# Pneumatic Valve Actuator

*Pressures to 150,000 psi (10342 bar)*

The need to control process and vent valves from a remote location makes air operated valves a vital component to many processing operations.

All Autoclave Engineer's valves are available with diaphragm or piston type actuators. Six sizes of air actuators (light, heavy light, medium, heavy duty or extra heavy, single and double stage) are offered to meet the service requirements of Autoclave Engineer's Low, Medium and High Pressure valves. Both air-to-open (normally closed) and air-to-close (normally open) designs are included in the product line. Optional air to open and close are available upon request.

For most Autoclave Engineers valve series there is a choice of two or more actuator designs. This provides the most efficient and economical pneumatic valve operation for any combination of process requirements and available air pressure.

Actuators are available for outdoor service. These operators provide corrosion resistant components and prevent the ingress of outside elements.

Actuator - Pneumatic

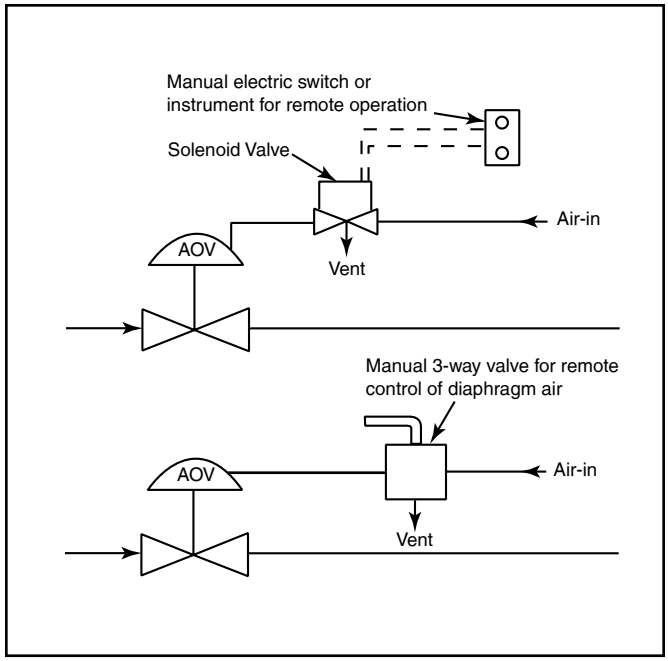
Autoclave Engineers
Fluid Components
Division of Snap-tite, Inc.
www.autoclave.com

## Pressures to 150,000 psi (10342 bar)

### Pneumatic Actuator

*Pressures to 150,000 psi (10342 bar)*

Six sizes of air operators (light, heavy light, medium, heavy duty or extra heavy, single and double stage) are offered for remote on-off operation or automatic operation of Autoclave Engineer's low, medium or high pressure valves. The actuators are available in air-to-open (normally closed) and air-to-close (normally open) designs.




### Remote on-off

Autoclave Engineer's air-operated valves (**ATO**- Air-To-Open or **ATC**-Air-To-Close) can be controlled by a 3-way manual low pressure valve or by a low pressure solenoid valve. These are actuated by either a manual switch or an automatic control instrument. Autoclave Engineer's air-operated, high pressure valves permit process control from a remotely located panel without the necessity of piping high pressure lines to the control panel. Safety is greatly increased and process "hold-up" is reduced.

Prudent selection of ATO or ATC valves, together with the air controlling devices, permits the design of systems to "fail safe" in either the closed or open condition in the event of loss of operating air, or electrical failure, or malfunction.

Where explosion proof conditions are a requirement, pneumatic actuated valves can be considered. Remote mounting of the solenoid valve removes the potential from the hazardous area.

### Ordering Procedure

To order a valve with an air operator, select the duty rating and type of the air operator from the chart below. Add the air operator identifying suffix to the catalog number of the Autoclave Engineer's valve. To order a 2-way straight, 30VM vee stem, 9/16" valve with a medium duty air-to-close air operator, specify: ex: **30VM9071-C1S** for a yoke style piston air actuated valve or **30VM9071-CM** for an integral style diaphragm air operated valve.

To order the same valve with an extended high temperature stuffing box, add HT to the ordering number: ex: **30VM9071-C1SHT** or **30VM9071-CMHT**.

To order a dual air operator manifold valve, specify both operators if different. The same valve with a medium duty ATC on one stem and a medium duty ATO on the other, specify: ex: **30VM9075-C1SO1S.**

To order a valve with operators for outdoor service add an "OD" suffix to the catalog number.

| Duty Rating | Operator | Type | Ordering Suffix |
|---|---|---|---|
| Light | Diaphragm | Air-to-open | OL |
| | | Air-to-close | CL |
| | Piston | Air-to-open | OLP |
| | | Air-to-close | CLP |
| Heavy-Light | Piston | Air-to-open | OHLP |
| | | Air-to-close | CHLP |
| Medium | Diaphragm | Air-to-open | OM |
| | | Air-to-close | CM |
| | Piston | Air-to-open | O1S |
| | | Air-to-close | C1S |
| Heavy | Diaphragm | Air-to-open | OH |
| | | Air-to-close | CH |
| | Piston | Air-to-open | O2S |
| | | Air-to-close | C2S |
| Extra Heavy Single Stage | Piston | Air-to-open | HO1S |
| | | Air-to-close | HC1S |
| Extra Heavy Double Stage | Piston | Air-to-open | HO2S |
| | | Air-to-close | HC2S |

# Pneumatic Valve Actuators - Actuator Quick Selector Guide

This table allows the designer to quickly select an appropriate air actuator based on valve style and size, maximum system operating pressure and maximum available air pressure. For example, if the system operating pressure is 25,000 psi (1724 bar) and the available air pressure is 60 psi (4.14 bar) and an air-to-open (spring fail closed) valve is required, a 30VM or 60VM valve with a heavy duty air operator can be used. More specific sizing data is available in the sizing charts on the following pages.

| Valve Series | Tube Outside Diameter in (mm) | Air-to-Close | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Light | | Medium | | Heavy | | Extra Heavy Single Stage | | Extra Heavy Two Stage | |
| | | System Pressure psi (bar) | Air Pressure psi (bar) | System Pressure psi (bar) | Air Pressure psi (bar) | System Pressure psi (bar) | Air Pressure psi (bar) | System Pressure psi (bar) | Air Pressure psi (bar) | System Pressure psi (bar) | Air Pressure psi (bar) |
| 10V | 1/8 (3.18) | 15,000 (1034.20) | 100 (6.89) | 15,000 (1034.20) | 30 (2.07) | | | | | | |
| | 1/4 (6.35) | 10,000 (689.46) | 100 (6.89) | 15,000 (1034.20) | 40 (2.76) | | | | | | |
| | 3/8 (9.52) | 10,000 (689.46) | 100 (6.89) | 15,000 (1034.20) | 40 (2.76) | | | | | | |
| | 1/2 (12.70) | | | 10,000 (689.46) | 65 (4.48) | | | | | | |
| SW | 1/4 (6.35) | | | 15,000 (1034.20) | 65 (4.48) | | | | | | |
| | 3/8 (9.52) | | | 15,000 (1034.20) | 90 (6.21) | 15,000 (1034.20) | 50 (3.45) | | | | |
| | 1/2 (12.70) | | | 8,500 (586.05) | 100 (6.89) | 10,000 (689.46) | 60 (4.13) | | | | |
| 10SM | 9/16 (14.27) | | | 8,600 (592.94) | 100 (6.89) | 10,000 (689.46) | 55 (3.79) | 10,000 (689.46) | 45 (3.10) | 10,000 (689.46) | 20 (1.38) |
| | 3/4 (19.05) | | | 4,800 (330.94) | 100 (6.89) | 10,000 (689.46) | 100 (6.89) | 10,000 (689.46) | 75 (5.17) | 10,000 (689.46) | 35 (2.41) |
| | 1 (25.40) | | | 2,800 (193.05) | 100 (6.89) | 6,300 (434.36) | 100 (6.89) | 8,500 (586.04) | 100 (6.89) | 10,000 (689.46) | 35 (2.41) |
| 20SM 15QS | 1/4 (6.35) | | | 20,000 (1378.93) | 95 (6.55) | 20,000 (1378.93) | 50 (3.45) | | | | |
| | 3/8 (9.52) | | | 19,000 (1310.00) | 100 (6.89) | 20,000 (1378.93) | 55 (3.79) | | | | |
| | 9/16 (14.27) | | | 10,700 (737.73) | 100 (6.89) | 20,000 (1378.93) | 85 (5.86) | 20,000 (1378.93) | 60 (4.13) | 20,000 (1378.93) | 30 (2.07) |
| | 3/4 (19.05) | | | 6,100 (420.57) | 100 (6.89) | 13,600 (937.67) | 100 (6.89) | 19,000 (1310.00) | 100 (6.89) | 20,000 (1378.93) | 50 (3.45) |
| | 1 (25.40) | | | 3,900 (268.89) | 100 (6.89) | 8,800 (606.73) | 100 (6.89) | 12,000 (827.36) | 100 (6.89) | 20,000 (1378.93) | 75 (5.17) |

**NOTE:** For 10P and 15P series pipe valves see sizing data tables.
1" QS series not available at this time.

Maximum pressure rating is based on the lowest rating of any component.
Actual working pressure may be determined by tubing pressure rating, if lower.

*All dimensions for reference only and subject to change.*
For prompt service, Autoclave stocks select products. Consult your local representative.

# Pneumatic Valve Actuators - Actuator Quick Selector Guide

| Valve Series | Tube Outside Diameter in (mm) | Air-to-Open | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Light | | Medium | | Heavy | | Extra Heavy Single Stage | | Extra Heavy Two Stage | |
| | | System Pressure psi (bar) | Air Pressure psi (bar) | System Pressure psi (bar) | Air Pressure psi (bar) | System Pressure psi (bar) | Air Pressure psi (bar) | System Pressure psi (bar) | Air Pressure psi (bar) | System Pressure psi (bar) | Air Pressure psi (bar) |
| 10V | 1/8 (3.18) | 8,200 (565.36) | 60 (4.14) | 15,000 (1034.20) | 45 (3.10) | | | | | | |
| | 1/4 (6.35) | 5,600 (386.10) | 60 (4.14) | 15,000 (1034.20) | 65 (4.48) | | | | | | |
| | 3/8 (9.52) | 5,600 (386.10) | 60 (4.14) | 15,000 (1034.20) | 65 (4.48) | | | | | | |
| | 1/2 (12.70) | | | 10,000 (689.46) | 95 (6.55) | | | | | | |
| SW | 1/4 (6.35) | | | 15,000 (1034.20) | 100 (6.89) | | | | | | |
| | 3/8 (9.52) | | | 10,000 (689.46) | 95 (6.55) | 15,000 (1034.20) | 75 (5.17) | | | | |
| | 1/2 (12.70) | | | 6,000 (413.68) | 95 (6.55) | 10,000 (689.46) | 75 (5.17) | | | | |
| 10SM | 9/16 (14.27) | | | 7,900 (544.68) | 95 (6.55) | 10,000 (689.46) | 75 (5.17) | 10,000 (689.46) | 65 (4.48) | 10,000 (689.46) | 40 (2.76) |
| | 3/4 (19.05) | | | | | | | 10,000 (689.46) | 95 (6.55) | 10,000 (689.46) | 60 (4.14) |
| | 1 (25.40) | | | | | | | 6,500 (448.15) | 100 (6.89) | 10,000 (689.46) | 85 (5.86) |
| 20SM 15QS | 1/4 (6.35) | | | 20,000 (1378.93) | 95 (6.55) | 20,000 (1378.93) | 50 (3.45) | | | | |
| | 3/8 (9.52) | | | 18,250 (1258.27) | 95 (6.55) | 18,250 (1258.27) | 50 (3.45) | | | | |
| | 9/16 (14.27) | | | 9,800 (675.68) | 95 (6.55) | 15,700 (1082.46) | 75 (5.17) | 20,000 (1378.93) | 85 (5.86) | 20,000 (1378.93) | 55 (3.79) |
| | 3/4 (19.05) | | | | | 6,000 (413.68) | 75 (5.17) | 15,000 (1034.20) | 100 (6.89) | 20,000 (1378.93) | 80 (5.52) |
| | 1 (25.40) | | | | | 4,000 (275.79) | 75 (5.17) | 10,000 (689.46) | 100 (6.89) | 20,000 (1378.93) | 100 (6.89) |

**NOTE:** For 10P and 15P series pipe valves see sizing data tables.
1" QS series not available at this time.

Maximum pressure rating is based on the lowest rating of any component.
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# Pneumatic Valve Actuators - Actuator Quick Selector Guide

| Valve Series | Tube Outside Diameter in (mm) | Air-to-Close | | | | | | | | Air-to-Open | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Light | | Medium | | Heavy | | Extra Heavy Two Stage | | Light | | Medium | | Heavy | | Extra Heavy Two Stage | |
| | | System Pressure psi (bar) | Air Pressure psi (bar) | System Pressure psi (bar) | Air Pressure psi (bar) | System Pressure psi (bar) | Air Pressure psi (bar) | System Pressure psi (bar) | Air Pressure psi (bar) | System Pressure psi (bar) | Air Pressure psi (bar) | System Pressure psi (bar) | Air Pressure psi (bar) | System Pressure psi (bar) | Air Pressure psi (bar) | System Pressure psi (bar) | Air Pressure psi (bar) |
| 30SC | 1 (25.40) | | | | | | | 30,000 (2068.39) | 80 (5.52) | | | | | | | 30,000 (2068.39) | 80 (5.52) |
| 30VM | 1/4 (6.35) | | | 30,000 (2068.39) | 50 (3.45) | 30,000 (2068.39) | 30 (2.07) | | | | | 30,000 (2068.39) | 75 (5.17) | 30,000 (2068.39) | 40 (2.76) | | |
| | 3/8 (9.52) | | | 30,000 (2068.39) | 75 (5.17) | 30,000 (2068.39) | 40 (2.76) | | | | | 30,000 (2068.39) | 95 (6.55) | 30,000 (2068.39) | 50 (3.45) | | |
| | 9/16 (14.27) | | | 30,000 (2068.39) | 75 (5.17) | 30,000 (2068.39) | 40 (2.76) | | | | | 30,000 (2068.39) | 95 (6.55) | 30,000 (2068.39) | 50 (3.45) | | |
| 40VM | 9/16 (14.27) | | | | | 40,000 (2757.86) | 45 (3.10) | | | | | | | 40,000 (2757.86) | 55 (3.79) | | |
| 60VM | 1/4 (6.35) | | | 60,000 (4136.79) | 75 (5.17) | 60,000 (4136.79) | 40 (2.76) | | | | | 60,000 (4136.79) | 95 (6.55) | 60,000 (4136.79) | 50 (3.45) | | |
| | 3/8 (9.52) | | | 60,000 (4136.79) | 75 (5.17) | 60,000 (4136.79) | 40 (2.76) | | | | | 60,000 (4136.79) | 95 (6.55) | 60,000 (4136.79) | 50 (3.45) | | |
| | 9/16 (14.27) | | | 60,000 (4136.79) | 90 (6.21) | 60,000 (4136.79) | 45 (3.10) | | | | | 60,000 (4136.79) | 95 (6.55) | 60,000 (4136.79) | 50 (3.45) | | |
| 100VM | 5/16 (7.92) | | | 100,000 (6894.55) | 100 (6.89) | 100,000 (6894.65) | 50 (3.45) | | | | | | | 100,000 (6894.65) | 70 (4.83) | | |
| 150V | 5/16 (7.92) | | | | | 150,000 (10341.97) | 80 (5.52) | | | | | | | 150,000 (10341.97) | 75 (5.17) | | |

## MVE/MV Mini Valves Series

| Valve Series | Tube Outside Diameter in (mm) | Air-to-Close | | | Air-to-Open | | |
|---|---|---|---|---|---|---|---|
| | | Heavy-Light | | | Heavy-Light | | |
| MVE | 1/16 (1.57) | 15,000 (1034.20) | 75 (5.17) | | 15,000 (1034.20) | 100 (6.89) | |
| MV | 1/8 (3.18) | 15,000 (1034.20) | 75 (5.17) | | 15,000 (1034.20) | 100 (6.89) | |

Maximum pressure rating is based on the lowest rating of any component.
Actual working pressure may be determined by tubing pressure rating, if lower.

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For prompt service, Autoclave stocks select products. Consult your local representative.

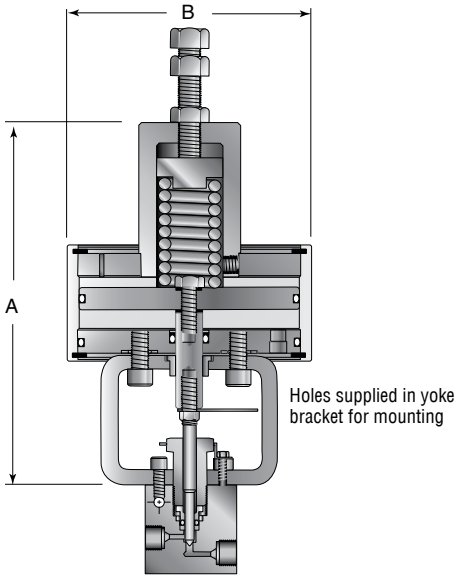
# Pneumatic Valve Actuators - Piston Style Pneumatic

## Pressures to 150,000 psi (10342 bar)

Piston type air-operated valves offer a unique, reliable design providing for a long and dependable life. These valves are more compact than diaphragm valves and are appropriate for applications such as high-flow gas and liquid delivery systems to reactors and mixer/vaporizers.

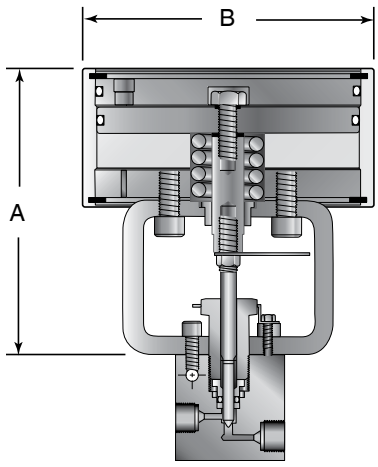
Autoclave Engineer's piston type actuators feature:

- Small, compact, piston actuator
- Air-to-open or -close with spring return
- Yoke design for separation of process and air pressure †
- Ease of stem replacement
- Stem position indicator is standard†
- Positive shut-off metal-to-metal seating
- High actuator cycle life
- 1/8" NPT air inlet connection except Extra Heavy duty has 3/8" NPT




Air-to-Open (ATO)

**NOTE:** Air inlet for air to open operator is located in the back, opposite the front of valve. For other locations, consult factory.




Air-to-Close (ATC)

† The standard Heavy-Light operator does not utilize the yoke design. A yoke design is available upon request.


## Air Operator Materials

Cylinder, piston, cover plates, spring housing

- Anodized aluminum (for corrosion and wear resistance).

Yoke

- Painted Steel

## Technical Data

**Air Operator**

- Maximum allowable working pressure: 100 psi (6.89 bar)
- Allowable piston temperature range: -20°F to 200°F (-29°C to 93°C)
- Area of piston:
  - Light duty - 4.9 sq. in (31.6 sq. cm)
  - Heavy-Light duty - 5.4 sq. in (34.8 sq. cm)
  - Medium duty - 19.6 sq. in (126.5 sq. cm)
  - Heavy duty - 39.2 sq. in (252.9 sq. cm)
  - Extra Heavy duty single stage - 56 sq. in (361.3 sq. cm)
  - Extra Heavy duty double stage - 112 sq. in (722.6 sq. cm)
- Approximate air usage/cycle @ 100 psi (6.89 bar):
  - Light duty - .003 SCF (.00008 SCM)
  - Heavy-Light duty - .007 SCF (.0002 SCM)
  - Medium duty - .04 SCF (.0011 SCM)
  - Heavy duty - .08 SCF (.0022 SCM)
  - Extra Heavy duty single stage - .33 SCF (.0095 SCM)
  - Extra Heavy duty double stage - .67 SCF (.019 SCM)
- Tested to 100,000 cycles at 100 psi (6.89 bar) with no leakage or signs of wear or fatigue.

| Duty Rating | Type | Ordering Suffix | Dimensions: inches (mm) | |
|---|---|---|---|---|
| | | | A | B |
| Light | Air-to-open | OLP | 5.50 (139.70) | 2.81 (71.37) |
| | Air-to-close | CLP | 3.94 (100.08) | 2.81 (71.37) |
| † Heavy-Light | Air-to-open | OHLP | 3.84 (97.67) | 3.06 (77.72) |
| | Air-to-close | CHLP | 2.61 (66.3) | 3.06 (77.70) |
| Medium | Air-to-open | O1S | 8.25 (209.55) | 5.69 (144.52) |
| | Air-to-close | C1S | 5.50 (139.70) | 5.69 (144.52) |
| Heavy | Air-to-open | O2S | 11.88 (301.75) | 5.69 (144.52) |
| | Air-to-close | C2S | 8.50 (215.90) | 5.69 (144.52) |
| Extra Heavy Single Stage | Air-to-open | HO1S | 15.16 (385.06) | 9.44 (239.77) |
| | Air-to-close | HC1S | 8.75 (217.67) | 9.44 (239.77) |
| Extra Heavy Two Stage | Air-to-open | HO2S | 18.50 (469.90) | 9.44 (239.78) |
| | Air-to-close | HC2S | 11.94 (303.27) | 9.44 (239.78) |

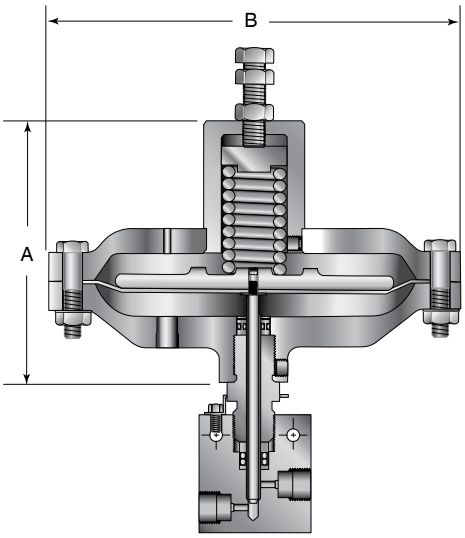
# Pneumatic Valve Actuators - Diaphragm Style Pneumatic

## Pressures to 150,000 psi (10342 bar)

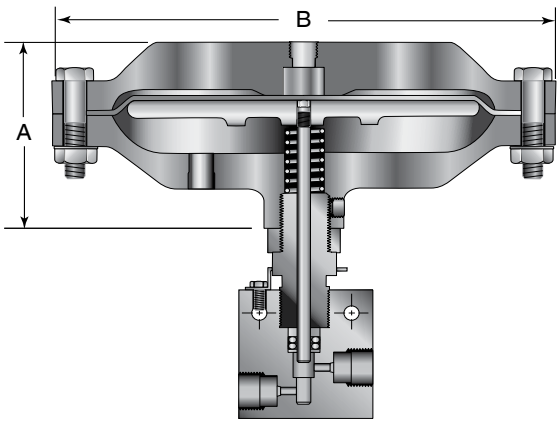
Diaphragm type air-operated valves are an efficient and economical means for "remote on-off" control of a wide range of process requirements. Diaphragm type actuators are designed to provide a dependable alternative to piston type actuators.

Autoclave Engineer's diaphragm type air actuators feature:

- Economical diaphragm design
- Air-to-open or -close with spring return
- Integral connection of valve and operator for height resticted applications.
- Oversized weep holes for separation of process and air operator pressures.
- Stem position indicator optional
- Medium actuator cycle life
- 1/8" NPT air inlet connection




Air-to-Open (ATO)




Air-to-Close (ATC)

## Air Operator Materials

Upper and lower housing, spring housing

- Anodized aluminum

Diaphragm plate

- Cast ductile iron.

## Technical Data

**Air Operator**

- Maximum allowable working pressure: 100 psi (6.89 bar)
- Allowable diaphragm temperature range: -40°F to 200°F (-40°C to 93°C)
- Area of diaphragm:
  - Light duty - 4.9 sq. in (31.6 sq. cm)
  - Medium duty - 19.6 sq. in (126.5 sq. cm)
  - Heavy duty - 45.66 sq. in (294.58 sq. cm)
- Approximate air usage/cycle @ 100 psi (6.89 bar):
  - Light duty - .007 SCF (.00019 SCM)
  - Medium duty - .07 SCF (.0019 SCM)
  - Heavy duty - .2 SCF (.0056 SCM)

| Duty Rating | Type | Ordering Suffix | Dimensions: inches (mm) | |
|---|---|---|---|---|
| | | | A | B |
| Light | Air-to-open | OL | 5.00 (127.00) | 4.25 (107.95) |
| | Air-to-close | CL | 2.38 (60.45) | 4.25 (107.95) |
| Medium | Air-to-open | OM | 8.00 (203.20) | 7.38 (187.45) |
| | Air-to-close | CM | 3.75 (95.25) | 7.38 (187.45) |
| Heavy | Air-to-open | OH | 8.75 (222.25) | 10.00 (254.00) |
| | Air-to-close | CH | 4.69 (119.13) | 10.00 (254.00) |

# Pneumatic Valve Actuators - Air Operator Sizing Data

## Air-to-Close

### Series 10V and SW Valves

| Valve Series | Operator Duty | | System Pressure KSI (Mpa) | | | | | | | | | | | Maximum Pressure psi (bar)* | Stem Travel in (mm) | Flow Coefficient** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1-4 (6.89-27.57) | 6 (41.37) | 8 (55.16) | 10 (68.95) | 12 (82.74) | 14 (96.53) | 15 (103.42) | | | | | | | |
| 10V2 | Light Duty | Air Pressure psi (bar) | 30 (2.07) | 40 (2.76) | 55 (3.79) | 65 (4.48) | 85 (5.86) | 95 (6.55) | 100 (6.89) | | | | | 15,000 (1034.20) | 0.16 (4.06) | 0.12 |
| | Medium Duty | | 25 (1.72) | 25 (1.72) | 25 (1.72) | 25 (1.72) | 25 (1.72) | 25 (1.72) | 30 (2.07) | | | | | | | |
| 10V4 | Light Duty | | 40 (2.76) | 60 (4.13) | 75 (5.17) | 95 (6.55) | | | | | | | | 10,000 (689.46) | 0.19 (4.83) | 0.20 |
| | Medium Duty | | 30 (2.07) | 30 (2.07) | 30 (2.07) | 30 (2.07) | 35 (2.41) | 35 (2.41) | 40 (2.76) | | | | | 15,000 (1034.20) | | |
| 10V6 | Light Duty | | 40 (2.76) | 60 (4.13) | 75 (5.17) | 100 (6.89) | | | | | | | | 10,000 (689.46) | 0.19 (4.83) | 0.20 |
| | Medium Duty | | 30 (2.07) | 30 (2.07) | 30 (2.07) | 35 (2.41) | 35 (2.41) | 35 (2.41) | 40 (2.76) | | | | | 15,000 (1034.20) | | |
| 10V8 | Medium Duty | | 50 (3.45) | 50 (3.45) | 55 (3.79) | 65 (4.48) | | | | | | | | 10,000 (689.46) | 0.31 (7.90) | 0.86 |
| SW4 | Medium Duty | | 40 (2.76) | 40 (2.76) | 40 (2.76) | 50 (3.45) | 55 (3.79) | 60 (4.13) | 65 (4.48) | | | | | 15,000 (1034.20) | 0.25 (6.40) | 0.65 |
| SW6 | Medium Duty | | 50 (3.45) | 50 (3.45) | 55 (3.79) | 70 (4.83) | 75 (5.17) | 85 (5.86) | 90 (6.21) | | | | | 15,000 (1034.20) | 0.25 (6.40) | 0.95 |
| | Heavy Duty | | 20 (1.38) | 25 (1.72) | 30 (2.07) | 35 (2.41) | 40 (2.76) | 45 (3.10) | 50 (3.45) | | | | | 15,000 (1034.20) | | |
| SW8 | Medium Duty | | 65 (4.48) | 70 (4.83) | 100 (6.89) | | | | | | | | | 8,500 (586.46) | 0.38 (9.70) | 1.90 |
| | Heavy Duty | | 35 (2.41) | 35 (2.41) | 50 (3.45) | 60 (4.13) | | | | | | | | 10,000 (698.46) | | |

### Series 10SM

| Valve Series | Operator Duty | | System Pressure KSI (Mpa) | | | | | | | | | | | Maximum Pressure psi (bar)* | Stem Travel in (mm) | Flow Coefficient** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1-3 (6.89-20.68) | 4 (27.58) | 6 (41.37) | 8 (55.16) | 10 (68.95) | 12 (82.74) | 14 (96.53) | 16 (110.31) | 18 (124.10) | 20 (137.89) | | | | |
| 10SM9 | Medium Duty | Air Pressure psi (bar) | 65 (4.48) | 65 (4.48) | 75 (5.17) | 100 (6.89) | | | | | | | | 8,600 (592.94) | 0.38 (9.65) | 1.75 |
| | Heavy Duty | | 35 (2.41) | 35 (2.41) | 40 (2.76) | 50 (3.45) | 55 (3.79) | | | | | | | 10,000 (689.46) | | |
| | Extra Heavy Duty Single Stage | | 30 (2.07) | 30 (2.07) | 30 (2.07) | 35 (2.41) | 45 (3.10) | | | | | | | 10,000 (689.46) | | |
| | Extra Heavy Duty Two Stage | | 15 (1.03) | 15 (1.03) | 15 (1.03) | 20 (1.38) | 20 (1.38) | | | | | | | 10,000 (689.46) | | |
| 10SM12 | Medium Duty | | 90 (6.21) | 100 (6.89) | | | | | | | | | | 4,800 (330.94) | 0.44 (11.18) | 2.80 |
| | Heavy Duty | | 45 (3.10) | 45 (3.10) | 60 (4.13) | 80 (5.52) | 100 (6.89) | | | | | | | 10,000 (689.46) | | |
| | Extra Heavy Duty Single Stage | | 35 (2.41) | 35 (2.41) | 50 (3.45) | 60 (4.13) | 70 (4.83) | | | | | | | 10,000 (689.46) | | |
| | Extra Heavy Duty Two Stage | | 20 (1.38) | 20 (1.38) | 25 (1.72) | 30 (2.07) | 35 (2.41) | | | | | | | 10,000 (689.46) | | |
| 10SM16 | Medium Duty | | 100 (6.89) | | | | | | | | | | | 2,800 (193.05) | 0.56 (14.22) | 5.20 |
| | Heavy Duty | | 60 (4.13) | 70 (4.83) | 100 (6.89) | | | | | | | | | 6,300 (434.36) | | |
| | Extra Heavy Duty Single Stage | | 45 (3.10) | 50 (3.45) | 70 (4.83) | 95 (6.55) | | | | | | | | 8,500 (586.46) | | |
| | Extra Heavy Duty Two Stage | | 25 (1.72) | 25 (1.72) | 35 (2.41) | 45 (3.10) | 55 (3.79) | | | | | | | 10,000 (689.46) | | |

## Air-to-Close - Series 20SM Valves

| Valve Series | Operator Duty | | System Pressure KSI (Mpa) | | | | | | | | | | | Maximum Pressure psi (bar)* | Stem Travel in (mm) | Flow Coefficient** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1-3 (6.89-20.68) | 4 (27.58) | 6 (41.37) | 8 (55.16) | 10 (68.95) | 12 (82.74) | 14 (96.53) | 16 (110.31) | 18 (124.10) | 20 (137.89) | | | | |
| 20SM4 15QS4 15P4 | Medium Duty | Air Pressure psi (bar) | 40 (2.76) | 40 (2.76) | 40 (2.76) | 40 (2.76) | 50 (3.45) | 60 (4.13) | 70 (4.83) | 80 (5.52) | 85 (5.86) | 95 (6.55) | | 20,000 (1378.93) | 0.25 (6.35) | 0.31 |
| | Heavy Duty | | 20 (1.38) | 20 (1.38) | 20 (1.38) | 20 (1.38) | 25 (1.72) | 30 (2.07) | 35 (2.41) | 40 (2.76) | 45 (3.10) | 50 (3.45) | | | | |
| 20SM6 15QS6 15P6 | Medium Duty | | 45 (3.10) | 45 (3.10) | 45 (3.10) | 45 (3.10) | 55 (3.79) | 65 (4.48) | 75 (5.17) | 85 (5.86) | 95 (6.55) | 100 (6.89) | | 19,000 (1309.98) | 0.25 (6.35) | 0.75 |
| | Heavy Duty | | 25 (1.72) | 25 (1.72) | 25 (1.72) | 25 (1.72) | 30 (2.07) | 35 (2.41) | 40 (2.76) | 45 (3.10) | 50 (3.45) | 55 (3.79) | | 20,000 (1378.93) | | |
| 20SM9 15QS9 15P8 | Medium Duty | | 60 (4.13) | 60 (4.13) | 65 (4.48) | 80 (5.52) | 100 (6.89) | | | | | | | 10,700 (737.73) | 0.38 (9.65) | 1.30 |
| | Heavy Duty | | 30 (2.07) | 30 (2.07) | 30 (2.07) | 40 (2.76) | 50 (3.45) | 55 (3.79) | 60 (4.13) | 70 (4.83) | 80 (5.52) | 85 (5.86) | | 20,000 (1378.93) | | |
| | Extra Heavy Duty Single Stage | | 25 (1.72) | 25 (1.72) | 25 (1.72) | 30 (2.07) | 35 (2.41) | 45 (3.10) | 50 (3.45) | 55 (3.79) | 60 (4.13) | 65 (4.48) | | 20,000 (1378.93) | | |
| | Extra Heavy Duty Two Stage | | 15 (1.03) | 15 (1.03) | 15 (1.03) | 15 (1.03) | 20 (1.38) | 20 (1.38) | 25 (1.72) | 25 (1.72) | 30 (2.07) | 30 (2.07) | | 20,000 (1378.93) | | |
| 20SM12 15QS12 10P12 | Medium Duty | | 80 (5.44) | 80 (5.44) | 100 (6.80) | | | | | | | | | 6,100 (420.57) | 0.44 (11.18) | 2.50 |
| | Heavy Duty | | 40 (2.72) | 40 (2.72) | 50 (3.40) | 60 (4.08) | 75 (5.10) | 90 (6.12) | 100 (6.80) | | | | | 13,600 (937.67) | | |
| | Extra Heavy Duty Single Stage | | 30 (2.07) | 30 (2.07) | 40 (2.76) | 50 (3.45) | 60 (4.13) | 65 (4.48) | 75 (5.17) | 85 (5.86) | 95 (6.55) | 100 (6.89) | | 19,000 (1310.00) | | |
| | Extra Heavy Duty Two Stage | | 15 (1.03) | 15 (1.03) | 20 (1.38) | 25 (1.72) | 30 (2.07) | 35 (2.41) | 40 (2.76) | 45 (3.10) | 50 (3.45) | 50 (3.45) | | 20,000 (1378.93) | | |
| 20SM16 10P16 | Medium Duty | | 100 (6.89) | 100 (6.89) | | | | | | | | | | 3,900 (268.89) | 0.56 (14.22) | 3.40 |
| | Heavy Duty | | 50 (3.45) | 50 (3.45) | 70 (4.83) | 100 (6.89) | | | | | | | | 8,800 (606.73) | | |
| | Extra Heavy Duty Single Stage | | 40 (2.76) | 40 (2.76) | 55 (3.79) | 70 (4.83) | 85 (5.86) | 95 (6.55) | | | | | | 19,000 (1310.00) | | |
| | Extra Heavy Duty Two Stage | | 20 (1.38) | 20 (1.38) | 25 (1.72) | 35 (2.41) | 40 (2.76) | 50 (3.45) | 55 (3.79) | 60 (4.48) | 70 (4.83) | 75 (5.17) | | 20,000 (1378.93) | | |

## Series 30SC Valves

| Valve Series | Operator Duty | | System Pressure KSI (Mpa) | | | | | | | | | | | Maximum Pressure psi (bar)* | Stem Travel in (mm) | Flow Coefficient** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1-10 (6.89-68.94) | 15 (103.42) | 16 (110.31) | 18 (124.10) | 20 (137.89) | 22 (151.68) | 24 (165.47) | 26 (179.26) | 28 (193.05) | 30 (206.84) | | | | |
| 30SC16 | Extra Heavy Duty Two Stage | Air Pressure psi (bar) | 30 (2.07) | 40 (2.76) | 45 (3.10) | 50 (3.45) | 55 (3.79) | 60 (4.13) | 65 (4.48) | 70 (4.83) | 75 (5.17) | 80 (5.52) | | 30,000 (2068.39) | 0.50 (12.70) | 2.61 |

*** $C_V$ data is for 2-way straight valves.*
*For angle pattern, add approximately 50% to the $C_V$ valve.*

***CAUTION:** While testing has shown O-rings to provide satisfactory service life, both cyclic and shelf life may vary widely with differing service conditions, properties of reactants, pressure and temperature cycling and age of the O-ring, FREQUENT INSPECTIONS SHOULD BE MADE to detect any deterioration, and O-rings replaced as required.*

*Maximum pressure rating is based on the lowest rating of any component. Actual working pressure may be determined by tubing pressure rating, if lower.

*All dimensions for reference only and subject to change.*
For prompt service, Autoclave stocks select products. Consult your local representative.

## Air-to-Close - Series 30VM Valves

| Valve Series | Operator Duty | | System Pressure KSI (Mpa) | | | | | | | | | | | Maximum Pressure psi (bar)* | Stem Travel in (mm) | Flow Coefficient** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1-10 (6.89-68.94) | 12 (82.74) | 14 (96.53) | 16 (110.31) | 18 (124.10) | 20 (137.89) | 22 (151.68) | 24 (165.47) | 26 (179.26) | 28 (193.05) | 30 (206.84) | | | |
| 30VM4 | Medium Duty | Air Pressure psi (bar) | 25 (1.72) | 25 (1.72) | 25 (1.72) | 30 (2.07) | 35 (2.41) | 35 (2.41) | 40 (2.76) | 45 (3.10) | 50 (3.45) | 50 (3.45) | 55 (3.79) | 30,000 (2068.39) | 0.19 (4.83) | 0.12 |
| | Heavy Duty | | 15 (1.03) | 15 (1.03) | 15 (1.03) | 15 (1.03) | 20 (1.38) | 20 (1.38) | 20 (1.38) | 25 (1.72) | 25 (1.72) | 25 (1.72) | 30 (2.07) | | | |
| 30VM6 & 30VM9 | Medium Duty | | 30 (2.07) | 30 (2.07) | 35 (2.41) | 40 (2.76) | 45 (3.10) | 50 (3.45) | 55 (3.79) | 60 (4.13) | 65 (4.48) | 70 (4.83) | 75 (5.17) | 30,000 (2068.39) | 0.19 (4.83) | 0.23 (30VM6) |
| | Heavy Duty | | 15 (1.03) | 15 (1.03) | 20 (1.38) | 20 (1.38) | 25 (1.72) | 25 (1.72) | 30 (2.07) | 30 (2.07) | 35 (2.41) | 35 (2.41) | 40 (2.76) | | | 0.33 (30VM9) |

## Series 40VM Valves

| Valve Series | Operator Duty | | System Pressure KSI (Mpa) | | | | | | | | Maximum Pressure psi (bar)* | Stem Travel in (mm) | Flow Coefficient** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1-10 (6.89-68.94) | 15 (103.42) | 20 (137.89) | 25 (172.37) | 30 (206.84) | 35 (241.31) | 40 (275.79) | | | | |
| 40VM9 | Medium Duty | Air Pressure psi (bar) | 40 (2.76) | 50 (3.45) | 60 (4.13) | 70 (4.83) | 80 (5.52) | 90 (6.21) | 90 (6.21) | | 40,000 (2757.86) | 0.25 (6.35) | 0.28 |
| | Heavy Duty | | 20 (1.38) | 25 (1.70) | 30 (2.07) | 35 (2.41) | 40 (2.76) | 45 (3.10) | 45 (3.10) | | | | |

## Series 60VM Valves

| Valve Series | Operator Duty | | System Pressure KSI (Mpa) | | | | | | | | | | Maximum Pressure psi (bar)* | Stem Travel in (mm) | Flow Coefficient** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1-20 (6.89-137.89) | 25 (172.37) | 30 (206.84) | 35 (241.31) | 40 (275.79) | 45 (310.26) | 50 (344.73) | 55 (379.21) | 60 (413.68) | | | | |
| 60VM4 & 60VM6 | Medium Duty | Air Pressure psi (bar) | 30 (2.07) | 30 (2.07) | 35 (2.41) | 45 (3.10) | 50 (3.45) | 55 (3.79) | 60 (4.13) | 70 (4.83) | 75 (5.17) | | 60,000 (4136.79) | 0.25 (6.35) | 0.08 (60VM4) |
| | Heavy Duty | | 15 (1.03) | 15 (1.03) | 20 (1.38) | 25 (1.72) | 25 (1.72) | 30 (2.07) | 30 (2.07) | 35 (2.41) | 40 (2.76) | | | | 0.09 (60VM6) |
| 60VM9 | Medium Duty | | 35 (2.41) | 40 (2.76) | 50 (3.45) | 55 (3.79) | 65 (4.48) | 70 (4.83) | 75 (5.17) | 85 (5.86) | 90 (6.21) | | 60,000 (4136.79) | 0.25 (6.35) | 0.14 |
| | Heavy Duty | | 20 (1.38) | 20 (1.38) | 25 (1.72) | 30 (2.07) | 35 (2.41) | 35 (2.41) | 40 (2.76) | 45 (3.10) | 45 (3.10) | | | | |

## Series 100VM & 150V Valves

| Valve Series | Operator Duty | | System Pressure KSI (Mpa) | | | | | | | | | Maximum Pressure psi (bar)* | Stem Travel in (mm) | Flow Coefficient** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1-40 (6.89-275.79) | 50 (344.73) | 60 (413.68) | 70 (482.63) | 80 (551.57) | 90 (620.52) | 100 (689.46) | 150 (1034.20) | | | | |
| 100VM4 100VM5 100VM6 | Medium Duty | Air Pressure psi (bar) | 50 (3.45) | 55 (3.79) | 65 (4.48) | 75 (5.17) | 85 (5.86) | 95 (6.55) | 100 (6.89) | | | 100,000 (6894.65) | 0.12 (3.05) | 0.09 |
| | Heavy Duty | | 30 (2.07) | 30 (2.07) | 35 (2.41) | 40 (2.76) | 40 (2.76) | 45 (3.10) | 50 (3.45) | | | | | |
| 150V5 | Heavy Duty | | 35 (2.41) | 40 (2.76) | 45 (3.10) | 45 (3.10) | 50 (3.45) | 55 (3.79) | 60 (4.13) | 100 (6.89) | | 150,000 (10341.97) | 0.12 (3.05) | 0.06 |

# Pneumatic Valve Actuators - Air Operator Sizing Data

## Air-to-Open

### Series 10V Valves

| Valve Series | Operator Duty | | System Pressure KSI (Mpa) | | | | | | | | | | | Maximum Pressure psi (bar)* | Flow Coefficient Cv** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1-6 (6.89-41.37) | 8 (110.31) | 10 (124.10) | 12 (82.74) | 14 (96.53) | 15 (103.42) | | | | | | | |
| 10V2 | Light Duty | Air Pressure: psi (bar) | 60 (4.13) | 60 (4.13) | | | | | | | | | | 8,200 (565.36) | 0.12 to 0.09*** |
| | | Spring Pre-Compression: in. (mm) | 0.31 (7.87) | 0.38 (9.65) | | | | | | | | | | | |
| | | Stem Travel in (mm) | 0.12 (3.05) | 0.06 (1.52) | | | | | | | | | | | |
| | Medium Duty | Air Pressure: psi (bar) | 40 (2.76) | 40 (2.76) | 40 (2.76) | 40 (2.76) | 40 (2.76) | 45 (3.10) | | | | | | 15,000 (1034.20) | 0.12 |
| | | Spring Pre-Compression: in. (mm) | 0.12 (3.05) | 0.12 (3.05) | 0.12 (3.05) | 0.12 (3.05) | 0.12 (3.05) | 0.16 (4.06) | | | | | | | |
| | | Stem Travel in (mm) | 0.12 (3.05) | 0.12 (3.05) | 0.12 (3.05) | 0.12 (3.05) | 0.12 (3.05) | 0.12 (3.05) | | | | | | | |
| 10V4 10V6 | Light Duty | Air Pressure: psi (bar) | 60 (4.13) | | | | | | | | | | | 5,600 (386.46) | 0.02 to 0.17*** |
| | | Spring Pre-Compression: in. (mm) | 0.38 (9.65) | | | | | | | | | | | | |
| | | Stem Travel in (mm) | 0.06 (1.52) | | | | | | | | | | | | |
| 10V4 | Medium Duty | Air Pressure: psi (bar) | 45 (3.10) | 45 (3.10) | 50 (3.45) | 55 (3.79) | 60 (4.14) | 65 (4.48) | | | | | | 15,000 (1034.20) | 0.20 |
| | | Spring Pre-Compression: in. (mm) | 0.12 (3.05) | 0.12 (3.05) | 0.14 (3.65) | 0.18 (4.75) | 0.20 (5.08) | 0.22 (5.59) | | | | | | | |
| | | Stem Travel in (mm) | 0.19 (4.83) | 0.19 (4.83) | 0.19 (4.83) | 0.19 (4.83) | 0.19 (4.83) | 0.19 (4.83) | | | | | | | |
| 10V6 | Medium Duty | Air Pressure: psi (bar) | 45 (3.10) | 45 (3.10) | 50 (3.45) | 55 (3.79) | 60 (4.13) | 65 (4.48) | | | | | | 15,000 (1034.20) | 0.20 |
| | | Spring Pre-Compression: in. (mm) | 0.12 (3.05) | 0.12 (3.05) | 0.14 (3.56) | 0.18 (4.57) | 0.20 (5.08) | 0.22 (5.57) | | | | | | | |
| | | Stem Travel in (mm) | 0.19 (4.83) | 0.19 (4.83) | 0.19 (4.83) | 0.19 (4.83) | 0.19 (4.83) | 0.19 (4.83) | | | | | | | |
| 10V8 | Medium Duty | Air Pressure: psi (bar) | 75 (5.17) | 85 (5.86) | 95 (6.55) | | | | | | | | | 10,000 (689.46) | 0.86 |
| | | Spring Pre-Compression: in. (mm) | 0.25 (6.35) | 0.30 (7.62) | 0.38 (9.65) | | | | | | | | | | |
| | | Stem Travel in (mm) | 0.25 (6.35) | 0.25 (6.35) | 0.25 (6.35) | | | | | | | | | | |
| | Heavy Duty | Air Pressure: psi (bar) | 50 (3.45) | 55 (3.79) | 60 (4.13) | | | | | | | | | 10,000 (689.46) | 0.86 |
| | | Spring Pre-Compression: in. (mm) | 0.14 (3.56) | 0.20 (5.08) | 0.24 (6.10) | | | | | | | | | | |
| | | Stem Travel in (mm) | 0.25 (6.35) | 0.25 (6.35) | 0.25 (6.35) | | | | | | | | | | |

*** $C_V$ data is for 2-way straight valves.*
*For angle pattern, add approximately 50% to the $C_V$ valve.*

***CAUTION:** While testing has shown O-rings to provide satisfactory service life, both cyclic and shelf life may vary widely with differing service conditions, properties of reactants, pressure and temperature cycling and age of the O-ring, FREQUENT INSPECTIONS SHOULD BE MADE to detect any deterioration, and O-rings replaced as required.*

*Maximum pressure rating is based on the lowest rating of any component. Actual working pressure may be determined by tubing pressure rating, if lower.

*All dimensions for reference only and subject to change.*
For prompt service, Autoclave stocks select products. Consult your local representative.

# Air-to-Open

## Series SW Valves

| Valve Series | Operator Duty | | System Pressure KSI (Mpa) | | | | | | | | | | | Maximum Pressure psi (bar)* | Flow Coefficient Cv** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1-6 (6.89-41.37) | 8 (55.16) | 10 (68.95) | 12 (82.74) | 14 (96.53) | 15 (103.41) | | | | | | | |
| SW4 | Medium Duty | Air Pressure: psi (bar) | 65 (4.48) | 65 (4.48) | 75 (5.17) | 85 (5.52) | 95 (6.55) | 95 (6.55) | | | | | | 15,000 (1034.20) | 0.65 |
| | | Spring Pre-Compression: in. (mm) | 0.19 (4.83) | 0.19 (4.83) | 0.25 (6.35) | 0.31 (7.87) | 0.36 (9.14) | 0.38 (9.14) | | | | | | | |
| | | Stem Travel in (mm) | 0.25 (6.35) | 0.25 (6.35) | 0.25 (6.35) | 025 (6.35) | 025 (6.35) | 025 (6.35) | | | | | | | |
| SW6 | Medium Duty | Air Pressure: psi (bar) | 75 (5.17) | 75 (5.17) | 95 (6.55) | 95 (6.55) | 95 (6.55) | 100 (6.89) | | | | | | 13,500 (930.77) | 0.62 to 0.95 |
| | | Spring Pre-Compression: in. (mm) | 0.25 (6.35) | 0.25 (6.35) | 0.28 (7.11) | 0.44 (11.17) | 0.52 (13.21) | 0.56 (14.22) | | | | | | | |
| | | Stem Travel in (mm) | 0.25 (6.35) | 0.25 (6.35) | 0.25 (6.35) | 0.19 (4.83) | 0.10 (2.54) | 0.06 (1.53) | | | | | | | |
| SW6 | Heavy Duty | Air Pressure: psi (bar) | 50 (3.45) | 55 (3.79) | 60 (4.13) | 65 (4.48) | 70 (4.83) | 75 (5.17) | | | | | | 15,000 (1034.20) | 0.95 |
| | | Spring Pre-Compression: in. (mm) | 0.14 (3.56) | 0.19 (4.83) | 0.24 (6.10) | 0.28 (7.11) | 0.34 (8.64) | 0.36 (9.14) | | | | | | | |
| | | Stem Travel in (mm) | 0.25 (6.35) | 0.25 (6.35) | 0.25 (6.35) | 0.25 (6.35) | 0.25 (6.35) | 0.25 (6.35) | | | | | | | |
| SW8 | Medium Duty | Air Pressure: psi (bar) | 95 (6.55) | 95 (6.55) | | | | | | | | | | 7,200 (469.41) | 1.75 |
| | | Spring Pre-Compression: in. (mm) | 0.38 (9.65) | 0.56 (14.22) | | | | | | | | | | | |
| | | Stem Travel in (mm) | 0.25 (6.35) | 0.05 (1.53) | | | | | | | | | | | |
| SW8 | Heavy Duty | Air Pressure: psi (bar) | 65 (4.48) | 75 (5.17) | 75 (5.17) | | | | | | | | | 10,000 (689.46) | 1.14 |
| | | Spring Pre-Compression: in. (mm) | 0.28 (7.11) | 0.38 (9.65) | 0.44 (11.18) | | | | | | | | | | |
| | | Stem Travel in (mm) | 0.25 (6.35) | 0.25 (6.35) | 0.19 (4.83) | | | | | | | | | | |

## Series MVE/MV Valves

| Valve Series | Operator Duty | | System Pressure KSI (Mpa) | | | | | | | | | | | Maximum Pressure psi (bar)* | Flow Coefficient Cv** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1-6 (6.89-41.37) | 8 (55.15) | 10 (68.95) | 12 (82.74) | 14 (96.53) | 15 (103.41) | | | | | | | |
| MVE1 MV1 MVE2 MV2 | Heavy-Light Duty | Air Pressure: psi (bar) | 60 (4.13) | 65 (4.48) | 75 (5.17) | 85 (5.86) | 90 (6.21) | 100 (6.89) | | | | | | 15,000 (1034.20) | MVE1/MV1 (0.05) MVE2/MV2 (0.11) |
| | | Spring Pre-Compression: in. (mm) | 0.073 (1.85) | 0.094 (2.39) | 0.125 (3.18) | 0.147 (3.73) | 0.172 (4.37) | 0.188 (4.78) | | | | | | | |
| | | Stem Travel in (mm) | 0.094 (2.39) | 0.094 (2.39) | 0.094 (2.39) | 0.094 (2.39) | 0.094 (2.39) | 0.094 (2.39) | | | | | | | |

*** $C_V$ data is for 2-way straight valves.*
*For angle pattern, add approximately 50% to the $C_V$ valve.*

***CAUTION:** While testing has shown O-rings to provide satisfactory service life, both cyclic and shelf life may vary widely with differing service conditions, properties of reactants, pressure and temperature cycling and age of the O-ring, FREQUENT INSPECTIONS SHOULD BE MADE to detect any deterioration, and O-rings replaced as required.*

*Maximum pressure rating is based on the lowest rating of any component.
Actual working pressure may be determined by tubing pressure rating, if lower.

*All dimensions for reference only and subject to change.*

For prompt service, Autoclave stocks select products. Consult your local representative.

# Air-to-Open - Series 10SM Valves

| Valve Series | Operator Duty | | System Pressure KSI (Mpa) | | | | | | | | | | | Maximum Pressure psi (bar)* | Flow Coefficient Cv** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1-4 (6.89-27.58) | 6 (41.37) | 8 (55.15) | 10 (68.95) | 12 (82.74) | 14 (96.53) | 16 (110.31) | 18 (124.10) | 20 (137.89) | | | | |
| 10SM9 | Medium Duty | Air Pressure: psi (bar) | 95 (6.55) | 95 (6.55) | 95 (6.55) | | | | | | | | | 7,900 (544.68) | 1.74 to 0.72*** |
| | | Spring Pre-Compression: in. (mm) | 0.38 (9.65) | 0.44 (11.18) | 0.56 (14.22) | | | | | | | | | | |
| | | Stem Travel in (mm) | 0.25 (6.35) | 0.19 (4.83) | 0.06 (1.52) | | | | | | | | | | |
| | Heavy Duty | Air Pressure: psi (bar) | 55 (3.79) | 65 (4.48) | 70 (4.83) | 75 (5.17) | | | | | | | | 10,000 (689.46) | 1.74 to 0.72*** |
| | | Spring Pre-Compression: in. (mm) | 0.22 (5.59) | 0.28 (7.11) | 0.34 (8.64) | 0.44 (11.18) | | | | | | | | | |
| | | Stem Travel in (mm) | 0.25 (6.35) | 0.25 (6.35) | 0.25 (6.35) | 0.19 (4.83) | | | | | | | | | |
| | Extra Heavy Duty Single Stage | Air Pressure: psi (bar) | 45 (3.10) | 45 (3.10) | 55 (3.79) | 60 (4.13) | | | | | | | | 10,000 (689.46) | 1.75 |
| | | Spring Pre-Compression: in. (mm) | 0.31 (7.87) | 0.34 (8.64) | 0.47 (11.94) | 0.59 (14.99) | | | | | | | | | |
| | | Stem Travel in (mm) | 0.38 (9.65) | 0.38 (9.65) | 0.38 (9.65) | 0.38 (9.65) | | | | | | | | | |
| | Extra Heavy Duty Two Stage | Air Pressure: psi (bar) | 25 (1.72) | 30 (2.07) | 35 (2.41) | 40 (2.76) | | | | | | | | 10,000 (689.46) | 1.75 |
| | | Spring Pre-Compression: in. (mm) | 0.16 (4.06) | 0.19 (4.83) | 0.25 (6.35) | 0.28 (7.11) | | | | | | | | | |
| | | Stem Travel in (mm) | 0.38 (9.65) | 0.38 (9.65) | 0.38 (9.65) | 0.38 (9.65) | | | | | | | | | |
| 10SM12 | Extra Heavy Duty Single Stage | Air Pressure: psi (bar) | 55 (3.79) | 65 (4.48) | 80 (5.52) | 95 (6.55) | | | | | | | | 10,000 (689.46) | 2.80 |
| | | Spring Pre-Compression: in. (mm) | 0.44 (11.18) | 0.63 (16.00) | 0.84 (21.34) | 1.06 (26.92) | | | | | | | | | |
| | | Stem Travel in (mm) | 0.44 (11.18) | 0.44 (11.18) | 0.44 (11.18) | 0.44 (11.18) | | | | | | | | | |
| | Extra Heavy Duty Two Stage | Air Pressure: psi (bar) | 40 (2.76) | 50 (3.45) | 55 (3.79) | 60 (4.13) | | | | | | | | 10,000 (689.46) | 2.80 |
| | | Spring Pre-Compression: in. (mm) | 0.22 (5.59) | 0.31 (7.87) | 0.44 (11.18) | 0.53 (13.46) | | | | | | | | | |
| | | Stem Travel in (mm) | 0.44 (11.18) | 0.44 (11.18) | 0.44 (11.18) | 0.44 (11.18) | | | | | | | | | |
| 10SM16 | Extra Heavy Duty Single Stage | Air Pressure: psi (bar) | 75 (5.17) | 100 (6.89) | | | | | | | | | | 6,500 (448.15) | 5.20 |
| | | Spring Pre-Compression: in. (mm) | 0.69 (17.53) | 1.13 (28.70) | | | | | | | | | | | |
| | | Stem Travel in (mm) | 0.50 (12.70) | 0.50 (12.70) | | | | | | | | | | | |
| | Extra Heavy Duty Two Stage | Air Pressure: psi (bar) | 55 (3.79) | 65 (4.48) | 75 (5.17) | 85 (5.86) | | | | | | | | 10,000 (689.46) | 5.20 |
| | | Spring Pre-Compression: in. (mm) | 0.34 (8.64) | 0.53 (13.46) | 0.69 (17.53) | 0.88 (22.35) | | | | | | | | | |
| | | Stem Travel in (mm) | 0.50 (12.70) | 0.50 (12.70) | 0.50 (12.70) | 0.50 (12.70) | | | | | | | | | |

# Air-to-Open - Series 20SM Valves

| Valve Series | Operator Duty | | System Pressure KSI (Mpa) | | | | | | | | | | | Maximum Pressure psi (bar)* | Flow Coefficient Cv** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1-4 (6.89-27.58) | 6 (41.37) | 8 (55.15) | 10 (68.95) | 12 (82.74) | 14 (96.53) | 16 (110.31) | 18 (124.10) | 20 (137.89) | | | | |
| 20SM4 15QS4 15P4 | Medium Duty | Air Pressure: psi (bar) | 65 (4.48) | 65 (4.48) | 65 (4.48) | 75 (5.17) | 85 (5.86) | 95 (6.55) | 95 (6.55) | 95 (6.55) | 95 (6.55) | | | 20,000 (1378.93) | 0.31 to 0.22*** |
| | | Spring Pre-Compression: in. (mm) | 0.19 (4.83) | 0.19 (4.83) | 0.19 (4.83) | 0.25 (6.35) | 0.31 (7.87) | 0.38 (9.65) | 0.44 (11.18) | 0.50 (12.70) | 0.56 (14.22) | | | | |
| | | Stem Travel in (mm) | 0.25 (6.35) | 0.25 (6.35) | 0.25 (6.35) | 0.25 (6.35) | 0.25 (6.35) | 0.25 (6.35) | 0.19 (4.83) | 0.12 (3.05) | 0.06 (1.52) | | | | |
| | Heavy Duty | Air Pressure: psi (bar) | 35 (2.41) | 35 (2.41) | 35 (2.41) | 40 (2.76) | 45 (3.10) | 50 (3.45) | 50 (3.45) | 50 (3.45) | 50 (3.45) | | | | |
| 20SM6 15QS6 15P6 | Medium Duty | Air Pressure: psi (bar) | 65 (4.48) | 65 (4.48) | 75 (5.17) | 85 (5.86) | 95 (6.55) | 95 (6.55) | 95 (6.55) | 95 (6.55) | | | | 18,250 (1258.27) | 0.75 to 0.57*** |
| | | Spring Pre-Compression: in. (mm) | 0.19 (4.83) | 0.19 (4.83) | 0.25 (6.35) | 0.31 (7.87) | 0.38 (9.65) | 0.44 (11.18) | 0.50 (12.70) | 0.56 (14.22) | | | | | |
| | | Stem Travel in (mm) | 0.25 (6.35) | 0.25 (6.35) | 0.25 (6.35) | 0.25 (6.35) | 0.25 (6.35) | 0.19 (4.83) | 0.12 (3.05) | 0.06 (1.52) | | | | | |
| | Heavy Duty | Air Pressure: psi (bar) | 35 (2.41) | 35 (2.41) | 40 (2.76) | 45 (3.10) | 50 (3.45) | 50 (3.45) | 50 (3.45) | 50 (3.45) | | | | | |
| 20SM9 15QS9 15P8 | Medium Duty | Air Pressure: psi (bar) | 85 (5.86) | 90 (6.21) | 95 (6.55) | 95 (6.55) | | | | | | | | 9,800 (675.68) | 1.29 to 0.53*** |
| | | Spring Pre-Compression: in. (mm) | 0.31 (7.87) | 0.34 (8.64) | 0.47 (11.94) | 0.56 (14.22) | | | | | | | | | |
| | | Stem Travel in (mm) | 0.25 (6.35) | 0.25 (6.35) | 0.15 (3.81) | 0.06 (1.52) | | | | | | | | | |
| | Heavy Duty | Air Pressure: psi (bar) | 50 (3.45) | 55 (3.79) | 65 (4.48) | 70 (4.83) | 75 (5.17) | 75 (5.17) | 75 (5.17) | | | | | 15,700 (1082.46) | 1.29 to 0.53*** |
| | | Spring Pre-Compression: in. (mm) | 0.19 (4.83) | 0.22 (5.59) | 0.28 (7.11) | 0.34 (8.64) | 0.44 (11.18) | 0.50 (12.70) | 0.56 (14.22) | | | | | | |
| | | Stem Travel in (mm) | 0.25 (6.35) | 0.25 (6.35) | 0.25 (6.35) | 0.25 (6.35) | 0.19 (4.83) | 0.12 (3.05) | 0.06 (1.52) | | | | | | |
| | Extra Heavy Duty Single Stage | Air Pressure: psi (bar) | 40 (2.76) | 40 (2.76) | 50 (3.45) | 55 (3.79) | 60 (4.13) | 65 (4.48) | 70 (4.83) | 75 (5.17) | 85 (5.86) | | | 20,000 (1378.93) | 1.30 |
| | | Spring Pre-Compression: in. (mm) | 0.25 (6.35) | 0.28 (7.11) | 0.38 (9.65) | 0.47 (11.94) | 0.56 (14.22) | 0.66 (16.76) | 0.75 (19.05) | 0.84 (21.34) | 0.94 (23.88) | | | | |
| | | Stem Travel in (mm) | 0.38 (9.65) | 0.38 (9.65) | 0.38 (9.65) | 0.38 (9.65) | 0.38 (9.65) | 0.38 (9.65) | 0.38 (9.65) | 0.38 (9.65) | 0.38 (9.65) | | | | |
| | Extra Heavy Duty Two Stage | Air Pressure: psi (bar) | 30 (2.07) | 35 (2.41) | 35 (2.41) | 40 (2.72) | 40 (2.72) | 45 (3.10) | 50 (3.45) | 50 (3.45) | 55 (3.79) | | | 20,000 (1378.93) | 1.30 |
| | | Spring Pre-Compression: in. (mm) | 0.13 (3.30) | 0.16 (4.06) | 0.19 (4.83) | 0.25 (6.35) | 0.28 (7.11) | 0.34 (8.64) | 0.38 (9.65) | 0.44 (11.18) | 0.47 (11.94) | | | | |
| | | Stem Travel in (mm) | 0.38 (9.65) | 0.38 (9.65) | 0.38 (9.65) | 0.38 (9.65) | 0.38 (9.65) | 0.38 (9.65) | 0.38 (9.65) | 0.38 (9.65) | 0.38 (9.65) | | | | |

**** $C_V$ varies because of spring compression limitations. The flow coefficient range is given for the maximum stem travel (lowest system pressure) to minimum travel (highest system pressure).*

## Air-to-Open - Series 20SM Valves

| Valve Series | Operator Duty | | System Pressure KSI (Mpa) | | | | | | | | | | | Maximum Pressure psi (bar)* | Flow Coefficient Cv** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1-4 (6.89-27.58) | 6 (41.37) | 8 (55.15) | 10 (68.95) | 12 (82.74) | 14 (96.53) | 16 (110.31) | 18 (124.10) | 20 (137.89) | | | | |
| 20SM12 15QS12 10P12 | Heavy Duty | Air Pressure: psi (bar) | 65 (4.48) | 75 (5.17) | | | | | | | | | | 6,000 (413.68) | 0.80 to 0.78*** |
| | | Spring Pre-Compression: in. (mm) | 0.28 (7.11) | 0.38 (9.65) | | | | | | | | | | | |
| | | Stem Travel in (mm) | 0.25 (6.35) | 0.25 (6.35) | | | | | | | | | | | |
| | Extra Heavy Duty Single Stage | Air Pressure: psi (bar) | 50 (3.45) | 60 (4.13) | 70 (4.83) | 80 (5.52) | 90 (6.21) | 100 (6.89) | 100 (6.89) | | | | | 15,000 (1034.19) | 2.50 |
| | | Spring Pre-Compression: in. (mm) | 0.38 (9.65) | 0.50 (12.70) | 0.66 (16.76) | 0.81 (20.57) | 0.97 (24.64) | 1.13 (28.70) | 1.22 (30.99) | | | | | | |
| | | Stem Travel in (mm) | 0.44 (11.18) | 0.44 (11.18) | 0.44 (11.18) | 0.44 (11.18) | 0.44 (11.18) | 0.44 (11.18) | 0.44 (11.18) | 0.44 (11.18) | 0.44 (11.18) | | | | |
| | Extra Heavy Duty Two Stage | Air Pressure: psi (bar) | 40 (2.76) | 45 (3.10) | 50 (3.45) | 55 (3.79) | 60 (4.13) | 65 (4.48) | 70 (4.83) | 75 (5.17) | 80 (5.52) | | | 20,000 (1378.93) | 2.50 |
| | | Spring Pre-Compression: in. (mm) | 0.19 (4.83) | 0.25 (6.35) | 0.31 (7.87) | 0.41 (10.41) | 0.50 (12.70) | 0.56 (14.22) | 0.66 (16.76) | 0.72 (18.29) | 0.81 (20.57) | | | | |
| | | Stem Travel in (mm) | 0.44 (11.18) | 0.44 (11.18) | 0.44 (11.18) | 0.44 (11.18) | 0.44 (11.18) | 0.44 (11.18) | 0.44 (11.18) | 0.44 (11.18) | 0.44 (11.18) | | | | |
| 20SM16 10P16 | Heavy Duty | Air Pressure: psi (bar) | 75 (5.17) | | | | | | | | | | | 4,000 (275.79) | 2.73 to .15*** |
| | | Spring Pre-Compression: in. (mm) | 0.38 (9.65) | | | | | | | | | | | | |
| | | Stem Travel in (mm) | 0.25 (6.35) | | | | | | | | | | | | |
| | Extra Heavy Duty Single Stage | Air Pressure: psi (bar) | 65 (4.48) | 80 (5.52) | 95 (6.55) | 100 (6.89) | | | | | | | | 10,000 (689.46) | 3.40 |
| | | Spring Pre-Compression: in. (mm) | 0.50 (12.70) | 0.75 (19.05) | 0.97 (24.64) | 1.22 (30.99) | | | | | | | | | |
| | | Stem Travel in (mm) | 0.50 (12.70) | 0.50 (12.70) | 0.50 (12.70) | 0.50 (12.70) | | | | | | | | | |
| | Extra Heavy Duty Two Stage | Air Pressure: psi (bar) | 50 (3.45) | 55 (3.79) | 65 (4.48) | 70 (4.83) | 80 (5.52) | 85 (5.86) | 90 (6.21) | 100 (6.89) | 100 (6.89) | | | 20,000 (1378.93) | 3.40 |
| | | Spring Pre-Compression: in. (mm) | 0.25 (6.35) | 0.38 (9.65) | 0.50 (12.70) | 0.63 (16.00) | 0.75 (19.05) | 0.84 (21.34) | 0.97 (24.64) | 1.09 (27.69) | 1.22 (30.99) | | | | |
| | | Stem Travel in (mm) | 0.50 (12.70) | 0.50 (12.70) | 0.50 (12.70) | 0.50 (12.70) | 0.50 (12.70) | 0.50 (12.70) | 0.50 (12.70) | 0.50 (12.70) | 0.50 (12.70) | | | | |

*** $C_V$ data is for 2-way straight valves.*
*For angle pattern, add approximately 50% to the $C_V$ valve.*

**** $C_V$ varies because of spring compression limitations. The flow coefficient range is given for the maximum stem travel (lowest system pressure) to minimum travel (highest system pressure).*

***CAUTION:*** *While testing has shown O-rings to provide satisfactory service life, both cyclic and shelf life may vary widely with differing service conditions, properties of reactants, pressure and temperature cycling and age of the O-ring, FREQUENT INSPECTIONS SHOULD BE MADE to detect any deterioration, and O-rings replaced as required.*

*Maximum pressure rating is based on the lowest rating of any component.
Actual working pressure may be determined by tubing pressure rating, if lower.

*All dimensions for reference only and subject to change.*
For prompt service, Autoclave stocks select products. Consult your local representative.

## Air-to-Open - Series 30SC Valves

| Valve Series | Operator Duty | | System Pressure KSI (Mpa) | | | | | | | | | | | Maximum Pressure psi (bar)* | Flow Coefficient Cv** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1-15 (6.89-103.42) | 16 (110.31) | 18 (124.10) | 20 (137.89) | 22 (151.68) | 24 (165.47) | 26 (179.26) | 28 (193.05) | 30 (206.84) | | | | |
| 30SC16 | Extra Heavy Duty Two Stage | Air Pressure: psi (bar) | 70 (4.83) | 75 (5.17) | 75 (5.17) | 80 (5.52) | 85 (5.86) | 95 (6.55) | 100 (6.89) | 100 (6.89) | 100 (6.89) | | | 30,000 (2068.39) | 2.61 |
| | | Spring Pre-Compression: in. (mm) | 0.56 (14.22) | 0.62 (15.75) | 0.68 (17.27) | 0.75 (19.05) | 0.88 (22.35) | 0.94 (23.88) | 1.00 (25.40) | 1.06 (26.92) | 1.38 (35.05) | | | | |
| | | Stem Travel in (mm) | 0.50 (12.70) | 0.50 (12.70) | 0.50 (12.70) | 0.50 (12.70) | 0.50 (12.70) | 0.50 (12.70) | 0.50 (12.70) | 0.50 (12.70) | 0.50 (12.70) | | | | |

## Series 30VM Valves

| Valve Series | Operator Duty | | System Pressure KSI (Mpa) | | | | | | | | | | | Maximum Pressure psi (bar)* | Flow Coefficient Cv** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1-10 (6.89-68.95) | 12 (82.74) | 14 (96.53) | 16 (110.31) | 18 (124.10) | 20 (137.89) | 22 (151.68) | 24 (165.47) | 26 (179.26) | 28 (193.05) | 30 (206.84) | | |
| 30VM4 | Medium Duty | Air Pressure: psi (bar) | 45 (3.10) | 45 (3.10) | 55 (3.79) | 55 (3.79) | 55 (3.79) | 55 (3.79) | 65 (4.48) | 65 (4.48) | 65 (4.48) | 65 (4.48) | 75 (5.17) | 30,000 (2068.39) | 0.12 |
| | | Spring Pre-Compression: in. (mm) | 0.12 (3.15) | 0.12 (3.05) | 0.19 (4.83) | 0.19 (4.83) | 0.19 (4.83) | 0.19 (4.83) | 0.25 (6.35) | 0.25 (6.35) | 0.25 (6.35) | 0.25 (6.35) | 0.31 (7.87) | | |
| | | Stem Travel in (mm) | 0.19 (4.83) | 0.19 (4.83) | 0.19 (4.83) | 0.19 (4.83) | 0.19 (4.83) | 0.19 (4.83) | 0.19 (4.83) | 0.19 (4.83) | 0.19 (4.83) | 0.19 (4.83) | 0.19 (4.83) | | |
| | Heavy Duty | Air Pressure: psi (bar) | 25 (1.72) | 25 (1.72) | 30 (2.07) | 30 (2.07) | 30 (2.07) | 30 (2.07) | 35 (2.41) | 35 (2.41) | 35 (2.41) | 35 (2.41) | 40 (2.76) | | |
| 30VM6 & 30VM9 | Medium Duty | Air Pressure: psi (bar) | 45 (3.10) | 55 (3.79) | 55 (3.79) | 65 (4.48) | 65 (4.48) | 75 (5.17) | 75 (5.17) | 75 (5.17) | 85 (5.86) | 85 (5.86) | 95 (6.55) | 30,000 (2068.39) | 0.33 (30VM6) 0.33 (30VM9) |
| | | Spring Pre-Compression: in. (mm) | 0.12 (3.05) | 0.19 (4.83) | 0.19 (4.83) | 0.25 (6.35) | 0.25 (6.35) | 0.31 (7.87) | 0.31 (7.87) | 0.31 (7.87) | 0.38 (9.65) | 0.38 (9.65) | 0.44 (11.18) | | |
| | | Stem Travel in (mm) | 0.19 (4.13) | 0.19 (4.83) | 0.19 (4.83) | 0.19 (4.83) | 0.19 (4.83) | 0.19 (4.83) | 0.19 (4.83) | 0.19 (4.83) | 0.19 (4.83) | 0.19 (4.83) | 0.19 (4.83) | | |
| | Heavy Duty | Air Pressure: psi (bar) | 25 (1.72) | 30 (2.07) | 30 (2.07) | 35 (2.41) | 35 (2.41) | 40 (2.76) | 40 (2.76) | 40 (2.76) | 45 (3.10) | 45 (3.10) | 50 (3.45) | | |

## Series 40VM Valves

| Valve Series | Operator Duty | | System Pressure KSI (Mpa) | | | | | | | | | | | Maximum Pressure psi (bar)* | Flow Coefficient Cv** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1-10 (6.89-68.95) | 15 (103.42) | 20 (137.89) | 25 (172.37) | 30 (206.84) | 35 (241.31) | 40 (275.79) | | | | | | |
| 40VM9 | Medium Duty | Air Pressure: psi (bar) | 60 (4.13) | 70 (4.83) | 75 (5.17) | 85 (5.86) | 95 (6.55) | 100 (6.89) | 100 (6.89) | | | | | 40,000 (2757.86) | 0.28 |
| | | Spring Pre-Compression: in (mm) | 0.12 (3.05) | 0.18 (4.57) | 0.25 (6.35) | 0.31 (7.87) | 0.38 (9.65) | 0.43 (10.92) | 0.5 (12.70) | | | | | | |
| | | Stem Travel in (mm) | 0.25 (6.35) | 0.25 (6.35) | 0.25 (6.35) | 0.25 (6.35) | 0.25 (6.35) | 0.25 (6.35) | 0.25 (6.35) | | | | | | |
| | Heavy Duty | Air Pressure: psi (bar) | 30 (2.07) | 35 (2.41) | 40 (2.76) | 45 (3.10) | 50 (3.45) | 50 (3.45) | 55 (3.79) | | | | | | |

## Air-to-Open - Series 60VM Valves

| Valve Series | Operator Duty | | System Pressure KSI (Mpa) | | | | | | | | | | | Maximum Pressure psi (bar)* | Flow Coefficient Cv** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1-15 (6.89-103.42) | 20 (137.89) | 25 (172.37) | 30 (206.84) | 35 (241.31) | 40 (275.79) | 45 (310.26) | 50 (344.73) | 55 (379.21) | 60 (413.68) | | | |
| 60VM4 & 60VM6 | Medium Duty | Air Pressure: psi (bar) | 55 (3.79) | 65 (4.48) | 65 (4.48) | 65 (4.48) | 75 (5.17) | 75 (5.17) | 85 (5.86) | 85 (5.86) | 85 (5.86) | 95 (6.55) | | 60,000 (4136.79) | 0.08 (60VM4) |
| | | Spring Pre-Compression: in. (mm) | 0.12 (3.05) | 0.19 (4.83) | 0.19 (4.83) | 0.19 (4.83) | 0.25 (6.35) | 0.25 (6.35) | 0.31 (7.87) | 0.31 (7.87) | 0.31 (7.87) | 0.38 (9.65) | | | |
| | | Stem Travel in (mm) | 0.25 (6.35) | 0.25 (6.35) | 0.25 (6.35) | 0.25 (6.35) | 0.25 (6.35) | 0.25 (6.35) | 0.25 (6.35) | 0.25 (6.35) | 0.25 (6.35) | 0.25 (6.35) | | | |
| | Heavy Duty | Air Pressure: psi (bar) | 30 (2.07) | 35 (2.41) | 35 (2.41) | 35 (2.41) | 40 (2.76) | 40 (2.76) | 45 (3.10) | 45 (3.10) | 45 (3.10) | 50 (3.45) | | | 0.09 (60VM6) |
| 60VM9 | Medium Duty | Air Pressure: psi (bar) | 55 (3.74) | 65 (4.42) | 65 (4.42) | 75 (5.10) | 75 (5.10) | 85 (5.78) | 95 (6.46) | 95 (6.46) | 95 (6.46) | 95 (6.46) | | 60,000 (4136.79) | 0.14 |
| | | Spring Pre-Compression: in. (mm) | 0.12 (3.05) | 0.19 (4.83) | 0.19 (4.83) | 0.25 (6.35) | 0.25 (6.35) | 0.31 (7.87) | 0.38 (9.65) | 0.38 (9.65) | 0.44 (11.18) | 0.50 (12.70) | | | |
| | | Stem Travel in (mm) | 0.25 (6.35) | 0.25 (6.35) | 0.25 (6.35) | 0.25 (6.35) | 0.25 (6.35) | 0.25 (6.35) | 0.25 (6.35) | 0.25 (6.35) | 0.19 (4.83) | 0.12 (3.05) | | | |
| | Heavy Duty | Air Pressure: psi (bar) | 30 (2.07) | 35 (2.41) | 35 (2.41) | 40 (2.76) | 40 (2.76) | 45 (3.10) | 50 (3.45) | 50 (3.45) | 50 (3.45) | 50 (3.45) | | | |

## Series 100VM and 150V Valves

| Valve Series | Operator Duty | | System Pressure KSI (Mpa) | | | | | | | | | | | Maximum Pressure psi (bar)* | Flow Coefficient Cv** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1-20 (6.89-137.89) | 40 (275.79) | 60 (13.68) | 80 (551.57) | 90 (620.52) | 100 (689.46) | 125 (861.83) | 150 (1034.20) | | | | | |
| 100VM4 100VM5 100VM6 | Heavy Duty | Air Pressure: psi (bar) | 35 (2.41) | 40 (2.76) | 50 (3.45) | 60 (4.14) | 70 (4.83) | 70 (4.83) | | | | | | 100,000 (6894.65) | 0.09 to 0.07*** |
| | | Spring Pre-Compression: in. (mm) | 0.12 (3.05) | 0.19 (4.83) | 0.25 (6.35) | 0.31 (7.87) | 0.38 (9.65) | 0.38 (9.65) | | | | | | | |
| | | Stem Travel in (mm) | 0.12 (3.05) | 0.12 (3.05) | 0.12 (3.05) | 0.12 (3.05) | 0.12 (3.05) | 0.12 (3.05) | | | | | | | |
| 150V5 | Heavy Duty | Air Pressure: psi (bar) | 30 (2.07) | 40 (2.76) | 45 (3.10) | 55 (3.79) | 60 (4.13) | 60 (4.13) | 70 (4.83) | 75 (5.17) | | | | 150,000 (10341.97) | 0.06 |
| | | Spring Pre-Compression: in. (mm) | 0.12 (3.05) | 0.19 (4.83) | 0.25 (6.35) | 0.31 (7.87) | 0.38 (9.65) | 0.38 (9.65) | 0.44 (11.18) | 0.56 (14.22) | | | | | |
| | | Stem Travel in (mm) | 0.12 (3.05) | 0.12 (3.05) | 0.12 (3.05) | 0.12 (3.05) | 0.12 (3.05) | 0.12 (3.05) | 0.12 (3.05) | 0.06 (1.52) | | | | | |

*** $C_V$ data is for 2-way straight valves.*
*For angle pattern, add approximately 50% to the $C_V$ valve.*

**** $C_V$ varies because of spring compression limitations. The flow coefficient range is given for the maximum stem travel (lowest system pressure) to minimum travel (highest system pressure).*

***CAUTION:** While testing has shown O-rings to provide satisfactory service life, both cyclic and shelf life may vary widely with differing service conditions, properties of reactants, pressure and temperature cycling and age of the O-ring, FREQUENT INSPECTIONS SHOULD BE MADE to detect any deterioration, and O-rings replaced as required.*

*Maximum pressure rating is based on the lowest rating of any component.
Actual working pressure may be determined by tubing pressure rating, if lower.

*All dimensions for reference only and subject to change.*
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