

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

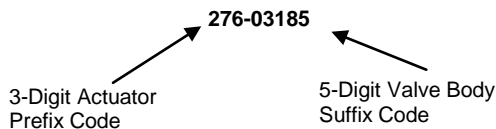


### Description

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.
- UF×UF and F×UM 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
<b>Liquid</b>	25 psi (173 kPa)	50 psi (345 kPa)
<b>Steam</b>	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)* and *Flowrite™ 599 Series 2-1/2 to 6-Inch Valve (2-Way & 3-Way) and Actuator Selection, TB 256 (155-776)*.

**Table 1. Electro-Hydraulic Actuator and Valve Assemblies.**

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




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

 Valve Body	Valve Size, Inch (mm)	Cv (Kvs)	Non-Spring Return			Spring Return			
									
			Floating			0 to 10 Vdc, 4 to 20 mA			
			120 second	30 second	SQX62U	2-Position	0 to 10 Vdc		
			SQX82.00U	SQX82.03U	SQX62U	599-03611	599-03609		
Actuator Prefix Codes					272	273	271	299	298
Normally Open	599-03162	1/2 (15)	1 (0.85)	272-03162	273-03162	271-03162	299-03162	298-03162	
	599-03163	1/2 (15)	1.6 (1.4)	272-03163	273-03163	271-03163	299-03163	298-03163	
	599-03164	1/2 (15)	2.5 (2.2)	272-03164	273-03164	271-03164	299-03164	298-03164	
	599-03165	1/2 (15)	4 (3.4)	272-03165	273-03165	271-03165	299-03165	298-03165	
	599-03166	3/4 (20)	6.5 (5.4)	272-03166	273-03166	271-03166	299-03166	298-03166	
	599-03167	1 (25)	10 (8.6)	272-03167	273-03167	271-03167	299-03167	298-03167	
	599-03168	1-1/4(32)	16 (14)	272-03168	273-03168	271-03168	299-03168	298-03168	
	599-03169	1-1/2 (40)	25 (22)	272-03169	273-03169	271-03169	299-03169	298-03169	
599-03170	2 (50)	40 (34)	272-03170	273-03170	271-03170	299-03170	298-03170		
Normally Closed	599-03180	1/2 (15)	1 (0.85)	272-03180	273-03180	271-03180	299-03180	298-03180	
	599-03181	1/2 (15)	1.6 (1.4)	272-03181	273-03181	271-03181	299-03181	298-03181	
	599-03182	1/2 (15)	2.5 (2.2)	272-03182	273-03182	271-03182	299-03182	298-03182	
	599-03183	1/2 (20)	4 (3.4)	272-03183	273-03183	271-03183	299-03183	298-03183	
	599-03184	3/4 (20)	6.3 (5.4)	272-03184	273-03184	271-03184	299-03184	298-03184	
	599-03185	1 (25)	10 (8.6)	272-03185	273-03185	271-03185	299-03185	298-03185	
	599-03186	1-1/4(32)	16 (14)	272-03186	273-03186	271-03186	299-03186	298-03186	
	599-03187	1-1/2 (40)	25 (22)	272-03187	273-03187	271-03187	299-03187	298-03187	
	599-03188	2 (50)	40 (34)	272-03188	273-03188	271-03188	299-03188	298-03188	

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

Action	Valve Size In (mm)	Electro-Hydraulic		Electro-Mechanical	
		SKB	SKD	SQX	599-03609 599-03611
Normally Open	1/2 (15)	250 (1724)	250 (1724)	250 (1724)	250 (1724)
	3/4 (20)	250 (1724)	250 (1724)	173 (1193)	231 (1593)
	1 (25)	250 (1724)	201 (1386)	112 (772)	149 (1028)
	1-1/4 (32)	250 (1724)	124 (855)	69 (476)	92 (634)
	1-1/2 (40)	250 (1724)	80 (552)	44 (303)	59 (407)
	2 (50)	201 (1386)	49 (338)	27 (186)	36 (248)
Normally Closed	1/2 (15)	250 (1724)	250 (1724)	250 (1724)	250 (1724)
	3/4 (20)	250 (1724)	250 (1724)	221 (1524)	250 (1724)
	1 (25)	250 (1724)	203 (1400)	130 (896)	173 (1193)
	1-1/4 (32)	250 (1724)	117 (807)	75 (517)	100 (690)
	1-1/2 (40)	208 (1334)	73 (503)	46 (317)	61 (421)
	2 (50)	126 (869)	44 (303)	28 (193)	37 (255)

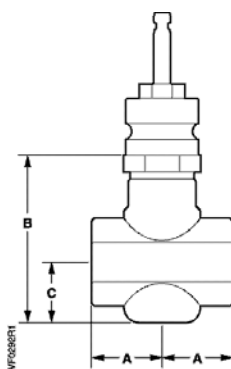
**Table 4. Pneumatic Actuator and Valve Assemblies.**

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

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

Valve Size, Inch (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 In (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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