

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

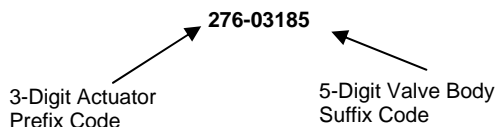


### Description

The Flowrite 599 Series two-way valve bodies, ANSI 250, work with a Flowrite series actuator with a 3/4-inch (20 mm) stroke. Typical applications include control of hot or chilled water, 50% water-glycol solutions, or steam.

### Product Numbers

Use the product numbers in the tables to order the valve and 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).
- Normally-open and normally-closed configurations.
- Cartridge-type packing.
- Equal percentage flow characteristics with either brass or stainless steel trim.
- Linear flow characteristic with stainless steel trim.
- High temperature packing available on linear valves.
- Direct-coupled universal bonnet.
- UFxUF and FxUM 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 250 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>Valve Size</b>	1/2-in. to 2-in. (15 mm 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>	
Normal duty	EPDM O-ring
Steam packing	Teflon® V-ring/EDPM O-ring
<b>Close-off Ratings</b>	According to ANSI/FCI 70-2 See Tables 3 and 5
<b>Controlled Medium</b>	Water, steam, 50% water-glycol solutions
<b>Medium Temperature:</b>	
Normal Duty	20°F to 250°F (-7°C to 120°C)
Steam Packing	337°F (170°C)




### Maximum Recommended Differential Pressure for Modulating Service:

Media	Bronze Trim	Stainless Steel Trim
Liquid	25 psi (173 kPa)	50 psi (345 kPa)
Steam	15 psi (103 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 or Linear
<b>Mounting</b>	NEMA 1 (interior only)

**NOTE:** To keep this document short, only valves with equal percentage flow characteristics, brass trim, with standard duty packing and female NPT connections are shown.  
For complete selection 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. Electro-Hydraulic Actuator and Valve Assemblies.**

Action		Flow Rate, Cv (Kvs)	Valve Size, Inches (mm)	NSR		Spring Return	
							
				Floating		0 to 10 Vdc, 4 to 20 mA	
				SKD82.50U	SKD82.51U	SKD62U	SKB62U
				Actuator Prefix Codes			
275		276		274		291	
Normally Open	599-03162	1 (0.85)	1/2 (15)	275-03162	276-03162	274-03162	—
	599-03163	1.6 (1.4)	1/2 (15)	275-03163	276-03163	274-03163	—
	599-03164	2.5 (2.2)	1/2 (15)	275-03164	276-03164	274-03164	—
	599-03165	4 (3.4)	1/2 (15)	275-03165	276-03165	274-03165	—
	599-03166	6.5 (5.4)	3/4 (20)	275-03166	276-03166	274-03166	—
	599-03167	10 (8.6)	1 (25)	275-03167	276-03167	274-03167	291-03167
	599-03168	16 (14)	1-1/4 (32)	275-03168	276-03168	274-03168	291-03168
	599-03169	25 (22)	1-1/2 (40)	275-03169	276-03169	274-03169	291-03169
599-03170	40 (34)	2 (50)	275-03170	276-03170	274-03170	291-03170	
Normally Closed	599-03180	1 (0.85)	1/2 (15)	275-03180	276-03180	274-03180	—
	599-03181	1.6 (1.4)	1/2 (15)	275-03181	276-03181	274-03181	—
	599-03182	2.5 (2.2)	1/2 (15)	275-03182	276-03182	274-03182	—
	599-03183	4 (3.4)	1/2 (15)	275-03183	276-03183	274-03183	—
	599-03184	6.3 (5.4)	3/4 (20)	275-03184	276-03184	274-03184	—
	599-03185	10 (8.6)	1 (25)	275-03185	276-03185	274-03185	291-03185
	599-03186	16 (14)	1-1/4 (32)	275-03186	276-03186	274-03186	291-03186
	599-03187	25 (22)	1-1/2 (40)	275-03187	276-03187	274-03187	291-03187
	599-03188	40 (34)	2 (50)	275-03188	276-03188	274-03188	291-03188




**Table 2. Electro-Mechanical Actuator and Valve Assemblies.**

Action		Flow Rate, Cv (Kvs)	Valve Size, Inch (mm)	Non-Spring Return				Spring Return					
													
				Floating		0 to 10 Vdc, 4 to 20 mA		Floating		0 to 10 Vdc, 4 to 20 mA			
				120 second	30 second	30 second	30 second	30 second	30 second	2-Position	0 to 10 Vdc		
				SQX82.00U	SQX82.03U	SQX62U	SAX81.03U	SAX61.03U	599-03611	599-03609			
Actuator Prefix Codes													
272		273		271		373		371		299		298	
Normally Open	599-03162	1 (0.85)	1/2 (15)	272-03162	273-03162	271-03162	373-03162	371-03162	299-03162	298-03162			
	599-03163	1.6 (1.4)	1/2 (15)	272-03163	273-03163	271-03163	373-03163	371-03163	299-03163	298-03163			
	599-03164	2.5 (2.2)	1/2 (15)	272-03164	273-03164	271-03164	373-03164	371-03164	299-03164	298-03164			
	599-03165	4 (3.4)	1/2 (15)	272-03165	273-03165	271-03165	373-03165	371-03165	299-03165	298-03165			
	599-03166	6.5 (5.4)	3/4 (20)	272-03166	273-03166	271-03166	373-03166	371-03166	299-03166	298-03166			
	599-03167	10 (8.6)	1 (25)	272-03167	273-03167	271-03167	373-03167	371-03167	299-03167	298-03167			
	599-03168	16 (14)	1-1/4(32)	272-03168	273-03168	271-03168	373-03168	371-03168	299-03168	298-03168			
	599-03169	25 (22)	1-1/2 (40)	272-03169	273-03169	271-03169	373-03169	371-03169	299-03169	298-03169			
599-03170	40 (34)	2 (50)	272-03170	273-03170	271-03170	373-03170	371-03170	299-03170	298-03170				
Normally Closed	599-03180	1 (0.85)	1/2 (15)	272-03180	273-03180	271-03180	373-03180	371-03180	299-03180	298-03180			
	599-03181	1.6 (1.4)	1/2 (15)	272-03181	273-03181	271-03181	373-03181	371-03181	299-03181	298-03181			
	599-03182	2.5 (2.2)	1/2 (15)	272-03182	273-03182	271-03182	373-03182	371-03182	299-03182	298-03182			
	599-03183	4 (3.4)	1/2 (15)	272-03183	273-03183	271-03183	373-03183	371-03183	299-03183	298-03183			
	599-03184	6.5 (5.4)	3/4 (20)	272-03184	273-03184	271-03184	373-03184	371-03184	299-03184	298-03184			
	599-03185	10 (8.6)	1 (25)	272-03185	273-03185	271-03185	373-03185	371-03185	299-03185	298-03185			
	599-03186	16 (14)	1-1/4(32)	272-03186	273-03186	271-03186	373-03186	371-03186	299-03186	298-03186			
	599-03187	25 (22)	1-1/2 (40)	272-03187	273-03187	271-03187	373-03187	371-03187	299-03187	298-03187			
	599-03188	40 (34)	2 (50)	272-03188	273-03188	271-03188	373-03188	371-03188	299-03188	298-03188			

**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)
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)	125 (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)

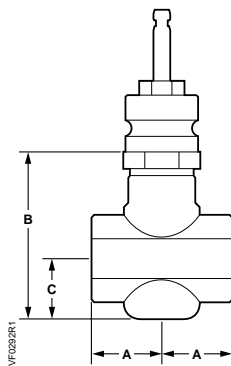
**Table 4. Pneumatic Actuator and Valve Assemblies.**

Action	 Valve Body	Flow Rate, Cv (Kvs)	Valve Size, Inches (mm)	4-Inch		8-Inch	
							
				Spring Range		W/O Positioner	With Positioner
				3-8 PSI	10-15 PSI	599-01050	599-01050 & 599-00426
				599-01081	599-01083	277	283
				Actuator Prefix Codes			
Normally Open	599-03162	1 (0.85)	1/2 (15)	268-03162	—	277-03162	283-03162
	599-03163	1.6 (1.4)	1/2 (15)	268-03163	—	277-03163	283-03163
	599-03164	2.5 (2.2)	1/2 (15)	268-03164	—	277-03164	283-03164
	599-03165	4 (3.4)	1/2 (15)	268-03165	—	277-03165	283-03165
	599-03166	6.3 (5.4)	3/4 (20)	268-03166	—	277-03166	283-03166
	599-03167	10 (8.6)	1 (25)	268-03167	—	277-03167	283-03167
	599-03168	16 (14)	1-1/4 (32)	268-03168	—	277-03168	283-03168
	599-03169	25 (22)	1-1/2 (40)	268-03169	—	277-03169	283-03169
599-03170	40 (34)	2 (50)	268-03170	—	277-03170	283-03170	
Normally Closed	599-03180	1 (0.85)	1/2 (15)	—	270-03180	277-03180	283-03180
	599-03181	1.6 (1.4)	1/2 (15)	—	270-03181	277-03181	283-03181
	599-03182	2.5 (2.2)	1/2 (15)	—	270-03182	277-03182	283-03182
	599-03183	4 (3.4)	1/2 (15)	—	270-03183	277-03183	283-03183
	599-03184	6.3 (5.4)	3/4 (20)	—	270-03184	277-03184	283-03184
	599-03185	10 (8.6)	1 (25)	—	270-03185	277-03185	283-03185
	599-03186	16 (14)	1-1/4 (32)	—	270-03186	277-03186	283-03186
	599-03187	25 (22)	1-1/2 (40)	—	270-03187	277-03187	283-03187
599-03188	40 (34)	2 (50)	—	270-03188	277-03188	283-03188	

**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" Actuator	8" Actuator		4" Actuator	8" Actuator
		15 psi (103 kPa)		30 psi (207 kPa)	0 psi (0 kPa)	
Normally Open	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)	93 (641)	250 (1724)	—	—
	1-1/2 (40)	20 (138)	60 (414)	198 (1365)	—	—
	2 (50)	12 (83)	37 (255)	123 (848)	—	—
Normally Closed	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.**



Action	Valve Size Inches (mm)	A	B	C	Weight lbs. (kg)
Normally Open	1/2 (15)	1-7/16 (36)	2-15/16 (74)	1-1/4 (32)	3 (1.4)
	3/4 (20)	1-11/16 (43)	3-15/16 (99)	1-7/16 (36)	4 (1.8)
	1 (25)	2 (50)	3-3/4 (96)	1-1/4 (32)	5 (2.3)
	1-1/4 (32)	2-1/2 (62)	4-1/4 (109)	2 (50)	7 (3.2)
	1-1/2 (40)	2-9/16 (65)	4-1/4 (109)	2 (50)	8 (3.6)
	2 (50)	3-1/8 (79)	4-9/16 (116)	2-1/4 (57)	16 (7.3)
Normally Closed	1/2 (15)	1-7/16 (36)	3-13/16 (97)	2-13/16 (55)	3 (1.4)
	3/4 (20)	1-11/16 (43)	3-13/16 (97)	2-13/16 (55)	4 (1.8)
	1 (25)	2 (50)	3-13/16 (97)	2-13/16 (55)	5 (2.3)
	1-1/4 (32)	2-1/2 (62)	3-13/16 (97)	2-13/16 (55)	7 (3.2)
	1-1/2 (40)	2-9/16 (65)	3-7/8 (99)	2-1/4 (58)	8 (3.6)
	2 (50)	3-1/8 (79)	4-1/2 (114)	2-9/16 (65)	16 (7.3)

**NOTE:** For complete technical details on valves with linear characteristics, stainless steel trim, or union female, angle female, or union male end connections, see *Flowrite™ 599 Series Two-way Valves Technical Instructions*, (155-184P25).

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