

## Pressure Independent Control Series 2-Way Flanged Valves and Electromotoric Valve Actuators



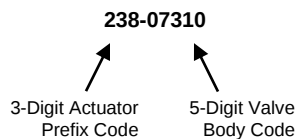
### Description

The 2-1/2-inch and 3-inch Pressure Independent Control Valves have a 3/4-inch (20 mm) stroke, and work with the SAX and SQV Series Electromotoric Actuators. The 4-, 5-, and 6-inch valves have a 1-1/2-inch (40 mm) stroke, and work with the SAV and SQV Series Electromotoric Actuators. The actuators require a 24 Vac/dc operating voltage and accept floating, 0 to 10 Vdc, or 4 to 20 mA control signals.

Typical applications include control of hot or chilled water or water-glycol solutions up to 50% in closed loop systems.

### 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 code. The prefix specifies an actuator. The 5-digit code specifies the valve body. See Table 2.



**Table 1. Reference: Valve Body Maximum Flow Range.**

| Valve Body | Line Size<br>Inch (mm) | Maximum GPM<br>Flow Range |
|------------|------------------------|---------------------------|
| 599-07310  | 2-1/2 (65)             | 19 to 110                 |
| 599-07320  | Low Flow               |                           |
| 599-07330  | 2-1/2 (65)             | 21 to 132                 |
| 599-07335  | New                    |                           |
| 599-07315  | 2-1/2 (65)             | 26 to 154                 |
| 599-07325  | High Flow              |                           |
| 599-07311  | 3 (80)                 | 24 to 150                 |
| 599-07321  | Low Flow               |                           |
| 599-07331  | 3 (80)                 | 31 to 195                 |
| 599-07336  | New                    |                           |
| 599-07316  | 3 (80)                 | 31 to 190                 |
| 599-07326  | High Flow              |                           |
| 599-07312  | 4 (100)                | 55 to 300                 |
| 599-07322  | Low Flow               |                           |
| 599-07332  | 4 (100)                | 54 to 307                 |
| 599-07337  | New                    |                           |
| 599-07317  | 4 (100)                | 65 to 395                 |
| 599-07327  | High Flow              |                           |
| 599-07313  | 5 (125)                | 85 to 485                 |
| 599-07323  | Low Flow               |                           |
| 599-07318  | 5 (125)                | 105 to 595                |
| 599-07328  | High Flow              |                           |
| 599-07314  | 6 (150)                | 115 to 650                |
| 599-07324  | Low Flow               |                           |
| 599-07319  | 6 (150)                | 140 to 860                |
| 599-07329  | High Flow              |                           |

### Features

The Pressure Independent Control Valves include a pressure regulator, a flow limiter, and a control valve in a single device.

SAX, SAV, and SQV Actuators have a direct-coupled installation, manual override and visual position indication.

### Technical Data

#### Valve Specifications

|                          |                                          |
|--------------------------|------------------------------------------|
| Body material:           | Cast iron                                |
| Stem:                    | Stainless steel                          |
| Line size:               | 2-1/2-inch (65 mm) to<br>6-inch (150 mm) |
| Action:                  | 2-way                                    |
| Valve body rating:       | ANSI 125/ANSI 250                        |
| Close-off:               | 100 psi (700 kPa) Δp                     |
| Leakage rate:            | < ANSI Class IV (0.01%)                  |
| Media temperature range: | 34°F to 250°F (1°C to 121°C)             |
| Flow characteristic:     | Linear                                   |
| Connection:              | ANSI flanged                             |

#### Actuator Specifications

|                                       |                                                   |
|---------------------------------------|---------------------------------------------------|
| Operating voltage:                    | 24 Vac/dc                                         |
| SAX, SAV, SQV                         |                                                   |
| Frequency:                            | 50/60 Hz                                          |
| Power consumption (normal operation): |                                                   |
| SAX81.03U/SAV81.00U                   | 5 VA (3.75W)/7 VA (4.5W)                          |
| SAX61.03U/SAV61.00U                   | 8 VA (3.75W)/9.5 VA (4.5W)                        |
| SQV                                   | 20 VA/7.5W                                        |
| Control Signal:                       |                                                   |
| SAX81.03U/SAV81.00U                   | Floating                                          |
| SAX61.03U/SAV61.00U                   | 0 to 10 Vdc, 4 to 20 mA                           |
| SQV                                   | Selectable (Floating,<br>0 to 10 Vdc, 4 to 20 mA) |
| Run time:                             |                                                   |
| SAX                                   | 30 seconds                                        |
| SAV                                   | 120 seconds                                       |
| SQV                                   | 40 to 240 seconds (adjustable)                    |
| Force:                                |                                                   |
| SAX                                   | 180 lb (800 N)                                    |
| SAV                                   | 360 lb (1600 N)                                   |
| SQV                                   | 250 lb (1100 N)                                   |
| Weight:                               |                                                   |
| SAX                                   | 4.1 lbs (1.85 kg)                                 |
| SAV                                   | 4.23 lbs (1.92 kg)                                |
| SQV                                   | 14 lbs (6.2 kg)                                   |

#### Additional References:

|                        |                                |
|------------------------|--------------------------------|
| Technical Instructions |                                |
| PICV Valves            | 155-522                        |
| SAX Actuators          | 155-506, 155-507               |
| SAV Actuators          | 155-547, 155-548               |
| SQV Actuators          | 155-521                        |
| Agency Certifications: |                                |
| UL                     | UL 873                         |
| cUL                    | Canadian Standard C22.2 No. 24 |

## Typical Specifications

Flow shall be varied by actuator position. At any given position, flow through the valve shall not vary more than  $\pm 5\%$  due to system pressure fluctuations across the valve in the selected operating range.

Valves shall be pressure independent between a differential pressure of  $\leq 5$  to 90 psi for low-flow valves and new 599-0733X valves, or  $\leq 10$  to 90 psi for high-flow valves. Length of stroke shall be consistent and independent of flow setting.

**Table 2. 2-1/2-Inch to 6-Inch 2-Way Valve and Actuator Assemblies.**

| Valve Body | ANSI Class | Line Size, Inch (mm) | Maximum Flow | Non-Spring Return                                                                 |                       |                                                                                     |                       | Spring Return                                                                       |                              |
|------------|------------|----------------------|--------------|-----------------------------------------------------------------------------------|-----------------------|-------------------------------------------------------------------------------------|-----------------------|-------------------------------------------------------------------------------------|------------------------------|
|            |            |                      |              | SAX61.03U<br>0 to 10V                                                             | SAX81.03U<br>Floating | SAV61.00U<br>0 to 10V                                                               | SAV81.00U<br>Floating | SQV91P30U<br>Normally Open                                                          | SQV91P40U<br>Normally Closed |
|            |            |                      |              |                                                                                   |                       |                                                                                     |                       | Floating, 0 to 10V, 4 to 20 mA                                                      |                              |
|            |            |                      |              |  |                       |  |                       |  |                              |
|            |            |                      |              | Actuator Prefix Code                                                              |                       |                                                                                     |                       |                                                                                     |                              |
| 371        | 373        | 378                  | 379          | 238                                                                               | 239                   |                                                                                     |                       |                                                                                     |                              |
| 599-07310  | 125        | 2.5 (65)             | 110          | 371-07310                                                                         | 373-07310             | -                                                                                   | -                     | 238-07310                                                                           | 239-07310                    |
| 599-07320  | 250        |                      |              | 371-07320                                                                         | 373-07320             | -                                                                                   | -                     | 238-07320                                                                           | 239-07320                    |
| 599-07330  | 125        |                      | 132          | 371-07330                                                                         | 373-07330             | -                                                                                   | -                     | 238-07330                                                                           | 239-07330                    |
| 599-07335  | 250        |                      |              | 371-07335                                                                         | 373-07335             | -                                                                                   | -                     | 238-07335                                                                           | 239-07335                    |
| 599-07315  | 125        |                      | 154          | 371-07315                                                                         | 373-07315             | -                                                                                   | -                     | 238-07315                                                                           | 239-07315                    |
| 599-07325  | 250        |                      |              | 371-07325                                                                         | 373-07325             | -                                                                                   | -                     | 238-07325                                                                           | 239-07325                    |
| 599-07311  | 125        | 3 (80)               | 150          | 371-07311                                                                         | 373-07311             | -                                                                                   | -                     | 238-07311                                                                           | 239-07311                    |
| 599-07321  | 250        |                      |              | 371-07321                                                                         | 373-07321             | -                                                                                   | -                     | 238-07321                                                                           | 239-07321                    |
| 599-07316  | 125        |                      | 190          | 371-07316                                                                         | 373-07316             | -                                                                                   | -                     | 238-07316                                                                           | 239-07316                    |
| 599-07326  | 250        |                      |              | 371-07326                                                                         | 373-07326             | -                                                                                   | -                     | 238-07326                                                                           | 239-07326                    |
| 599-07331  | 125        |                      | 195          | 371-07331                                                                         | 373-07331             | -                                                                                   | -                     | 238-07331                                                                           | 239-07331                    |
| 599-07336  | 250        |                      |              | 371-07336                                                                         | 373-07336             | -                                                                                   | -                     | 238-07336                                                                           | 239-07336                    |
| 599-07312  | 125        | 4 (100)              | 300          | -                                                                                 | -                     | 378-07312                                                                           | 379-07312             | 238-07312                                                                           | 239-07312                    |
| 599-07322  | 250        |                      |              | -                                                                                 | -                     | 378-07322                                                                           | 379-07322             | 238-07322                                                                           | 239-07322                    |
| 599-07332  | 125        |                      | 307          | -                                                                                 | -                     | 378-07332                                                                           | 379-07332             | 238-07332                                                                           | 239-07332                    |
| 599-07337  | 250        |                      |              | -                                                                                 | -                     | 378-07337                                                                           | 379-07337             | 238-07337                                                                           | 239-07337                    |
| 599-07317  | 125        |                      | 395          | -                                                                                 | -                     | 378-07317                                                                           | 379-07317             | 238-07317                                                                           | 239-07317                    |
| 599-07327  | 250        |                      |              | -                                                                                 | -                     | 378-07327                                                                           | 379-07327             | 238-07327                                                                           | 239-07327                    |
| 599-07313  | 125        | 5 (125)              | 485          | -                                                                                 | -                     | 378-07313                                                                           | 379-07313             | 238-07313                                                                           | 239-07313                    |
| 599-07323  | 250        |                      |              | -                                                                                 | -                     | 378-07323                                                                           | 379-07323             | 238-07323                                                                           | 239-07323                    |
| 599-07318  | 125        |                      | 595          | -                                                                                 | -                     | 378-07318                                                                           | 379-07318             | 238-07318                                                                           | 239-07318                    |
| 599-07328  | 250        |                      |              | -                                                                                 | -                     | 378-07328                                                                           | 379-07328             | 238-07328                                                                           | 239-07328                    |
| 599-07314  | 125        | 6 (150)              | 650          | -                                                                                 | -                     | 378-07314                                                                           | 379-07314             | 238-07314                                                                           | 239-07314                    |
| 599-07324  | 250        |                      |              | -                                                                                 | -                     | 378-07324                                                                           | 379-07324             | 238-07324                                                                           | 239-07324                    |
| 599-07319  | 125        |                      | 860          | -                                                                                 | -                     | 378-07319                                                                           | 379-07319             | 238-07319                                                                           | 239-07319                    |
| 599-07329  | 250        |                      |              | -                                                                                 | -                     | 378-07329                                                                           | 379-07329             | 238-07329                                                                           | 239-07329                    |

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