

## Flowrite™ 599 Series Valves, 2-1/2 to 6-Inch, Flanged, ANSI Class 125, Iron Body



### Description

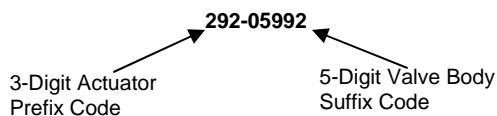
The Flowrite 599 Series two-way and three-way flanged iron bodies are designed to work with a Flowrite series actuator with a 3/4-inch (20 mm) or 1-1/2 inch (40 mm) stroke. They are available in ANSI Class 125 for normally open, normally closed or three-way action. Typical applications include control of hot or chilled water, 50% water-glycol solutions or steam.

### Features

- ANSI Class IV leakage ( $\leq 0.01\%$  of Cv).
- Two-way normally open and normally closed configurations.
- Cartridge-type packing.
- Two-way equal-percentage flow characteristic valves with either bronze or stainless steel trim.
- Two-way linear flow characteristic valves with stainless steel trim.
- Three-way valves with either bronze or stainless steel trim.
- High temperature packing available on two-way linear valves.

### 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.



### Typical Specifications

Automatic control valves shall have flanged connections, 2-1/2 inch through 6-inch (65 through 150 mm) sizes, and shall be ANSI 125 rated to withstand the pressures and temperatures encountered.

Valves shall have metal-to-metal seats, stainless steel stems, and ethylene propylene O-ring packing.

Valve 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>          | 2-1/2 to 6-inch (65 to 150 mm)                             |
| <b>Body</b>                | Flanged style, cast iron ASTM A126 Class B, ANSI Class 125 |
| <b>Trim</b>                | Bronze or stainless steel                                  |
| <b>Stem</b>                | Stainless steel<br>ASTM A582 Type 303                      |
| <b>Stem Travel:</b>        |  |
| <b>2-1/2- and 3-inch</b>   | 3/4-inch (20 mm) stroke                                    |
| <b>4-, 5-, and 6-inch</b>  | 1-1/2 inch (40 mm) stroke                                  |
| <b>Seat</b>                | Metal-to-metal   |
| <b>Packing:</b>            |  |
| <b>Normal duty</b>         | EPDM O-ring  |
| <b>Steam packing</b>       | Teflon® V-ring/EDPM O-ring                                 |
| <b>Close-off Ratings</b>   | According to ANSI/FCI 70-2<br>See Tables 2 and 4.          |
| <b>Controlled Medium</b>   | Water, steam,<br>50% water-glycol solutions                |
| <b>Medium Temperature:</b> |  |
| <b>Normal Duty</b>         | 20°F to 250°F (-7°C to 120°C)                              |
| <b>Steam Packing</b>       | 337°F (170°C) maximum                                      |

### Maximum Recommended Differential Pressure for Modulating Service

| Media  | Bronze Trim      | SS 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 2-way equal percentage, bronze trim and all 3-way with bronze trim are shown.

For complete selection tables, see *Flowrite™ 599 Series 2-1/2 to 6-Inch Valve, Two-Way & Three-Way, and Actuator Assembly Selection* (155-776).

**Table 1. Flowrite ANSI 125 Valve Electronic Actuator Assemblies with Equal Percentage, Bronze Trim and Normal Duty Packing.**

| Valve Body      | Valve Size, Inch (mm) | Cv (Kvs)   | Stroke    | Electro-Hydraulic- 24 Vac |           |           |           |           |                         |           |           |           |           |
|-----------------|-----------------------|------------|-----------|---------------------------|-----------|-----------|-----------|-----------|-------------------------|-----------|-----------|-----------|-----------|
|                 |                       |            |           | Non-spring Return         |           |           |           |           | Spring Return           |           |           |           |           |
|                 |                       |            |           | Floating                  |           | Floating  |           |           | 0 to 10 Vdc, 4 to 20 mA |           |           |           |           |
|                 |                       |            |           | SKD82.50U                 | SKB82.50U | SKC82.60U | SKD82.51U | SKB82.51  | SKC82.61U               | SKD62U    | SKB62U    | SKC62U    |           |
|                 |                       |            |           | Actuator Prefix Codes     |           |           |           |           |                         |           |           |           |           |
|                 |                       |            |           | 275                       | 290       | 293       | 276       | 289       | 292                     | 274       | 291       | 294       |           |
| Normally Open   | 599-05980             | 2-1/2 (65) | 63 (54)   | 3/4 (20)                  | 275-05980 | 290-05980 | —         | 276-05980 | 289-05980               | —         | 274-05980 | 291-05980 | —         |
|                 | 599-05981             | 3 (80)     | 100 (86)  | 3/4 (20)                  | 275-05981 | 290-05981 | —         | 276-05981 | 289-05981               | —         | 274-05981 | 291-05981 | —         |
|                 | 599-05982             | 4 (100)    | 160 (140) | 1-1/2 (40)                | —         | —         | 293-05982 | —         | —                       | 292-05982 | —         | —         | 294-05982 |
|                 | 599-05983             | 5 (125)    | 250 (215) | 1-1/2 (40)                | —         | —         | 293-05983 | —         | —                       | 292-05983 | —         | —         | 294-05983 |
|                 | 599-05984             | 6 (150)    | 400 (340) | 1-1/2 (40)                | —         | —         | 293-05984 | —         | —                       | 292-05984 | —         | —         | 294-05984 |
| Normally Closed | 599-05990             | 2-1/2 (65) | 63 (54)   | 3/4 (20)                  | 275-05990 | 290-05990 | —         | 276-05990 | 289-05990               | —         | 274-05990 | 291-05990 | —         |
|                 | 599-05991             | 3 (80)     | 100 (86)  | 3/4 (20)                  | 275-05991 | 290-05991 | —         | 276-05991 | 289-05991               | —         | 274-05991 | 291-05991 | —         |
|                 | 599-05992             | 4 (100)    | 160 (140) | 1-1/2 (40)                | —         | —         | 293-05992 | —         | —                       | 292-05992 | —         | —         | 294-05992 |
|                 | 599-05993             | 5 (125)    | 250 (215) | 1-1/2 (40)                | —         | —         | 293-05993 | —         | —                       | 292-05993 | —         | —         | 294-05993 |
|                 | 599-05994             | 6 (150)    | 400 (340) | 1-1/2 (40)                | —         | —         | 293-05994 | —         | —                       | 292-05994 | —         | —         | 294-05994 |
| 3-Way           | 599-06160             | 2-1/2 (65) | 63 (54)   | 3/4 (20)                  | 275-06160 | 290-06160 | —         | 276-06160 | 289-06160               | —         | 274-06160 | 291-06160 | —         |
|                 | 599-06161             | 3 (80)     | 100 (86)  | 3/4 (20)                  | 275-06161 | 290-06161 | —         | 276-06161 | 289-06161               | —         | 274-06161 | 291-06161 | —         |
|                 | 599-06162             | 4 (100)    | 160 (140) | 1-1/2 (40)                | —         | —         | 293-06162 | —         | —                       | 292-06162 | —         | —         | 294-06162 |
|                 | 599-06163             | 5 (125)    | 250 (215) | 1-1/2 (40)                | —         | —         | 293-06163 | —         | —                       | 292-06163 | —         | —         | 294-06163 |
|                 | 599-06164             | 6 (150)    | 400 (340) | 1-1/2 (40)                | —         | —         | 293-06164 | —         | —                       | 292-06164 | —         | —         | 294-06164 |

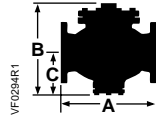
**Table 2. Flowrite ANSI 250 Valve and Pneumatic Actuator Assemblies with Bronze Trim and Normal Duty Packing.**

| Action          |  | Valve Size, Inch (mm) | Cv (Kvs)   | Stroke    | 20mm  |           | 40 mm   | 20 mm     | 40 mm  |           |   |     |                         |     |
|-----------------|---|-----------------------|------------|-----------|---|-----------|---|-----------|--|-----------|---|-----|-------------------------|-----|
|                 |   |                       |            |           | Without Positioner  |           |   |           | With Positioners   |           |   |     |                         |     |
|                 |   |                       |            |           |  |           |  |           |  |           |  |     |                         |     |
|                 |   |                       |            |           | 8-Inch  |           | 12-Inch   |           | 8-Inch   |           | 12-Inch   |     |                         |     |
|                 |   |                       |            |           | 599-01000   |           | 599-01010   |           | 599-01000  |           | 599-01050+<br>599-00426   |     | 599-01010+<br>599-00423 |     |
|                 |   |                       |            |           | Actuator Prefix Codes   |           |   |           |  |           | 281   | 283 | 285                     | 287 |
|                 |   |                       |            |           | 277   |           | 279   |           | 281  |           | 283   |     | 285                     |     |
| Normally Open   | ANSI 125  | 599-05980             | 2-1/2 (65) | 63 (54)   | 3/4 (20)  | 277-05980 | 279-05980   | —         | 283-05980  | 285-05980 | —   |     |                         |     |
|                 |   | 599-05981             | 3 (80)     | 100 (86)  | 3/4 (20)  | 277-05981 | 279-05981   | —         | 283-05981  | 285-05981 | —   |     |                         |     |
|                 |   | 599-05982             | 4 (100)    | 160 (140) | 1-1/2 (40)  | —         | —   | 281-05982 | —  | —         | 287-05982   |     |                         |     |
|                 |   | 599-05983             | 5 (125)    | 250 (215) | 1-1/2 (40)  | —         | —   | 281-05983 | —  | —         | 287-05983   |     |                         |     |
|                 |   | 599-05984             | 6 (150)    | 400 (340) | 1-1/2 (40)  | —         | —   | 281-05984 | —  | —         | 287-05984   |     |                         |     |
| Normally Closed | ANSI 125  | 599-05990             | 2-1/2 (65) | 63 (54)   | 3/4 (20)  | 277-05990 | 279-05990   | —         | 283-05990  | 285-05990 | —   |     |                         |     |
|                 |   | 599-05991             | 3 (80)     | 100 (86)  | 3/4 (20)  | 277-05991 | 279-05991   | —         | 283-05991  | 285-05991 | —   |     |                         |     |
|                 |   | 599-05992             | 4 (100)    | 160 (140) | 1-1/2 (40)  | —         | —   | 281-05992 | —  | —         | 287-05992   |     |                         |     |
|                 |   | 599-05993             | 5 (125)    | 250 (215) | 1-1/2 (40)  | —         | —   | 281-05993 | —  | —         | 287-05993   |     |                         |     |
|                 |   | 599-05994             | 6 (150)    | 400 (340) | 1-1/2 (40)  | —         | —   | 281-05994 | —  | —         | 287-05994   |     |                         |     |
| 3-way           | ANSI 125  | 599-06160             | 2-1/2 (65) | 63 (54)   | 3/4 (20)  | 277-06160 | 279-06160   | —         | 283-06160  | 285-06160 | —   |     |                         |     |
|                 |   | 599-06161             | 3 (80)     | 100 (86)  | 3/4 (20)  | 277-06161 | 279-06161   | —         | 283-06161  | 285-06161 | —   |     |                         |     |
|                 |   | 599-06162             | 4 (100)    | 160 (140) | 1-1/2 (40)  | —         | —   | 281-06162 | —  | —         | 287-06162   |     |                         |     |
|                 |   | 599-06163             | 5 (125)    | 250 (215) | 1-1/2 (40)  | —         | —   | 281-06163 | —  | —         | 287-06163   |     |                         |     |
|                 |   | 599-06164             | 6 (150)    | 400 (340) | 1-1/2 (40)  | —         | —   | 281-06164 | —  | —         | 287-06164   |     |                         |     |

**Table 3. Close-Off Ratings in PSI (kPa).**

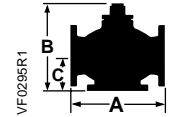
| Action         | Valve Size Inch (mm) | Electro Hydraulic Actuator |          | Pneumatic Actuator, Spring Range |           |          |            |              |           |
|----------------|----------------------|----------------------------|----------|----------------------------------|-----------|----------|------------|--------------|-----------|
|                |                      | SKB/C                      | SKD      | 3 to 8 psi                       |           |          |            | 10 to 15 psi |           |
|                |                      |                            |          | 8-Inch                           |           | 12-Inch  |            | 8-Inch       | 12-Inch   |
|                |                      |                            |          | 15 psi                           | 30 psi    | 15 psi   | 30 psi     | 0 psi        | 15 psi    |
| NO, Lower Port | 2-1/2 (65)           | 153 (518)                  | 38 (262) | 31 (213)                         | 100 (689) | 95 (655) | 250 (1724) | —            | —         |
|                | 3 (80)               | 101 (342)                  | 25 (172) | 20 (138)                         | 66 (444)  | 63 (434) | 200 (1378) | —            | —         |
|                | 4 (100)              | 65 (448)                   | —        | —                                | —         | 40 (275) | 129 (889)  | —            | —         |
|                | 5 (125)              | 42 (289)                   | —        | —                                | —         | 26 (179) | 82 (565)   | —            | —         |
|                | 6 (150)              | 29 (199)                   | —        | —                                | —         | 18 (124) | 57 (393)   | —            | —         |
| NC, Upper Port | 2-1/2 (65)           | 97 (668)                   | 34 (234) | —                                | —         | —        | —          | 36 (248)     | 114 (786) |
|                | 3 (80)               | 63 (434)                   | 22 (152) | —                                | —         | —        | —          | 23 (158)     | 74 (610)  |
|                | 4 (100)              | 39 (268)                   | —        | —                                | —         | —        | —          | —            | 46 (317)  |
|                | 5 (125)              | 25 (172)                   | —        | —                                | —         | —        | —          | —            | 29 (199)  |
|                | 6 (150)              | 17 (117)                   | —        | —                                | —         | —        | —          | —            | 20 (137)  |

**Table 4. Flanged 2-Way Valve Dimensions.**



| Action          | Valve Size In (mm) | A            | B              | C            | Weight lbs (kg) |
|-----------------|--------------------|--------------|----------------|--------------|-----------------|
| Normally Open   | 2-1/2 (65)         | 10-7/8 (276) | 11 (281)       | 4-7/8 (123)  | 60 (27)         |
|                 | 3 (80)             | 11-3/4 (299) | 12-1/4 (312)   | 5-5/16 (135) | 76 (34)         |
|                 | 4 (100)            | 13-7/8 (352) | 13-9/16 (345)  | 6-5/16 (160) | 124 (56)        |
|                 | 5 (125)            | 15-3/4 (400) | 15-3/16 (385)  | 7 (177)      | 155 (70)        |
|                 | 6 (150)            | 17-3/4 (451) | 16-3/4 (426)   | 7-7/8 (200)  | 212 (96)        |
| Normally Closed | 2-1/2 (65)         | 10-7/8 (276) | 10-5/8 (269)   | 4-7/8 (125)  | 58 (26)         |
|                 | 3 (80)             | 11-3/4 (299) | 11-15/16 (303) | 5-5/8 (142)  | 75 (34)         |
|                 | 4 (100)            | 13-7/8 (352) | 13-15/16 (354) | 6-5/8 (168)  | 123 (56)        |
|                 | 5 (125)            | 15-3/4 (400) | 15-1/4 (388)   | 7-1/2 (185)  | 153 (69)        |
|                 | 6 (150)            | 17-3/4 (451) | 17-1/16 (433)  | 8-3/16 (207) | 209 (95)        |

**Table 5. Flanged 3-Way Valve Dimensions.**



| Valve Size In (mm) | A            | B            | C           | Weight lbs (kg) |
|--------------------|--------------|--------------|-------------|-----------------|
| 2-1/2 (65)         | —            | —            | —           | —               |
| 3 (80)             | —            | —            | —           | —               |
| 4 (100)            | —            | —            | —           | —               |
| 5 (125)            | —            | —            | —           | —               |
| 6 (150)            | —            | —            | —           | —               |
| 2-1/2 (65)         | 10-7/8 (276) | 9-3/8 (239)  | 3-3/4 (95)  | 50 (23)         |
| 3 (80)             | 11-3/4 (299) | 10-3/4 (272) | 4-3/8 (111) | 65 (30)         |
| 4 (100)            | 13-7/8 (352) | 12-1/2 (318) | 5-1/8 (132) | 110 (50)        |
| 5 (125)            | 15-3/4 (400) | 13-3/4 (349) | 5-3/4 (146) | 136 (62)        |
| 6 (150)            | 17-3/4 (451) | 15-1/2 (393) | 6-5/8 (167) | 141 (64)        |

For complete technical details on valves with a linear characteristic and stainless steel trim, see Technical Instructions *Flowrite™ VF 599 Series Two-way Valves*, (155-159P25) or Technical Instructions *Flowrite™ VF 599 Series Three-way Valves* (155-160P25).

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