

## Flowrite™ 599 Series, 3-Way Valves, 1/2 to 2-Inch Threaded, ANSI Class 250, Bronze Body

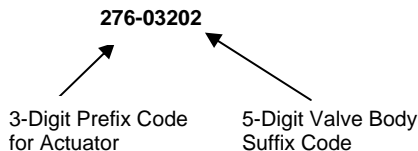


### Description

The Flowrite 599 Series 3-Way Valve bodies, ANSI 250, work with a Flowrite Series actuator with a 3/4-inch (20 mm) stroke. Typical applications include mixing of hot or chilled water and the control of 50% water- glycol solutions.

### Product Numbers

Use the product numbers in the tables to order the valve and the actuator assembled together. The product number consists of a 3-digit prefix code, a hyphen, and a 5-digit suffix code. The prefix specifies an actuator. The suffix specifies the valve body.



### Features

- ANSI Leakage Class IV (0.01% of Cv)
- Cartridge-type packing
- Brass or stainless steel trim
- Direct-coupled universal bonnet
- UFxUF connections available

### Typical Specifications

Automatic control valves shall have NPT threaded type fittings, 1/2 through 2-inch (15 through 50 mm) sizes, and shall be ANSI Rated to withstand the pressures and temperatures encountered.

Valves shall have metal-to-metal seats, stainless steel stems, and Ethylene propylene O-ring packing. Valves shall be ANSI Leakage Class IV (0.01% of Cv). Valves shall have a 100:1 rangeability or better.

### Technical Data

<b>Line Size</b>	1/2 to 2-inch (15 to 50 mm)
<b>Body</b>	Globe style, UNS CA 844 bronze, ANSI Class 250
<b>Trim</b>	Brass or stainless steel
<b>Stem</b>	Stainless steel ASTM A582 Type 303, 3/4-inch (20-mm) stroke
<b>Seat</b>	Single seat, metal-to-metal
<b>Packing</b>	EPDM O-ring
<b>Close-off Ratings</b>	According to ANSI/FCI 70-2 See Tables 3 and 5.
<b>Controlled Medium</b>	Water, 50% water-glycol solutions
<b>Medium Temperature:</b>	
Normal Duty	20 to 250°F (-7 to 120°C)





### Maximum Recommended Differential Pressure for Modulating Service

Media	Brass Trim	SS Trim
Liquid	25 psi (173 kPa)	50 psi (345 kPa)





<b>Rangeability</b>	>100:1
<b>Leakage Rate</b>	Class IV (0.01% of Cv)
<b>Flow Characteristics</b>	Equal Percentage for upper port Linear for lower port
<b>Mounting</b>	NEMA 1 (interior only)

**NOTE:** To keep the document short, only valves with brass trim and female NPT connections are shown.  
For complete selections tables, see Flowrite™ 599 Series 1/2 to 2-Inch Valve (2-Way & 3-Way) and Actuator Assembly Selection TB 255 (155-772).

**Table 1. Three-way, Equal Percentage Valve and Actuator Assemblies with Brass Trim, Normal Duty Packing and Female NPT Connections.**

 Valve Body	Flow Rate, Cv (Kvs)	Valve Size, Inches (mm)	Electro- Hydraulic 24 Vac				
			NSR	Spring Return			
							
			Floating		0 to 10 Vdc, 4 to 20 mA		
			SKD82.50U	SKD82.51U	SKD62U	SKB62U	
			Actuator Prefix Codes				275
599-03198	1 (0.85)	1/2 (15)	275-03198	276-03198	274-03198	—	
599-03199	1.6 (1.4)	1/2 (15)	275-03199	276-03199	274-03199	—	
599-03200	2.5 (2.2)	1/2 (15)	275-03200	276-03200	274-03200	—	
599-03201	4 (3.4)	1/2 (15)	275-03201	276-03201	274-03201	—	
599-03202	6.3(5.4)	3/4 (20)	275-03202	276-03202	274-03202	—	
599-03203	10(8.6)	1 (25)	275-03203	276-03203	274-03203	291-03203	
599-03204	16 (14)	1-1/4 (32)	275-03204	276-03204	274-03204	291-03204	
599-03205	25 (22)	1-1/2 (40)	275-03205	276-03205	274-03205	291-03205	
599-03206	40 (34)	2 (50)	275-03206	276-03206	274-03206	291-03206	




**Table 2. Three-way, Equal Percentage Valve and Actuator Assemblies with Brass Trim, Normal Duty Packing and Female NPT Connections.**

 Valve Body	Flow Rate, Cv (Kvs)	Valve Size, Inches (mm)	Electro-Mechanical										
			Non-Spring Return				Spring Return						
													
			Floating		0 to 10V, 4 to 20 mA	Floating	0 to 10V, 4 to 20 mA,	2-Position	0 to 10 Vdc				
			120-second	30-second									
			SQX82.00U	SQX82.03U	SQX62U	SAX81.03U	SAX61.03U	599-03611	599-03609				
Actuator Prefix Codes							272	273	271	373	371	299	298
599-03198	1 (0.85)	1/2 (15)	272-03198	273-03198	271-03198	373-03198	371-03198	299-03198	298-03198				
599-03199	1.6 (1.4)	1/2 (15)	272-03199	273-03199	271-03199	373-03199	371-03199	299-03199	298-03199				
599-03200	2.5 (2.2)	1/2 (15)	272-03200	273-03200	271-03200	373-03200	371-03200	299-03200	298-03200				
599-03201	4 (3.4)	1/2 (15)	272-03201	273-03201	271-03201	373-03201	371-03201	299-03201	298-03201				
599-03202	6.3(5.4)	3/4 (20)	272-03202	273-03202	271-03202	373-03202	371-03202	299-03202	298-03202				
599-03203	10(8.6)	1 (25)	272-03203	273-03203	271-03203	373-03203	371-03203	299-03203	298-03203				
599-03204	16 (14)	1-1/4 (32)	272-03204	273-03204	271-03204	373-03204	371-03204	299-03204	298-03204				
599-03205	25 (22)	1-1/2 (40)	272-03205	273-03205	271-03205	373-03205	371-03205	299-03205	298-03205				
599-03206	40 (34)	2 (50)	272-03206	273-03206	271-03206	373-03206	371-03206	299-03206	298-03206				

**Table 3. PSI (kPa) Close-Off Ratings for Electronic Assemblies, Equal Percentage.**

Action	Valve Size, Inches (mm)	Electro-Hydraulic		Electro-Mechanical		
		SKB	SKD	SQX	SAX	599-03609 599-03611
Normally Open	1/2 (15)	250 (1724)	250 (1724)	250 (1724)	250 (1724)	250 (1724)
	3/4 (20)	250 (1724)	250 (1724)	173 (1193)	211 (1456)	231 (1593)
	1 (25)	250 (1724)	201 (1386)	112 (772)	137 (945)	149 (1028)
	1-1/4 (32)	250 (1724)	124 (855)	69 (476)	85 (586)	92 (634)
	1-1/2 (40)	250 (1724)	80 (552)	44 (303)	55 (379)	59 (407)
	2 (50)	201 (1386)	49 (338)	27 (186)	34 (235)	36 (248)
(Lower Port) Normally Closed	1/2 (15)	250 (1724)	250 (1724)	250 (1724)	250 (1724)	250 (1724)
	3/4 (20)	250 (1724)	250 (1724)	221 (1524)	192 (1325)	250 (1724)
	1 (25)	250 (1724)	203 (1400)	130 (896)	124 (862)	173 (1193)
	1-1/4 (32)	250 (1724)	117 (807)	75 (517)	77 (531)	100 (690)
	1-1/2 (40)	208 (1334)	73 (503)	46 (317)	50 (345)	61 (421)
	2 (50)	126 (869)	44 (303)	28 (193)	31 (214)	37 (255)

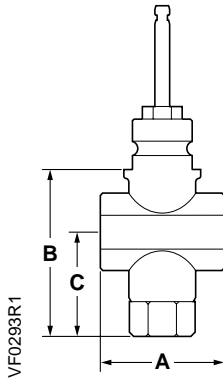
**Table 4. Three-way, Equal Percentage Valve and Actuator Assemblies with Brass Trim, Normal Duty Packing and Female NPT Connections.**

 Valve Body	Flow Rate, Cv (Kvs)	Valve Size, Inches (mm)	Pneumatic Actuators – 24 Vac				
			4-Inch			8-Inch	
							
			3 to 8 psi	5 to 10 psi	10 to 15 psi	599-01050	w/Position Relay
			599-01081	599-01081	599-01083		
Actuator Prefix Codes							
			268	269	270	277	283
599-03198	1 (0.85)	1/2 (15)	268-03198	269-03198	270-03198	277-03198	283-03198
599-03199	1.6 (1.4)	1/2 (15)	268-03199	269-03199	270-03199	277-03199	283-03199
599-03200	2.5 (2.2)	1/2 (15)	268-03200	269-03200	270-03200	277-03200	283-03200
599-03201	4 (3.4)	1/2 (15)	268-03201	269-03201	270-03201	277-03201	283-03201
599-03202	6.3(5.4)	3/4 (20)	268-03202	269-03202	270-03202	277-03202	283-03202
599-03203	10(8.6)	1 (25)	268-03203	269-03203	270-03203	277-03203	283-03203
599-03204	16 (14)	1-1/4 (32)	268-03204	269-03204	270-03204	277-03204	283-03204
599-03205	25 (22)	1-1/2 (40)	268-03205	269-03205	270-03205	277-03205	283-03205
599-03206	40 (34)	2 (50)	268-03206	269-03206	270-03206	277-03206	283-03206

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**Table 5. PSI (kPa) Close-Off Ratings for Pneumatic Valve Assemblies, Equal Percentage.**

Action	Valve Size, Inches (mm)	Spring Range				
		3 to 8 psi (21 to 55 kPa)			10 to 15 psi (69 to 103 kPa)	
		4-inch Actuator	8-inch Actuator		4-inch Actuator	8-inch Actuator
		15 psi (103 kPa)		30 psi (207 kPa)	0 psi (0 kPa)	
Normally Open (Lower Port)	1/2 (15)	142 (979)	250 (1724)	250 (1724)	—	—
	3/4 (20)	80 (552)	231 (1593)	250 (1724)	—	—
	1 (25)	52 (359)	150 (1034)	250 (1724)	—	—
	1-1/4 (32)	32 (221)	150 (1034)	250 (1724)	—	—
	1-1/2 (40)	20 (138)	93 (641)	198 (1365)	—	—
	2 (50)	12 (83)	60 (414)	123 (848)	—	—
Normally Closed (Upper Port)	1/2 (15)	—	—	—	236 (1627)	250 (1724)
	3/4 (20)	—	—	—	155 (1069)	250 (1724)
	1 (25)	—	—	—	91 (627)	250 (1724)
	1-1/4 (32)	—	—	—	52 (359)	148 (1020)
	1-1/2 (40)	—	—	—	32 (331)	92 (634)
	2 (50)	—	—	—	20 (138)	55 (379)



**Table 6. Valve Dimensions.**

Valve Size Inches (mm)	A	B	C	Weight lbs. (kg)
1/2 (15)	2-7/8 (72)	4-5/16 (110)	2-11/16 (68)	3 (1.4)
3/4 (20)	3-3/8 (85)	4-5/16 (110)	2-3/4 (69)	4 (1.8)
1 (25)	3-15/16 (100)	4-1/2 (114)	2-7/8 (72)	5 (2.3)
1-1/4 (32)	4-15/16 (125)	4-5/8 (116)	2-15/16 (74)	7 (3.2)
1-1/2 (40)	5-1/8 (130)	4-5/8 (116)	3 (76)	9 (4.1)
2 (50)	6-1/4 (158)	4-3/4 (121)	3-3/16 (81)	13 (5.9)

For complete technical details on valves with stainless steel trim, or union female, angle female, or union male end connections, see Technical Instructions *Flowrite™ 599 Series, Three-way Valves*. (155-185P25)

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