Number *	Valve Size Inches (mm)	Close-Off ΔP in psi (kPa)	Flow Rate Cv (Kvs)	Fail-Safe		
						
				Control & Actuator Prefix Code		
				2-Position, GMA121.1P 171E	3-Position, GMA131.1P 171F	0 to 10 Vdc, GMA161.1P 171G
599-10350(S)	1/2 (15)	200 (1379)	0.4 (0.34)	171E-10350(S)	171F-10350(S)	171G-10350(S)
599-10351(S)			0.63 (0.54)	171E-10351(S)	171F-10351(S)	171G-10351(S)
599-10352(S)			1.0 (0.86)	171E-10352(S)	171F-10352(S)	171G-10352(S)
599-10353(S)			1.6 (1.4)	171E-10353(S)	171F-10353(S)	171G-10353(S)
599-10354(S)			2.5 (2.2)	171E-10354(S)	171F-10354(S)	171G-10354(S)
599-10355(S)			4 (3.5)	171E-10355(S)	171F-10355(S)	171G-10355(S)
599-10356(S)			6.3 (5.5)	171E-10356(S)	171F-10356(S)	171G-10356(S)
599-10357(S)*			10 (8.6)	171E-10357(S)*	171F-10357(S)*	171G-10357(S)*
599-10358(S)	3/4 (20)	200 (1379)	6.3 (5.5)	171E-10358(S)	171F-10358(S)	171G-10358(S)
599-10359(S)			10 (8.6)	171E-10359(S)	171F-10359(S)	171G-10359(S)
599-10360(S)*			16 (14)	171E-10360(S)*	171F-10360(S)*	171G-10360(S)*
599-10361(S)	1 (25)	200 (1379)	10 (8.6)	171E-10361(S)	171F-10361(S)	171G-10361(S)
599-10362(S)			16 (14)	171E-10362(S)	171F-10362(S)	171G-10362(S)
599-10363(S)*			25 (22)	171E-10363(S)*	171F-10363(S)*	171G-10363(S)*
599-10364(S)	1-1/4 (32)	200 (1379)	16 (14)	171E-10364(S)	171F-10364(S)	171G-10364(S)
599-10365(S)			25 (22)	171E-10365(S)	171F-10365(S)	171G-10365(S)
599-10366(S)*			40 (35)	171E-10366(S)*	171F-10366(S)*	171G-10366(S)*
599-10367(S)	1-1/2 (40)	200 (1379)	25 (22)	171E-10367(S)	171F-10367(S)	171G-10367(S)
599-10368(S)			40 (35)	171E-10368(S)	171F-10368(S)	171G-10368(S)
599-10369(S)*			63 (54)	171E-10369(S)*	171F-10369(S)*	171G-10369(S)*
599-10370(S)	2 (50)	200 (1379)	40 (35)	171E-10370(S)	171F-10370(S)	171G-10370(S)
599-10371(S)			63 (54)	171E-10371(S)	171F-10371(S)	171G-10371(S)
599-10372(S)*			100 (86)	171E-10372(S)*	171F-10372(S)*	171G-10372(S)*

\* Denotes a full-port valve without flow optimizer insert.

S – Suffix denotes stainless steel ball and stem

**NOTE:** Maximum operating differential pressure = 60 psi for 1/2" to 1-1/2"; 35 psi for 2".

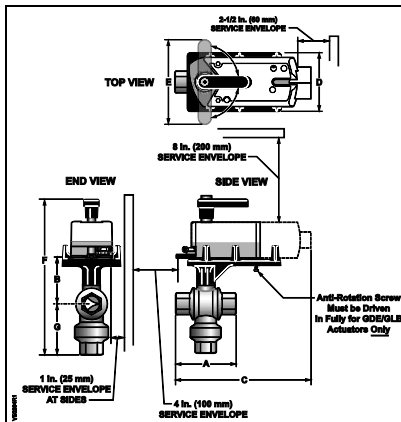
**Table 2. 3-Way, Full-Port (Without Flow Optimizer) Ball Valve Product Numbers and Flow Coefficients.**

Valve Size in Inches (mm)	Valve Body Product Number	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)	4 (102)	5 (127)	6 (152)
1/2 (15)	599-10357(S)	10.00 (8.62)	6.94 (5.93)	6.19 (5.29)	--	--	--	--	--	--	--	--
3/4 (20)	599-10360(S)	--	16.00 (13.79)	13.9 (11.98)	12.4 (10.69)	--	--	--	--	--	--	--
1 (25)	599-10363(S)	--	--	25.00 (21.55)	22.5 (19.40)	21.2 (18.27)	--	--	--	--	--	--
1-1/4 (32)	599-10366(S)	--	--	--	40.00 (34.48)	36.9 (31.81)	33.3 (28.70)	--	--	--	--	--
1-1/2 (40)	599-10369(S)	--	--	--	--	63.00 (54.31)	55.3 (47.67)	51.00 (43.96)	--	--	--	--
2 (50)	599-10372(S)	--	--	--	--	--	100 (86.21)	94.3 (81.29)	86.1 (74.23)	--	--	--

 = Valve may be oversized.  = Optimal valve size.  = Valve may be undersized.

**Table 3. Dimensions in Inches (Millimeters).**

Line Size Inches (mm)	Product Number	A Length	C Length * for Actuator Codes 171A-D	C Length * for Actuator Codes 171E-G	B Height	G Height	F Height	Weight
1/2 (15)	599-10350(S) through 599-10357(S)	2-9/16 (65)	6-11/16 (170)	7-3/4 (197)	3-1/4 (83)	1-3/8 (35)	8-5/8 (219)	1.50 (0.68)
3/4 (20)	599-10358(S)	2-3/4 (70)	6-11/16 (170)	8 (203)	3-1/4 (83)	1-3/8 (35)	8-5/8 (219)	1.60 (0.73)
	599-10359(S)	3-1/8 (79)						1-11/16 (43)
1 (25)	599-10361(S)	3-1/8 (79)	6-11/16 (170)	8 (203)	3-3/4 (95)	1-11/16 (43)	9-1/8 (232)	2.37 (1.08)
	599-10362(S) 599-10363(S)	3-13/16 (97)						6-15/16 (176)
1-1/4 (32)	599-10364(S) 599-10365(S)	3-5/8 (92)	6-7/8 (174)	8-1/2 (216)	4 (102)	2-1/8 (54)	9-3/4 (248)	3.50 (1.59)
	599-10366(S)	3-15/16 (100)	7 (178)					2-5/16 (59)
1-1/2 (40)	599-10367(S) 599-10368(S)	3-15/16 (100)	7 (178)	8-1/2 (216)	4 (102)	2-5/16 (59)	10-1/4 (260)	3.90 (1.76)
	599-10369(S)	4-5/8 (117)	7-1/4 (184)					8-3/4 (222)
2 (50)	599-10370(S)	4-5/8 (117)	7-1/4 (184)	8-3/4 (222)	4-1/2 (114)	2-7/8 (73)	10-3/8 (264)	6.70 (3.04)
	599-10371(S) 599-10372(S)							5-3/4 (146)



- All dimensions are in inches (mm) and weights are in pounds (kg).
- Stamping on valve body indicates the ball size, not necessarily the line size.
- Dimension "C" is maximum length, measured from the actuator, end fitting, or mounting plate, whichever extends the furthest.
- Dimension "D", Depth, is 3 inches (76 mm).
- Dimension "E", Handle, is 4 inches (102 mm).

Information in this publication is based on current specifications. The company reserves the right to make changes in specifications and models as design improvements are introduced. OpenAir is a trademark of Siemens Schweiz, AG. Other product or company names mentioned herein may be the trademarks of their respective owners. © 2014 Siemens Industry, Inc.