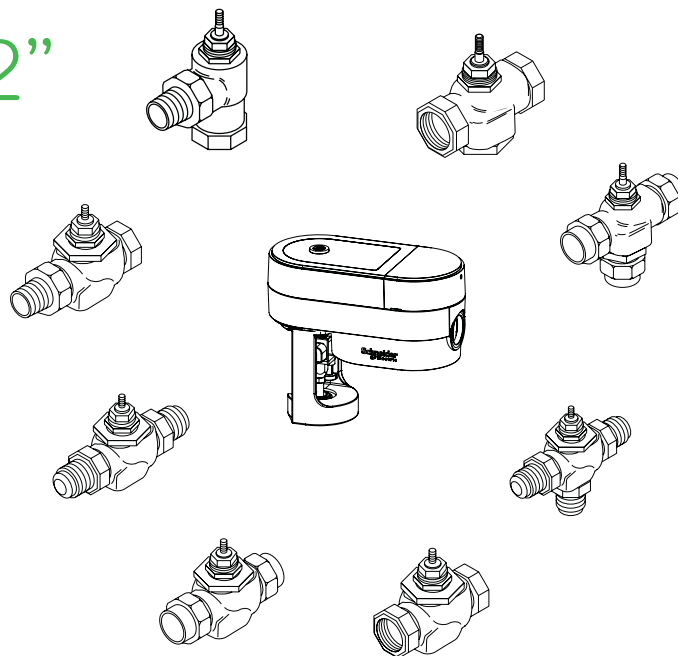


# VB-7000 Series 1/2” to 2” Globe Valves with MG350V Series SmartX Actuators



## Product Description

Schneider Electric MG350V non-spring actuators and VB-7000 series two and three-way globe valves provide for control of fan coils, unit ventilators, reheat, cooling units, perimeter heating and other applications. Input signal options include 0...10 Vdc, 2...10 Vdc, 4...20 mA proportional, floating, two-position, and pulse width modulation (PWM).

## Valve and Actuator Selection Procedure

1. Determine the required flow coefficient (Cv/kvs). Using the required flow and pressure drop for the application (consult CA28, F-13755 if necessary), determine the required flow coefficient.
2. Determine the valve body part number. Select a two-way valve body from Table 1 or a three-way mixing or diverting valve body from Table 2 that has the required flow coefficient, size, body pattern, end connection, and temperature/pressure ratings appropriate for the application.
3. Select the MG350V actuator. Using the required close-off pressure for the application, consult Table 5 and select a SmartX actuator that provides sufficient close-off pressure for the valve body selected in Step 2. Additional SmartX actuator specifications may be found in Table 3 or in the MG350V SmartX Actuator Installation Instructions (F-27852).
4. Determine assembly part number. If a complete valve and actuator assembly is required, consult Table 3 for the actuator code of the SmartX actuator selected in Step 3. For the complete assembly part number:
  - Change the valve body part number prefix from VB to VF (for a floating or a two-position or PWM control input signal) or VS (for a 0...10 Vdc, 2...10 Vdc, or 4...20 mA proportional control input signal).
  - Insert the actuator code in the third field of the part number.

- Confirm the availability of the factory assembly by consulting Table 6 (two-way valves) or Table 7 (three-way mixing valves).

### Example 1

- Valve body: VB-7213-0-4-04
- Actuator: MG350V-24M (actuator code 110 from Table 3 with a VS valve assembly prefix)
- Complete assembly: VS-7213-110-4-04

MG350V-24M proportional SmartX actuators are field configured for the desired control signal type such as 0...10 Vdc or 2...10 Vdc plus the desired control action (reverse or direct). Consult the appropriate MG350V SmartX Actuator Installation Instructions (F-27852) for further information.

### Example 2

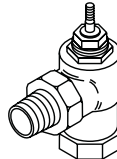
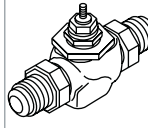
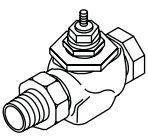
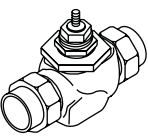
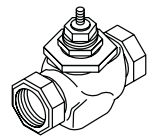
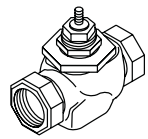
- Valve body: VB-7211-0-3-04
- Actuator: MG350V-24F
- Complete assembly: None, Check Tables 6 and 7. This combination is valid only as a field assembly. Order the valve body and actuator and assemble in the field. Consult the appropriate MG350V SmartX Actuator Installation Instructions (F-27852) for further information.

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## Valve Body and Actuator Selection

Table 1: VB-72xx Series Two-Way Valve Bodies

| <ul style="list-style-type: none"><li>• Stem Up Open or Stem Up Closed</li><li>• 1/2"...1-1/4" Union Angle and Straightway</li><li>• 5/8" OD SAE Flared</li><li>• 1/2"...2" Union Sweat</li><li>• 1/2"...2" NPT or Rp Threaded</li><li>• ANSI Pressure Class: 250 PSI up to 400 °F (204 °C) below 150 °F (65 °C) ISO PN16</li></ul> |                   | Application: Chilled Water, Hot Water, or Low Pressure Steam                      |                                                                                   |                                                                                                                                                                         |                                                                                   |                                                                                     |                                                                                     |                           |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------|
|                                                                                                                                                                                                                                                                                                                                     |                   |  |  |                                                                                        |  |  |  |                           |
|                                                                                                                                                                                                                                                                                                                                     |                   | Union Angle                                                                       | SAE Flared                                                                        | Union Straightway                                                                                                                                                       | Union Sweat                                                                       | NPT Threaded Rp Threaded                                                            | NPT Threaded                                                                        |                           |
| Size                                                                                                                                                                                                                                                                                                                                |                   | 1/2"...1-1/4"                                                                     | 5/8" OD                                                                           | 1/2"...1-1/4"                                                                                                                                                           | 1/2"...2"                                                                         | 1/2"...2"<br>15...50 mm                                                             | 1/2"...2"                                                                           |                           |
| Valve Body Part Number, Stem Up Open                                                                                                                                                                                                                                                                                                |                   | VB-7211-0-3-P                                                                     | VB-7212-0-4-P                                                                     | VB-7211-0-4-P                                                                                                                                                           | VB-7214-0-4-P                                                                     | VB-7213-0-4-P<br>VB-7215-0-4-P <sup>a</sup>                                         | VB-7253-0-4-P                                                                       | VB-7273-0-4-P             |
| Valve Body Part Number, Stem Up Closed                                                                                                                                                                                                                                                                                              |                   | —                                                                                 | VB-7222-0-4-P                                                                     | VB-7221-0-4-P                                                                                                                                                           | VB-7224-0-4-P                                                                     | VB-7223-0-4-P<br>VB-7225-0-4-P <sup>a</sup>                                         | VB-7263-0-4-P <sup>c</sup>                                                          | VB-7283-0-4-P             |
| ANSI Seat Leakage <sup>d</sup>                                                                                                                                                                                                                                                                                                      |                   | ANSI IV                                                                           |                                                                                   | Designed to ANSI V with ANSI IV above 35 psi (241 kPa) close off. Long term seat leakage dependent on proper water conditioning maintenance of the system. <sup>d</sup> |                                                                                   |                                                                                     |                                                                                     | ANSI III                  |
| Allowable Differential Pressure, Water <sup>b</sup>                                                                                                                                                                                                                                                                                 |                   | 35 PSI (241 kPa) for Normal Life                                                  |                                                                                   | 87 PSI (600 kPa) for Normal Life                                                                                                                                        |                                                                                   |                                                                                     |                                                                                     |                           |
| Flow Type                                                                                                                                                                                                                                                                                                                           |                   | Modified Equal %                                                                  |                                                                                   |                                                                                                                                                                         |                                                                                   |                                                                                     | Modified Linear                                                                     |                           |
| Material                                                                                                                                                                                                                                                                                                                            | Body              | Bronze                                                                            |                                                                                   |                                                                                                                                                                         |                                                                                   |                                                                                     |                                                                                     |                           |
|                                                                                                                                                                                                                                                                                                                                     | Stem              | 316 Stainless Steel                                                               |                                                                                   |                                                                                                                                                                         |                                                                                   |                                                                                     |                                                                                     |                           |
|                                                                                                                                                                                                                                                                                                                                     | Seat              | Bronze                                                                            |                                                                                   |                                                                                                                                                                         |                                                                                   |                                                                                     | 316 Stainless Steel                                                                 |                           |
|                                                                                                                                                                                                                                                                                                                                     | Plug              | Brass                                                                             |                                                                                   |                                                                                                                                                                         |                                                                                   |                                                                                     | 316 Stainless Steel                                                                 |                           |
|                                                                                                                                                                                                                                                                                                                                     | Packing           | Spring Loaded PTFE/EPDM                                                           |                                                                                   |                                                                                                                                                                         |                                                                                   |                                                                                     | Spring Loaded PTFE                                                                  |                           |
|                                                                                                                                                                                                                                                                                                                                     | Seat Seal         | Soft Seal                                                                         |                                                                                   |                                                                                                                                                                         |                                                                                   |                                                                                     | PTFE                                                                                | Metal to Metal            |
| Maximum Inlet Pressure, Steam                                                                                                                                                                                                                                                                                                       |                   | 35 PSIG (241 kPa)                                                                 |                                                                                   |                                                                                                                                                                         |                                                                                   |                                                                                     | 100 PSIG (690 kPa)                                                                  | 150 PSIG (1034 kPa)       |
| Allowable Control Media Temperature                                                                                                                                                                                                                                                                                                 |                   | 20...281 °F (-7...138 °C)                                                         |                                                                                   |                                                                                                                                                                         |                                                                                   |                                                                                     | 20...340 °F (-7...171 °C)                                                           | 20...400 °F (-7...205 °C) |
| To Select a Port Code (P)                                                                                                                                                                                                                                                                                                           |                   |                                                                                   |                                                                                   |                                                                                                                                                                         |                                                                                   |                                                                                     |                                                                                     |                           |
| P Code                                                                                                                                                                                                                                                                                                                              | Valve Size        | Cv (kvs) Rating                                                                   |                                                                                   |                                                                                                                                                                         |                                                                                   |                                                                                     |                                                                                     |                           |
| 01                                                                                                                                                                                                                                                                                                                                  | 1/2"<br>(15 mm)   | 0.4 (0.34)                                                                        | 0.4 (0.34)                                                                        | 0.4 (0.34)                                                                                                                                                              | 0.4 (0.34)                                                                        | 0.4 (0.34)                                                                          | 0.4 (0.34)                                                                          | 0.4 (0.34)                |
| 02                                                                                                                                                                                                                                                                                                                                  |                   | 1.3 (1.1)                                                                         | 1.3 (1.1)                                                                         | 1.3 (1.1)                                                                                                                                                               | 1.3 (1.1)                                                                         | 1.3 (1.1)                                                                           | 1.3 (1.1)                                                                           | 1.3 (1.1)                 |
| 03                                                                                                                                                                                                                                                                                                                                  |                   | 2.2 (1.9)                                                                         | 2.2 (1.9)                                                                         | 2.2 (1.9)                                                                                                                                                               | 2.2 (1.9)                                                                         | 2.2 (1.9)                                                                           | 2.2 (1.9)                                                                           | 2.2 (1.9)                 |
| 04                                                                                                                                                                                                                                                                                                                                  |                   | 5.0 (4.3)                                                                         | 4.4 (3.8)                                                                         | 4.4 (3.8)                                                                                                                                                               | 4.4 (3.8)                                                                         | 4.4 (3.8)                                                                           | 4.4 (3.8)                                                                           | 4.4 (3.8)                 |
| 05                                                                                                                                                                                                                                                                                                                                  | 3/4" (20 mm)      | 5.5 (4.7)                                                                         | —                                                                                 | 5.5 (4.7)                                                                                                                                                               | 5.5 (4.7)                                                                         | 5.5 (4.7)                                                                           | 5.5 (4.7)                                                                           | 5.5 (4.7)                 |
| 06                                                                                                                                                                                                                                                                                                                                  |                   | 8.5 (7.4)                                                                         | —                                                                                 | 7.5 (6.5)                                                                                                                                                               | 7.5 (6.5)                                                                         | 7.5 (6.5)                                                                           | 7.5 (6.5)                                                                           | 7.5 (6.5)                 |
| 07                                                                                                                                                                                                                                                                                                                                  | 1" (25 mm)        | 14 (12)                                                                           | —                                                                                 | 10 (8.6)                                                                                                                                                                | 10 (8.6)                                                                          | 10 (8.6)                                                                            | 10 (8.6)                                                                            | 10 (8.6)                  |
| 08                                                                                                                                                                                                                                                                                                                                  |                   | 16 (14)                                                                           | —                                                                                 | 14 (12)                                                                                                                                                                 | 14 (12)                                                                           | 14 (12)                                                                             | 12 (10.4)                                                                           | 12 (10.4)                 |
| 09                                                                                                                                                                                                                                                                                                                                  | 1-1/4"<br>(32 mm) | 22 (19)                                                                           | —                                                                                 | 20 (17.3)                                                                                                                                                               | 20 (17.3)                                                                         | 20 (17.3)                                                                           | 20 (17.3)                                                                           | 20 (17.3)                 |
| 10                                                                                                                                                                                                                                                                                                                                  | 1-1/2"<br>(40 mm) | —                                                                                 | —                                                                                 | —                                                                                                                                                                       | 28 (21.2)                                                                         | 28 (21.2)                                                                           | 28 (21.2)                                                                           | 28 (21.2)                 |
| 11                                                                                                                                                                                                                                                                                                                                  | 2" (50 mm)        | —                                                                                 | —                                                                                 | —                                                                                                                                                                       | 40 (34.6)                                                                         | 40 (34.6)                                                                           | 40 (34.6)                                                                           | 40 (34.6)                 |

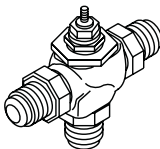
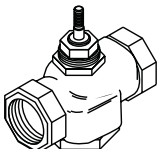
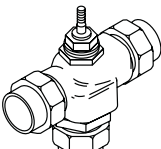
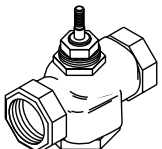
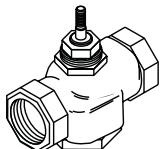
a) 15...50 mm valves with metric thread Rp 1/2...Rp 2.

b) Maximum recommended differential in full open position. Do not exceed recommended differential pressure (pressure drop) or integrity of parts may be affected.

c) VB-7263 series valves with port codes from -28...-82 have the same specifications as the respective matching pipe size VB-7263 series valves with port codes -01...-11.

d) Actuator close-off ratings are based on ANSI V with EPDM and PTFE discs in steam. VB-7273 and VB-7283 series metal-to-metal units are designed for ANSI III (0.1% ma. leakage) in full port seats.

Table 2: VB-73xx Series Three-Way Valve Bodies

|                                                                                                                                                                                                                                                                       |                |                                                                                   |                                                                                                                                                                           |                                                                                   |                                                                                    |                                                                                                                                                                           |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"><li>• Mixing or Diverting</li><li>• 5/8" OD SAE Flared</li><li>• 1/2"...2" NPT or Rp Threaded</li><li>• 1/2"...2" Union Sweat</li><li>• ANSI Pressure Class: 250 PSI up to 400 °F (204 °C) below 150 °F (65 °C) ISO PN 16</li></ul> |                | Application: Chilled or Hot Water or Steam                                        |                                                                                                                                                                           |                                                                                   |                                                                                    |                                                                                                                                                                           |
|                                                                                                                                                                                                                                                                       |                |  |                                                                                          |  |  |                                                                                        |
|                                                                                                                                                                                                                                                                       |                | SAE Flared                                                                        | NPT Threaded Rp Threaded                                                                                                                                                  | Union Sweat                                                                       | NPT Threaded Rp Threaded                                                           | NPT Threaded                                                                                                                                                              |
| Size                                                                                                                                                                                                                                                                  |                | 5/8" OD                                                                           | 1/2"...2" 15...50 mm                                                                                                                                                      | 1/2"...2"                                                                         |                                                                                    |                                                                                                                                                                           |
| Valve Body Part Number, Mixing <sup>a</sup>                                                                                                                                                                                                                           |                | VB-7312-0-4-P                                                                     | VB-7313-0-4-P<br>VB-7315-0-4-P <sup>b</sup>                                                                                                                               | VB-7314-0-4-P                                                                     | —                                                                                  | VB-7363-0-4-P                                                                                                                                                             |
| Valve Body Part Number, Diverting <sup>c</sup>                                                                                                                                                                                                                        |                | —                                                                                 | —                                                                                                                                                                         | —                                                                                 | VB-7323-0-4-P<br>VB-7325-0-4-P <sup>b</sup>                                        | —                                                                                                                                                                         |
| Flow Type                                                                                                                                                                                                                                                             |                | Modified Linear                                                                   |                                                                                                                                                                           |                                                                                   |                                                                                    |                                                                                                                                                                           |
| Material                                                                                                                                                                                                                                                              | Body           | Bronze                                                                            |                                                                                                                                                                           |                                                                                   |                                                                                    |                                                                                                                                                                           |
|                                                                                                                                                                                                                                                                       | Stem           | 316 Stainless Steel                                                               |                                                                                                                                                                           |                                                                                   |                                                                                    |                                                                                                                                                                           |
|                                                                                                                                                                                                                                                                       | Packing        | Spring Loaded PTFE/EPDM                                                           |                                                                                                                                                                           |                                                                                   |                                                                                    |                                                                                                                                                                           |
|                                                                                                                                                                                                                                                                       | Seat           | Bronze                                                                            |                                                                                                                                                                           |                                                                                   |                                                                                    | 316 Stainless Steel                                                                                                                                                       |
|                                                                                                                                                                                                                                                                       | Plug           | Brass                                                                             |                                                                                                                                                                           |                                                                                   |                                                                                    | 316 Stainless Steel                                                                                                                                                       |
|                                                                                                                                                                                                                                                                       | Soft Seat      | Metal to Metal                                                                    | A Port Soft Seat, B Port Metal to Metal                                                                                                                                   | A Port Soft Seat, B Port Metal to Metal                                           | Metal to Metal with EPDM Port Isolation                                            | A Port PTFE, B Port Metal to Metal                                                                                                                                        |
| Allowable Control Media Temperature                                                                                                                                                                                                                                   |                | 20...281 °F (-7...138 °C)                                                         |                                                                                                                                                                           |                                                                                   |                                                                                    | 20...340 °F (-7...171 °C)                                                                                                                                                 |
| Allowable Differential Pressure, Water <sup>d</sup>                                                                                                                                                                                                                   |                | 35 PSI (241 kPa) for Normal Life                                                  | 87 PSI (600 kPa) for Normal Life                                                                                                                                          |                                                                                   | 35 PSI (241 kPa) for Normal Life                                                   | 87 PSI (600 kPa) for Normal Life                                                                                                                                          |
| A Port ANSI Seat Leakage<br>B port ANSI seat leakage is ANSI III for all three-way valve bodies.                                                                                                                                                                      |                | ANSI III                                                                          | Designed to ANSI V with ANSI IV above 35 psi (241 kPa) close off for the A port. Long term seat leakage dependent on proper water conditioning maintenance of the system. |                                                                                   | ANSI III                                                                           | Designed to ANSI V with ANSI IV above 35 psi (241 kPa) close off for the A port. Long term seat leakage dependent on proper water conditioning maintenance of the system. |
| To Select a Port Code (P)                                                                                                                                                                                                                                             |                |                                                                                   |                                                                                                                                                                           |                                                                                   |                                                                                    |                                                                                                                                                                           |
| P Code                                                                                                                                                                                                                                                                | Valve Size     | Cv (kvs) Rating                                                                   |                                                                                                                                                                           |                                                                                   |                                                                                    |                                                                                                                                                                           |
| 02                                                                                                                                                                                                                                                                    | 1/2" (15 mm)   | 2.2 (1.9)                                                                         |                                                                                                                                                                           |                                                                                   | —                                                                                  | 2.2 (1.9)                                                                                                                                                                 |
| 04                                                                                                                                                                                                                                                                    |                | 4.4 (3.8)                                                                         |                                                                                                                                                                           |                                                                                   |                                                                                    |                                                                                                                                                                           |
| 06                                                                                                                                                                                                                                                                    | 3/4" (20 mm)   | —                                                                                 | 7.5 (6.5)                                                                                                                                                                 |                                                                                   |                                                                                    |                                                                                                                                                                           |
| 08                                                                                                                                                                                                                                                                    | 1" (25 mm)     | —                                                                                 | 14 (12)                                                                                                                                                                   |                                                                                   |                                                                                    | 12 (10.4)                                                                                                                                                                 |
| 09                                                                                                                                                                                                                                                                    | 1-1/4" (32 mm) | —                                                                                 | 20 (17.3)                                                                                                                                                                 |                                                                                   |                                                                                    |                                                                                                                                                                           |
| 10                                                                                                                                                                                                                                                                    | 1-1/2" (40 mm) | —                                                                                 | 28 (21.2)                                                                                                                                                                 |                                                                                   |                                                                                    |                                                                                                                                                                           |
| 11                                                                                                                                                                                                                                                                    | 2" (50 mm)     | —                                                                                 | 41 (36)                                                                                                                                                                   |                                                                                   | 40 (34.6)                                                                          | 36 (31.3)                                                                                                                                                                 |

a) On VB-7313 and VB-7315 mixing valves, port AB is the common port (located on the side) and ports A and B are inlets. Flow is from B to AB when the valve stem is in up position (port A closed). Flow is from A to AB when valve stem is in down position (port B closed).

b) 15...50 mm valves with metric thread Rp 1/2...Rp 2.

c) On VB-7323 diverting valves, inlet port B is the common port (located on the bottom) and ports AB and A are outlets. When the valve stem is in the up position, flow is from B to AB (port A closed). When the valve stem is in the down position, flow is from port B to A (port AB closed).

d) Maximum recommended differential in full open position. Do not exceed recommended differential pressure (pressure drop) or integrity of parts may be affected.

Table 3: MG350V Actuator Models

| Model        | Valve Assembly Prefix | Actuator Code | Force, lbf (N) | Approx. Timing in Seconds for 1/2" Stroke | Power <sup>a</sup> | Proportional Input <sup>b</sup> (VDC) | Proportional Input <sup>c</sup> (VDC, mA) | Floating, Two Wire (Form A) Two Position | PWM <sup>d</sup> | Position Output Signal <sup>e</sup> |
|--------------|-----------------------|---------------|----------------|-------------------------------------------|--------------------|---------------------------------------|-------------------------------------------|------------------------------------------|------------------|-------------------------------------|
| MG350V-24F   | VF                    | 110           | 79 (350)       | 102                                       | 5 VA               | —                                     | —                                         | Yes                                      | —                | —                                   |
| MGF350V-24FP | VF                    | 112           | 67 (300)       | 51                                        | 7.2 VA             | —                                     | —                                         | Yes                                      | Yes              | 2...10 / 0...5 Vdc                  |
| MG350V-24M   | VS                    | 110           | 79 (350)       | 102                                       |                    | Yes                                   | —                                         | —                                        | —                | —                                   |
| MGF350V-24MP | VS                    | 112           | 67 (300)       | 51                                        |                    | —                                     | Yes                                       | —                                        | —                | 2...10 / 0...5 Vdc                  |

a) 24 Vac (Class 2 power supply),  $\pm 20\%$ , 50/60 Hz, 20...29 Vdc, 5 W; see the MG350V series installation instruction (F-27852) for more information.

b) DIP switch configurable 0...10 Vdc or 2...10 Vdc control input, (4...20 mA requires an externally mounted 500 ohm resistor).

c) DIP switch configurable 0...10 Vdc, 2...10 Vdc, or 4...20 mA control input.

d) DIP switch configurable 0.1...25.5 sec, 0.59...2.93 sec.

e) DIP switch configurable 2...10 Vdc or 0...5 Vdc.

Table 4: Restrictions on Ambient Temperature for MG350V Series Actuators

| Fluid Temperature in Valve Body     | Maximum Allowable Ambient Temperature <sup>a</sup> |
|-------------------------------------|----------------------------------------------------|
| Chilled water up to 266 °F (130 °C) | 131 °F (55 °C)                                     |
| 281 °F (138 °C)                     | 127 °F (53 °C)                                     |
| 340 °F (171 °C)                     | 115 °F (46 °C)                                     |
| 400 °F (204 °C)                     | 102 °F (39 °C)                                     |

a) Minimum allowable ambient operating temperature 14 °F (-10 °C).

Note: When installing valve and actuator assemblies, observe the minimum and maximum fluid and ambient temperature limits shown in Table 1, Table 2, and Table 4.

Table 5: Select Valve/Actuator Combination Having Sufficient Close-Off for Application

| Body                         |                | Close-off Ratings, psi (kPa) <sup>b</sup> |                        | Compatible Two-Way Valve Series                                                                                                                                                                                                               |
|------------------------------|----------------|-------------------------------------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| P Code                       | Size           | MGF350V-24FP, MGF350V-24MP                | MG350V-24F, MG350V-24M |                                                                                                                                                                                                                                               |
| -01, -02, -03, -04           | 1/2" (15 mm)   | 219 (1510)                                | 250 (1724)             | VB-7211-0-3-P, VB-7211-0-4-P, VB-7212-0-4-P, VB-7213-0-4-P, VB-7214-0-4-P, VB-7215-0-4-P, VB-7221-0-4-P, VB-7222-0-4-P, VB-7223-0-4-P, VB-7224-0-4-P, VB-7225-0-4-P, VB-7253-0-4-P, VB-7263-0-4-P <sup>a</sup> , VB-7273-0-4-P, VB-7283-0-4-P |
| -05, -06                     | 3/4" (20 mm)   | 135 (931)                                 | 157 (1082)             |                                                                                                                                                                                                                                               |
| -07, -08                     | 1" (25 mm)     | 67 (462)                                  | 79 (545)               |                                                                                                                                                                                                                                               |
| -09                          | 1-1/4" (32 mm) | 42 (290)                                  | 49 (338)               |                                                                                                                                                                                                                                               |
| -09                          | 1-1/4" (32 mm) | 42 (290)                                  | 49 (338)               |                                                                                                                                                                                                                                               |
| P Code                       | Size           | MGF350V-24FP, MGF350V-24MP                | MG350V-24F, MG350V-24M | Compatible Three-Way Valve Series                                                                                                                                                                                                             |
| -02, -04                     | 1/2" (15 mm)   | 219 (1510)                                | 250 (1724)             | VB-7312-0-4-P, VB-7313-0-4-P, VB-7314-0-4-P, VB-7315-0-4-P, VB-7363-0-4-P,                                                                                                                                                                    |
| -06                          | 3/4" (20 mm)   | 135 (931)                                 | 157 (1082)             |                                                                                                                                                                                                                                               |
| -08                          | 1" (25 mm)     | 67 (462)                                  | 79 (545)               |                                                                                                                                                                                                                                               |
| -09                          | 1-1/4" (32 mm) | 42 (290)                                  | 49 (338)               |                                                                                                                                                                                                                                               |
| -09                          | 1-1/4" (32 mm) | 42 (290)                                  | 49 (338)               |                                                                                                                                                                                                                                               |
| -04, -06, -08, -09, -10, -11 | 1/2"...2"      | 250 (1712)                                |                        | VB-7323-0-4-P<br>VB-7325-0-4-P                                                                                                                                                                                                                |

a) VB-7263 series valves with port codes from -28...-82 have the same close-off ratings as the respective matching pipe size VB-7263 series valves with port codes -01...-11.

b) For higher close-off rating options refer to the U.S. Globe Valve and Actuators Catalog, F-27855.

## Factory Assemblies

Table 6: Factory Valve and Actuator Assemblies - Two-Way Valves<sup>a</sup>

| Valve Assembly<br>Part Number <sup>b</sup> | P Code <sup>b</sup>   | Size   | Actuator Model<br>(Actuator Code <sup>b,c</sup> ) |                                    |
|--------------------------------------------|-----------------------|--------|---------------------------------------------------|------------------------------------|
|                                            |                       |        | MGF350V-24FP,<br>MGF350V-24MP<br>(112)            | MG350V-24F,<br>MG350V-24M<br>(110) |
| Vx-7211-xxx-4-P,<br>Vx-7213-xxx-4-P        | -01, -02, -03,<br>-04 | 1/2"   | X                                                 | X                                  |
|                                            | -05, -06              | 3/4"   | X                                                 | X                                  |
|                                            | -07, -08              | 1"     | X                                                 | X                                  |
|                                            | -09                   | 1-1/4" | X                                                 | X                                  |

a) See Table 5 for close-off pressures. Larger size valve and actuator assemblies with lower close-offs may not be available as a factory assembly.

b) Insert actuator code in third field of assembly part number. Insert P code in last field of assembly part number. Enter VF for a floating or two-position or PWM input signal or VS for a proportional (Vdc/mA) input signal valve and actuator assembly.

c) Some actuator codes may not be available for all valve assembly part numbers.

Table 7: Factory Valve and Actuator Assemblies — Three-Way Mixing Valves<sup>a</sup>

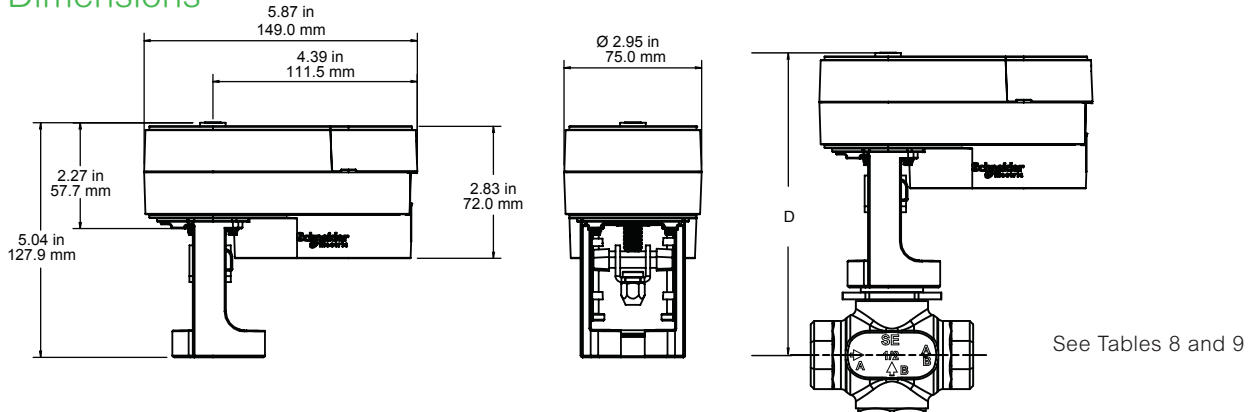
| Valve Assembly<br>Part Number <sup>b</sup> | P Code <sup>b</sup> | Size   | Actuator Model (Actuator Code <sup>b,c</sup> ) |                                    |
|--------------------------------------------|---------------------|--------|------------------------------------------------|------------------------------------|
|                                            |                     |        | MGF350V-24FP,<br>MGF350V-24MP<br>(112)         | MG350V-24F,<br>MG350V-24M<br>(110) |
| Vx-7313-xxx-4-P                            | -02, -04            | 1/2"   | X                                              | X                                  |
|                                            | -06                 | 3/4"   | X                                              | X                                  |
|                                            | -08                 | 1"     | X                                              | X                                  |
|                                            | -09                 | 1-1/4" | X                                              | X                                  |

a) See Table 5 for close-off pressures. Larger size valve and actuator assemblies with lower close-offs may not be available as a factory assembly.

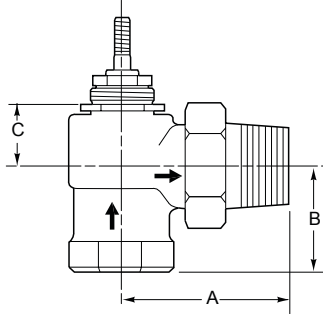
b) Insert actuator code in third field of assembly part number. Insert P code in last field of assembly part number. Enter VF for a floating or two-position or PWM input signal or VS for a proportional (VDC/mA) input signal valve and actuator assembly.

c) Some actuator codes may not be available for all valve assembly part numbers.

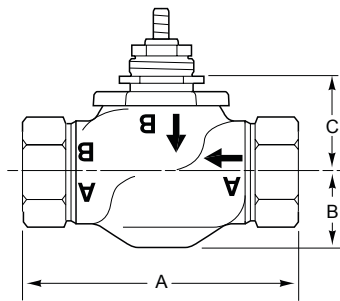
## Dimensions



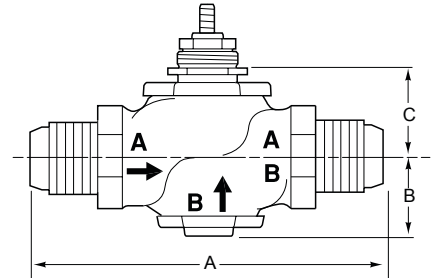
### Two-Way Valves (see Table 8 for A, B, C, D values)



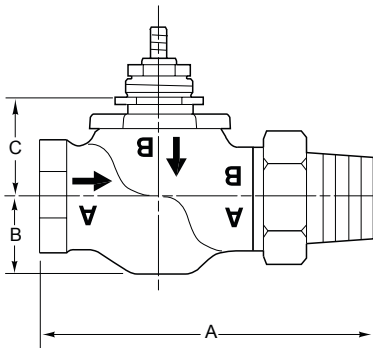
VB-7211-0-3-P Union Angle  
VB-7251-0-3-P Union Angle



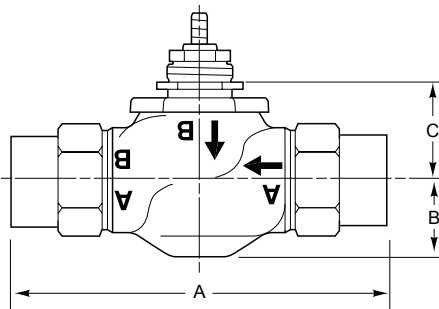
VB-7213-0-4-P NPT Threaded  
VB-7215-0-4-P Rp Threaded  
VB-7253-0-4-P NPT Threaded  
VB-7273-0-4-P NPT Threaded



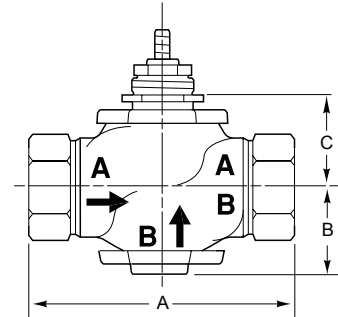
VB-7222-0-4-P SAE Flared



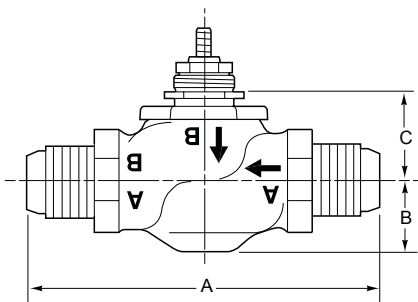
VB-7211-0-4-P Union Straightway  
VB-7251-0-4-P Union Straightway



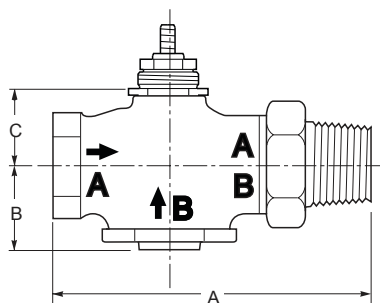
VB-7214-0-4-P Union Sweat



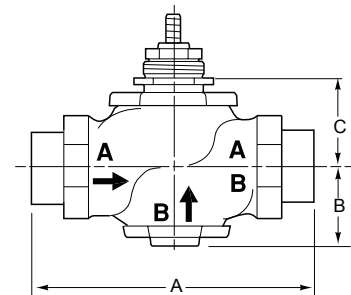
VB-7223-0-4-P NPT Threaded  
VB-7225-0-4-P Rp Threaded  
VB-7263-0-4-P NPT Threaded  
VB-7283-0-4-P NPT Threaded



VB-7212-0-4-P 5/8" OD SAE Flared



VB-7221-0-4-P Union Straightway



VB-7224-0-4-P Union Sweat

Table 8: Two-Way Valve Dimensions

| Valve Body<br>Part Number                                        | Size           | Dimensions in inches (mm) |              |              |                |
|------------------------------------------------------------------|----------------|---------------------------|--------------|--------------|----------------|
|                                                                  |                | A                         | B            | C            | D <sup>a</sup> |
| VB-7211-0-3-P                                                    | 1/2"           | 3-1/8 (79)                | 1-5/8 (41)   | 3/4 (19)     | 5-7/8 (148)    |
|                                                                  | 3/4"           | 3-5/8 (92)                | 1-11/16 (43) | 15/16 (24)   | 6-1/16 (153)   |
|                                                                  | 1"             | 4-1/16 (103)              | 1-15/16 (49) | 1-1/4 (32)   | 6-3/8 (161)    |
|                                                                  | 1-1/4"         | 4-5/16 (110)              | 2-3/16 (56)  | 1-11/16 (43) | 6-13/16 (172)  |
| VB-7211-0-4-P                                                    | 1/2"           | 4-3/16 (106)              | 1-1/16 (27)  | 1-1/8 (29)   | 6-1/4 (158)    |
|                                                                  | 3/4"           | 4-15/16 (125)             | 1-1/16 (27)  | 1-1/8 (29)   | 6-1/4 (158)    |
|                                                                  | 1"             | 6 (152)                   | 1-1/8 (29)   | 1-3/16 (30)  | 6-5/16 (166)   |
|                                                                  | 1-1/4"         | 6-1/4 (159)               | 1-3/8 (35)   | 1-7/16 (37)  | 6-9/16 (166)   |
| VB-7212-0-4-P                                                    | 5/8" O.D.      | 4 (102)                   | 1-1/16 (27)  | 1-1/8 (29)   | 6-14 (158)     |
| VB-7213-0-4-P<br>VB-7215-0-4-P<br>VB-7253-0-4-P<br>VB-7273-0-4-P | 1/2" (15 mm)   | 3 (76)                    | 1-1/16 (27)  | 1-1/8 (29)   | 6-1/4 (158)    |
|                                                                  | 3/4" (20 mm)   | 3-5/8 (92)                | 1-1/16 (27)  | 1-1/8 (29)   | 6-1/4 (158)    |
|                                                                  | 1" (25 mm)     | 4-5/8 (117)               | 1-1/8 (29)   | 1-3/16 (30)  | 6-5/16 (159)   |
|                                                                  | 1-1/4" (32 mm) | 4-5/8 (117)               | 1-3/8 (35)   | 1-7/16 (37)  | 6-9/16 (166)   |
|                                                                  | 1-1/2" (40 mm) | 5-3/8 (137)               | 1-1/2 (38)   | 1-7/8 (48)   | 7 (177)        |
|                                                                  | 2" (50 mm)     | 6-1/8 (156)               | 1-9/16 (40)  | 2-1/8 (54)   | 7-1/4 (183)    |
| VB-7214-0-4-P                                                    | 1/2" (15 mm)   | 4-3/16 (106)              | 1-1/16 (27)  | 1-1/8 (29)   | 6-1/4 (158)    |
|                                                                  | 3/4" (20 mm)   | 5-7/16 (138)              | 1-1/16 (27)  | 1-1/8 (29)   | 6-1/4 (158)    |
|                                                                  | 1" (25 mm)     | 6-5/8 (168)               | 1-1/8 (29)   | 1-3/16 (30)  | 6-5/16 (159)   |
|                                                                  | 1-1/4" (32 mm) | 6-13/16 (173)             | 1-3/8 (35)   | 1-7/16 (37)  | 6-9/16 (166)   |
|                                                                  | 1-1/2" (40 mm) | 8-5/16 (211)              | 1-1/2 (38)   | 1-7/8 (48)   | 7 (177)        |
|                                                                  | 2" (50 mm)     | 9-3/16 (233)              | 1-9/16 (40)  | 2-1/8 (54)   | 7-1/4 (183)    |
| VB-7221-0-4-P                                                    | 1/2" (15 mm)   | 4-3/16 (106)              | 1-1/4 (32)   | 1-1/8 (29)   | 6-1/4 (158)    |
|                                                                  | 3/4" (20 mm)   | 4-15/16 (125)             | 1-1/4 (32)   | 1-1/8 (29)   | 6-1/4 (158)    |
|                                                                  | 1" (25 mm)     | 6 (152)                   | 1-3/4 (45)   | 1-3/16 (30)  | 6-5/16 (159)   |
|                                                                  | 1-1/4" (32 mm) | 6-1/4 (159)               | 1-3/4 (45)   | 1-7/16 (37)  | 6-9/16 (166)   |
| VB-7222-0-4-P                                                    | 5/8" O.D.      | 4 (102)                   | 1-1/4 (32)   | 1-1/8 (29)   | 6-1/4 (158)    |
| VB-7223-0-4-P<br>VB-7225-0-4-P<br>VB-7263-0-4-P<br>VB-7283-0-4-P | 1/2" (15 mm)   | 3-1/16 (78)               | 1-3/16 (30)  | 1-1/8 (29)   | 6-1/4 (158)    |
|                                                                  | 3/4" (20 mm)   | 3-5/8 (92)                | 1-3/16 (30)  | 1-1/8 (29)   | 6-1/4 (158)    |
|                                                                  | 1" (25 mm)     | 4-5/8 (117)               | 1-3/4 (44)   | 1-3/16 (30)  | 6-5/16 (159)   |
|                                                                  | 1-1/4" (32 mm) | 4-5/8 (117)               | 1-3/4 (44)   | 1-7/16 (37)  | 6-9/16 (166)   |
|                                                                  | 1-1/2" (40 mm) | 5-3/8 (137)               | 1-13/16 (46) | 1-9/16 (40)  | 6-11/16 (169)  |
|                                                                  | 2" (50 mm)     | 6-1/8 (156)               | 2-1/4 (57)   | 1-5/8 (42)   | 6-3/4 (171)    |
| VB-7224-0-4-P                                                    | 1/2" (15 mm)   | 4-3/16 (106)              | 1-1/4 (32)   | 1-1/8 (29)   | 6-1/4 (158)    |
|                                                                  | 3/4" (20 mm)   | 5-7/16 (138)              | 1-1/4 (32)   | 1-1/8 (29)   | 6-1/4 (158)    |
|                                                                  | 1" (25 mm)     | 6-5/8 (168)               | 1-3/4 (45)   | 1-3/16 (30)  | 6-5/16 (159)   |
|                                                                  | 1-1/4" (32 mm) | 6-13/16 (173)             | 1-3/4 (45)   | 1-7/16 (37)  | 6-9/16 (166)   |
|                                                                  | 1-1/2" (40 mm) | 8-5/16 (211)              | 1-13/16 (45) | 1-9/16 (40)  | 6-11/16 (169)  |
|                                                                  | 2" (50 mm)     | 9-3/16 (233)              | 2-1/16 (53)  | 1-5/8 (42)   | 6-3/4 (171)    |

a. Assembly height, centerline of valve body to top of actuator. Leave an additional 8" (203 mm) clearance for actuator cover removal.

## Three-Way Valves (see Table 9 for A, B, C, D values)

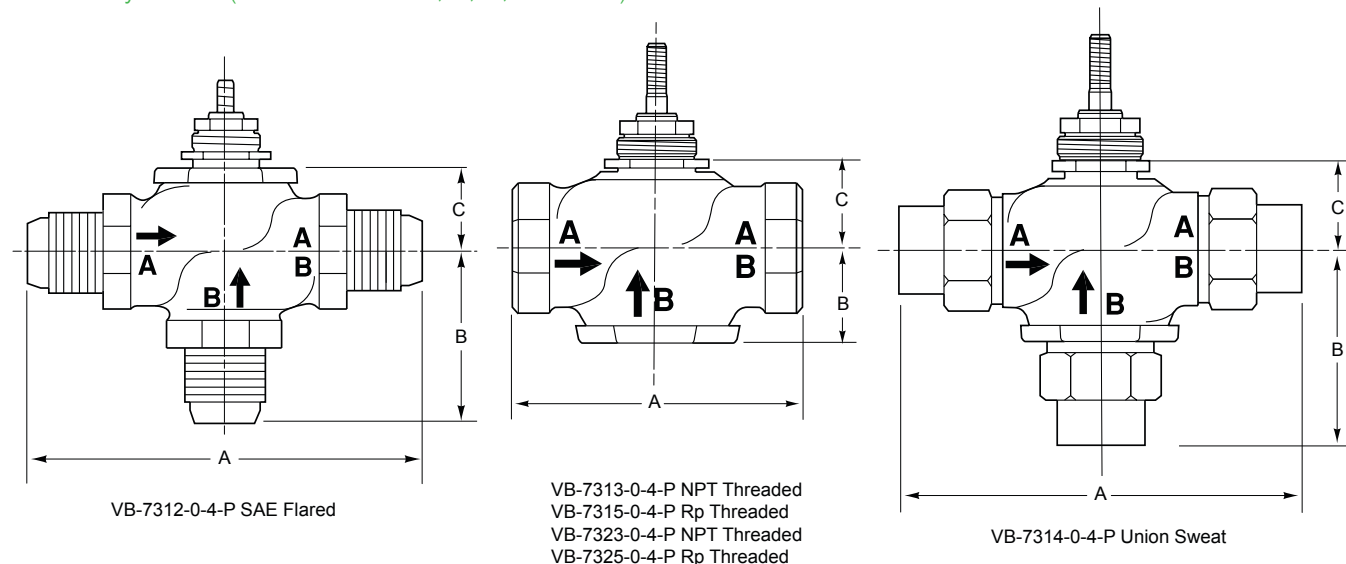


Table 9: Three-Way Valve Dimensions

| Valve Body Part Number         | Size           | Dimensions in inches (mm) |              |             |                |
|--------------------------------|----------------|---------------------------|--------------|-------------|----------------|
|                                |                | A                         | B            | C           | D <sup>a</sup> |
| VB-7312-0-4-P                  | 5/8" OD        | 4 (102)                   | 2-1/4 (57)   | 1-1/8 (29)  | 6-1/4 (158)    |
| VB-7313-0-4-P<br>VB-7315-0-4-P | 1/2" (15 mm)   | 3-1/16 (76)               | 1-3/4 (44)   | 1-1/8 (29)  | 6-1/4 (158)    |
|                                | 3/4" (20 mm)   | 3-5/8 (92)                | 1-13/16 (46) | 1-1/8 (29)  | 6-1/4 (158)    |
|                                | 1" (25 mm)     | 4-5/8 (118)               | 1-3/4 (44)   | 1-3/16 (30) | 6-5/16 (159)   |
|                                | 1-1/4" (32 mm) | 4-5/8 (118)               | 1-3/4 (44)   | 1-7/16 (37) | 6-9/16 (166)   |
|                                | 1-1/2" (40 mm) | 5-3/8 (137)               | 1-13/16 (46) | 1-9/16 (40) | 6-11/16 (169)  |
|                                | 2" (50 mm)     | 6-1/8 (156)               | 2-1/4 (57)   | 1-5/8 (42)  | 6-3/4 (171)    |
| VB-7314-0-4-P                  | 1/2" (15 mm)   | 4-3/16 (106)              | 2-5/16 (59)  | 1-1/8 (29)  | 6-1/4 (158)    |
|                                | 3/4" (20 mm)   | 5-7/16 (138)              | 2-5/8 (67)   | 1-1/8 (29)  | 6-1/4 (158)    |
|                                | 1" (25 mm)     | 6-5/8 (168)               | 3-3/16 (81)  | 1-3/16 (30) | 6-5/16 (159)   |
|                                | 1-1/4" (32 mm) | 6-13/16 (173)             | 3-7/16 (87)  | 1-7/16 (37) | 6-9/16 (166)   |
|                                | 1-1/2" (40 mm) | 8-5/16 (211)              | 3-3/4 (95)   | 1-9/16 (40) | 6-11/16 (169)  |
|                                | 2" (50 mm)     | 9-3/16 (233)              | 4-3/16 (106) | 1-5/8 (42)  | 6-3/4 (171)    |
| VB-7323-0-4-P<br>VB-7325-0-4-P | 1/2" (15 mm)   | 3-1/16 (76)               | 1-3/8 (35)   | 1-1/8 (29)  | 6-1/4 (158)    |
|                                | 3/4" (20 mm)   | 3-5/8 (92)                | 1-11/16 (43) | 1-1/8 (29)  | 6-1/4 (158)    |
|                                | 1" (25 mm)     | 4-5/8 (118)               | 1-9/16 (40)  | 1-3/16 (30) | 6-5/16 (159)   |
|                                | 1-1/4" (32 mm) | 4-5/8 (118)               | 1-5/8 (41)   | 1-7/16 (37) | 6-9/16 (166)   |
|                                | 1-1/2" (40 mm) | 5-3/8 (137)               | 1-11/16 (43) | 1-9/16 (40) | 6-11/16 (169)  |
|                                | 2" (50 mm)     | 6-1/8 (156)               | 1-7/8 (48)   | 1-5/8 (42)  | 6-3/4 (171)    |

a.Assembly height, centerline of valve body to top of actuator. Leave an additional 8" (203 mm) clearance for actuator cover removal.

## Stem and Bonnet Nut Thread Information for All VB-7000 Valve Series

Valve Stem Threads: 1/4"-28 UNF-2A thread

Bonnet Nut Threads: 1-1/4" -16 thread

Bonnet Nut Outer Hex Size: 1-5/8" (use 1-5/8" open end wrench or equivalent)