



# DIRECTIONAL CONTROL VALVES

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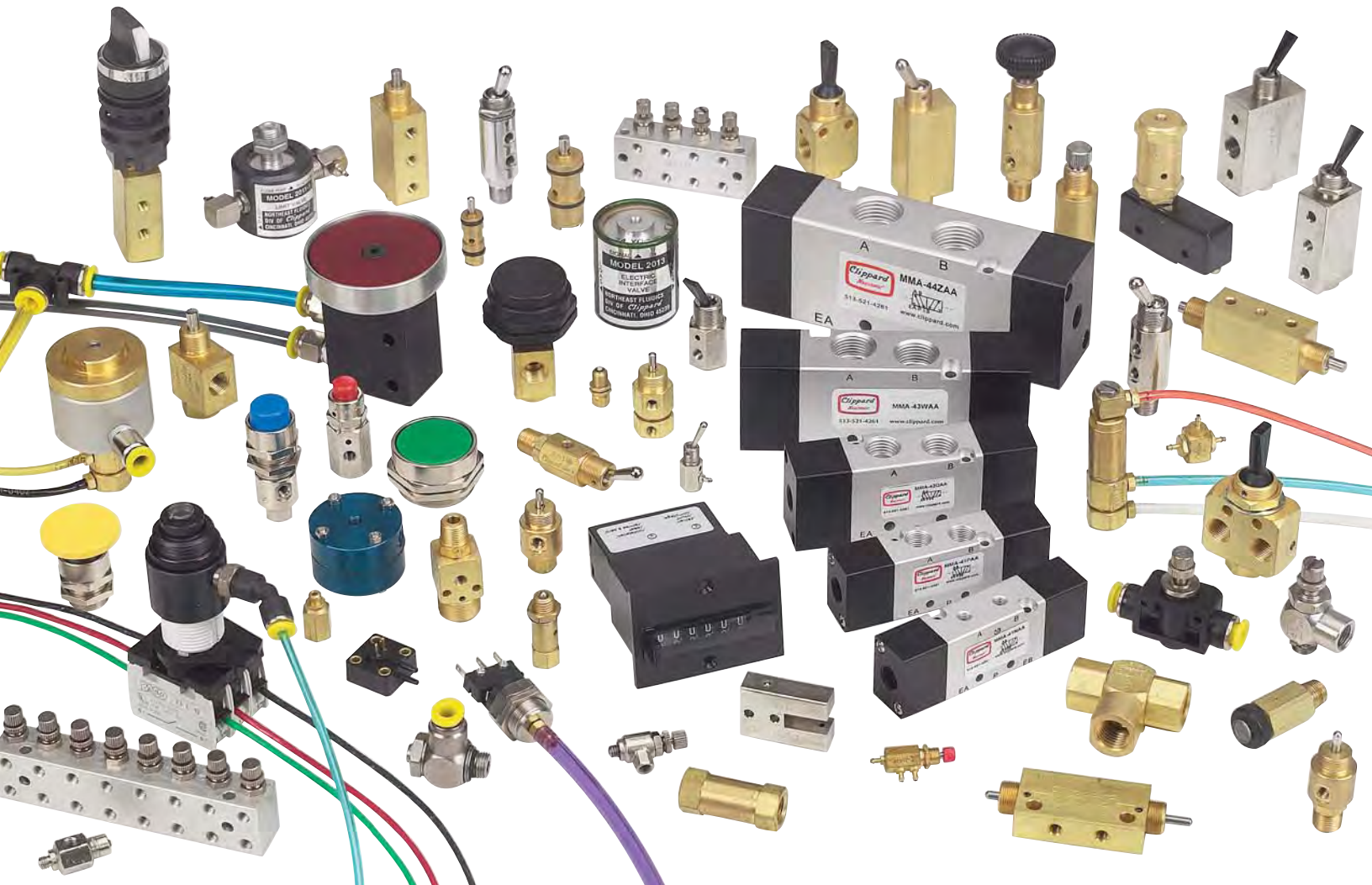
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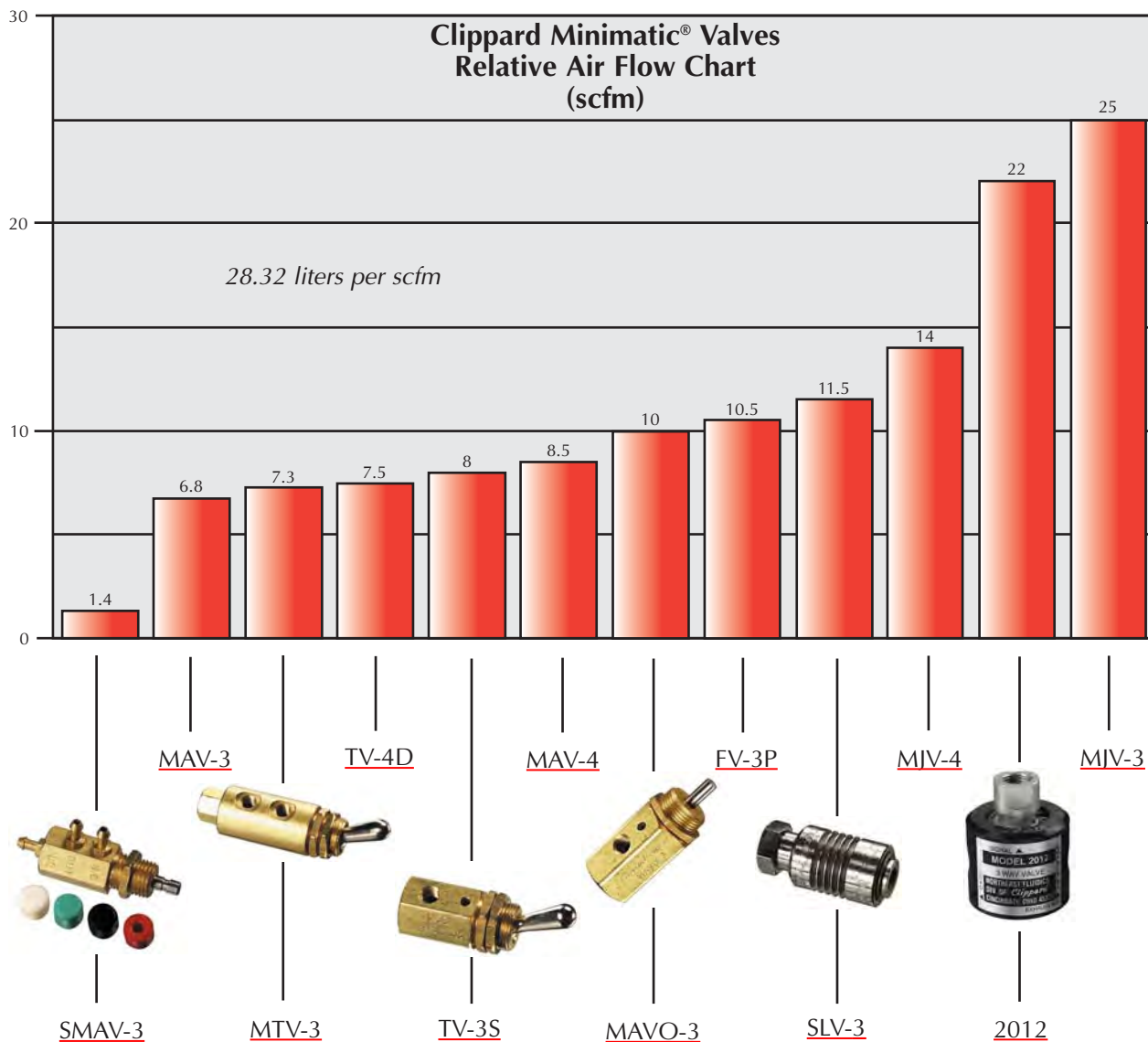




Every air system is unique . . . and Clippard has the air valve you need. Clippard control valves are available in poppet or spool design; 2-, 3-, or 4-way functions, in sizes from #3-56 and #10-32 (M5) through 1/8" NPT (G1/8) ports; and for pressures to 300 psig/21 bar. They are available with solenoid, air pilot, manual and mechanical actuators. Mounting styles include in-line, panel mount, manifold mount or clearance holes for mounting screws.

When designing a pneumatic system, choose the proper size for each component. A valve of insufficient capacity may cause an entire system to operate slower than expected. Conversely, utilizing a valve which possesses greater capacity than is actually required results in needless size and often leads to excessive speed, impact, wear, and air consumption.

The chart below shows the variety of valve flows available from Clippard. It can be used as a guide to determine the proper valve for an actual application.





# SELECTION CHARTS

## 2-Way Toggle, Stem & Air-Piloted Valves

|                            | Order No.                 | Style     | Flow (@ 100<br>psig/7 bar) | Ports    |          |         | Normally-Open | Normally-Closed | Momentary/Derated | Metal Toggle | Plastic Toggle      | Page No.            |
|----------------------------|---------------------------|-----------|----------------------------|----------|----------|---------|---------------|-----------------|-------------------|--------------|---------------------|---------------------|
|                            |                           |           |                            | Inlet    | Outlet   | Exhaust |               |                 |                   |              |                     |                     |
| <b>Toggle Valves</b>       | <a href="#">MTV-2</a>     | Poppet    | 7.3 scfm                   | #10-32   | #10-32   | -       | ▲             | D               | ▲                 |              |                     | <a href="#">106</a> |
|                            | <a href="#">MTV-2-M5</a>  | Poppet    | 175 l/min                  | M5       | M5       | -       | ▲             | D               | ▲                 |              |                     | <a href="#">106</a> |
|                            | <a href="#">MTV-2P</a>    | Poppet    | 7.3 scfm                   | 1/8" NPT | #10-32   | -       | ▲             | D               | ▲                 |              |                     | <a href="#">106</a> |
|                            | <a href="#">TV-2S</a>     | Spool     | 8 scfm                     | #10-32   | #10-32   | -       | ▲             | D               | ▲                 |              |                     | <a href="#">106</a> |
|                            | <a href="#">TV-2S-M5</a>  | Spool     | 190 l/min                  | M5       | M5       | -       | ▲             | D               | ▲                 |              |                     | <a href="#">106</a> |
|                            | <a href="#">TV-2SF</a>    | Spool     | 8 scfm                     | #10-32   | #10-32   | -       | ▲             | D               |                   | ▲            |                     | <a href="#">106</a> |
|                            | <a href="#">TV-2SF-M5</a> | Spool     | 190 l/min                  | M5       | M5       | -       | ▲             | D               |                   | ▲            |                     | <a href="#">106</a> |
|                            | <a href="#">TV-2SP</a>    | Spool     | 8 scfm                     | 1/8" NPT | #10-32   | -       | ▲             | D               | ▲                 |              |                     | <a href="#">106</a> |
|                            | <a href="#">TV-2SFP</a>   | Spool     | 8 scfm                     | 1/8" NPT | #10-32   | -       | ▲             | D               |                   | ▲            |                     | <a href="#">106</a> |
|                            | <a href="#">TV-2M</a>     | Poppet    | 8 scfm                     | #10-32   | #10-32   | -       | ▲             | M               | ▲                 |              |                     | <a href="#">106</a> |
|                            | <a href="#">TV-2M-M5</a>  | Poppet    | 190 l/min                  | M5       | M5       | -       | ▲             | M               | ▲                 |              |                     | <a href="#">106</a> |
|                            | <a href="#">TV-2MF</a>    | Poppet    | 8 scfm                     | #10-32   | #10-32   | -       | ▲             | M               |                   | ▲            |                     | <a href="#">106</a> |
|                            | <a href="#">TV-2MF-M5</a> | Poppet    | 190 l/min                  | M5       | M5       | -       | ▲             | M               |                   | ▲            |                     | <a href="#">106</a> |
|                            | <a href="#">TV-2MP</a>    | Poppet    | 6.8 scfm                   | 1/8" NPT | #10-32   | -       | ▲             | M               | ▲                 |              |                     | <a href="#">107</a> |
|                            | <a href="#">TV-2MFP</a>   | Poppet    | 6.8 scfm                   | 1/8" NPT | #10-32   | -       | ▲             | M               |                   | ▲            |                     | <a href="#">107</a> |
|                            | <a href="#">TVO-2M</a>    | Spool     | 8 scfm                     | #10-32   | #10-32   | -       | ▲             |                 | M                 | ▲            |                     | <a href="#">107</a> |
|                            | <a href="#">TVO-2M-M5</a> | Spool     | 190 l/min                  | M5       | M5       | -       | ▲             |                 | M                 | ▲            |                     | <a href="#">107</a> |
|                            | <a href="#">TVO-2MF</a>   | Spool     | 8 scfm                     | #10-32   | #10-32   | -       | ▲             |                 | M                 |              | ▲                   | <a href="#">107</a> |
| <a href="#">TVO-2MF-M5</a> | Spool                     | 190 l/min | M5                         | M5       | -        | ▲       |               | M               |                   | ▲            | <a href="#">107</a> |                     |
| <a href="#">TVO-2MP</a>    | Spool                     | 6.8 scfm  | 1/8" NPT                   | #10-32   | -        | ▲       |               | M               | ▲                 |              | <a href="#">107</a> |                     |
| <a href="#">TVO-2MFP</a>   | Spool                     | 6.8 scfm  | 1/8" NPT                   | #10-32   | -        | ▲       |               | M               |                   | ▲            | <a href="#">107</a> |                     |
| <b>Stem Valves</b>         | <a href="#">MAV-2</a>     | Poppet    | 6.8 scfm                   | #10-32   | #10-32   | -       |               | ▲               |                   |              |                     | <a href="#">104</a> |
|                            | <a href="#">MAV-2-M5</a>  | Poppet    | 170 l/min                  | M5       | M5       | -       |               | ▲               |                   |              |                     | <a href="#">104</a> |
|                            | <a href="#">MAV-2P</a>    | Poppet    | 6.8 scfm                   | 1/8" NPT | #10-32   | -       |               | ▲               |                   |              |                     | <a href="#">104</a> |
|                            | <a href="#">MAV-2C</a>    | Poppet    | 6 scfm                     | -        | -        | -       |               | ▲               |                   |              |                     | <a href="#">104</a> |
|                            | <a href="#">MIV-2C</a>    | Poppet    | 22 scfm                    | -        | -        | -       |               | ▲               |                   |              |                     | <a href="#">105</a> |
|                            | <a href="#">MAV-2R</a>    | Poppet    | 6.8 scfm                   | #10-32   | #10-32   | -       |               | ▲               |                   |              |                     | <a href="#">104</a> |
|                            | <a href="#">MAV-2R-M5</a> | Poppet    | 170 l/min                  | M5       | M5       | -       |               | ▲               |                   |              |                     | <a href="#">104</a> |
|                            | <a href="#">MAVO-2</a>    | Spool     | 10 scfm                    | #10-32   | #10-32   | -       | ▲             |                 |                   |              |                     | <a href="#">104</a> |
|                            | <a href="#">MAVO-2-M5</a> | Spool     | 245 l/min                  | M5       | M5       | -       | ▲             |                 |                   |              |                     | <a href="#">104</a> |
|                            | <a href="#">MAVO-2P</a>   | Spool     | 10 scfm                    | 1/8" NPT | #10-32   | -       | ▲             |                 |                   |              |                     | <a href="#">105</a> |
|                            | <a href="#">MAVO-2C</a>   | Spool     | 10 scfm                    | -        | -        | -       | ▲             |                 |                   |              |                     | <a href="#">104</a> |
|                            | <a href="#">MIV-2</a>     | Poppet    | 25 scfm                    | 1/8" NPT | 1/8" NPT | -       |               | ▲               |                   |              |                     | <a href="#">105</a> |
|                            | <a href="#">MIV-2-MG</a>  | Poppet    | 708 l/min                  | G1/8     | G1/8     | -       |               | ▲               |                   |              |                     | <a href="#">105</a> |
|                            | <a href="#">MIVO-2</a>    | Spool     | 12 scfm                    | 1/8" NPT | 1/8" NPT | -       | ▲             |                 |                   |              |                     | <a href="#">105</a> |
|                            | <a href="#">MJVO-2-MG</a> | Spool     | 600 l/min                  | G1/8     | G1/8     | -       | ▲             |                 |                   |              |                     | <a href="#">105</a> |
|                            | <a href="#">MIVO-2C</a>   | Spool     | 15 scfm                    | -        | -        | -       | ▲             |                 |                   |              |                     | <a href="#">105</a> |
| <b>Air-Piloted</b>         | <a href="#">PAV-2</a>     | Poppet    | 6.8 scfm                   | 1/8" NPT | #10-32   | -       |               | ▲               |                   |              |                     | <a href="#">108</a> |
|                            | <a href="#">PAV-2P</a>    | Poppet    | 6.8 scfm                   | 1/8" NPT | 1/8" NPT | -       |               | ▲               |                   |              |                     | <a href="#">108</a> |
|                            | <a href="#">PAVO-2</a>    | Spool     | 11.6 scfm                  | #10-32   | #10-32   | -       | ▲             |                 |                   |              |                     | <a href="#">108</a> |
|                            | <a href="#">PAVO-2P</a>   | Spool     | 11.6 scfm                  | #10-32   | 1/8" NPT | -       | ▲             |                 |                   |              |                     | <a href="#">108</a> |



### 3-Way Toggle Valves

| Order No.                  | Style  | Flow (@ 100 psig/7 bar) | Ports    |          |              | Normally-Open | Normally-Closed | Momentary/Detented | Metal Toggle | Plastic Toggle | Page No. |
|----------------------------|--------|-------------------------|----------|----------|--------------|---------------|-----------------|--------------------|--------------|----------------|----------|
|                            |        |                         | Inlet    | Outlet   | Exhaust      |               |                 |                    |              |                |          |
| <a href="#">MTV-3</a>      | Poppet | 7 scfm                  | #10-32   | #10-32   | #10-32       |               | ▲               | D                  | ▲            |                | 111      |
| <a href="#">MTV-3-M5</a>   | Poppet | 175 l/min               | M5       | M5       | M5           |               | ▲               | D                  | ▲            |                | 111      |
| <a href="#">MTV-3P</a>     | Poppet | 7 scfm                  | 1/8" NPT | #10-32   | #10-32       |               | ▲               | D                  | ▲            |                | 111      |
| <a href="#">MITV-3</a>     | Poppet | 25 scfm                 | 1/8" NPT | 1/8" NPT | 1/8" NPT     |               | ▲               | D                  | ▲            |                | 112      |
| <a href="#">MITV-3-MG</a>  | Poppet | 600 l/min               | G1/8     | G1/8     | G1/8         |               | ▲               | D                  | ▲            |                | 112      |
| <a href="#">FTV-3</a>      | Spool  | 10 scfm                 | #10-32   | #10-32   | #10-32       |               | ▲               | D                  | ▲            |                | 113      |
| <a href="#">FTV-3-M5</a>   | Spool  | 240 l/min               | M5       | M5       | M5           |               | ▲               | D                  | ▲            |                | 113      |
| <a href="#">FTV-3F</a>     | Spool  | 10 scfm                 | #10-32   | #10-32   | #10-32       |               | ▲               | D                  |              | ▲              | 113      |
| <a href="#">FTV-3F-M5</a>  | Spool  | 130 l/min               | M5       | M5       | M5           |               | ▲               | D                  |              | ▲              | 113      |
| <a href="#">FTV-3P</a>     | Spool  | 10.5 scfm               | 1/8" NPT | 1/8" NPT | 1/8" NPT     |               | ▲               | D                  | ▲            |                | 113      |
| <a href="#">FTV-3-MG</a>   | Spool  | 250 l/min               | G1/8     | G1/8     | G1/8         |               | ▲               | D                  | ▲            |                | 113      |
| <a href="#">FTV-3FP</a>    | Spool  | 10.5 scfm               | 1/8" NPT | 1/8" NPT | 1/8" NPT     |               | ▲               | D                  |              | ▲              | 113      |
| <a href="#">FTV-3F-MG</a>  | Spool  | 250 l/min               | G1/8     | G1/8     | G1/8         |               | ▲               | D                  |              | ▲              | 113      |
| <a href="#">TV-3S</a>      | Spool  | 8 scfm                  | #10-32   | #10-32   | hole in body |               | ▲               | D                  | ▲            |                | 111      |
| <a href="#">TV-3S-M5</a>   | Spool  | 190 l/min               | M5       | M5       | hole in body |               | ▲               | D                  | ▲            |                | 111      |
| <a href="#">TV-3SF</a>     | Spool  | 8 scfm                  | #10-32   | #10-32   | hole in body |               | ▲               | D                  |              | ▲              | 111      |
| <a href="#">TV-3SF-M5</a>  | Spool  | 190 l/min               | M5       | M5       | hole in body |               | ▲               | D                  |              | ▲              | 111      |
| <a href="#">TV-3SP</a>     | Spool  | 8 scfm                  | 1/8" NPT | #10-32   | hole in body |               | ▲               | D                  | ▲            |                | 111      |
| <a href="#">TV-3SFP</a>    | Spool  | 8 scfm                  | 1/8" NPT | #10-32   | hole in body |               | ▲               | D                  |              | ▲              | 111      |
| <a href="#">TV-3M</a>      | Poppet | 6.8 scfm                | #10-32   | #10-32   | hole in body |               | ▲               | M                  | ▲            |                | 111      |
| <a href="#">TV-3M-M5</a>   | Poppet | 170 l/min               | M5       | M5       | hole in body |               | ▲               | M                  | ▲            |                | 111      |
| <a href="#">TV-3MF</a>     | Poppet | 6.8 scfm                | #10-32   | #10-32   | hole in body |               | ▲               | M                  |              | ▲              | 111      |
| <a href="#">TV-3MF-M5</a>  | Poppet | 170 l/min               | M5       | M5       | hole in body |               | ▲               | M                  |              | ▲              | 111      |
| <a href="#">TV-3MP</a>     | Poppet | 6.8 scfm                | 1/8" NPT | #10-32   | hole in body |               | ▲               | M                  | ▲            |                | 112      |
| <a href="#">TV-3MFP</a>    | Poppet | 6.8 scfm                | 1/8" NPT | #10-32   | hole in body |               | ▲               | M                  |              | ▲              | 112      |
| <a href="#">TVO-3M</a>     | Spool  | 6.8 scfm                | #10-32   | #10-32   | hole in body | ▲             |                 | M                  | ▲            |                | 112      |
| <a href="#">TVO-3M-M5</a>  | Spool  | 170 l/min               | M5       | M5       | hole in body | ▲             |                 | M                  | ▲            |                | 112      |
| <a href="#">TVO-3MF</a>    | Spool  | 6.8 scfm                | #10-32   | #10-32   | hole in body | ▲             |                 | M                  |              | ▲              | 112      |
| <a href="#">TVO-3MF-M5</a> | Spool  | 170 l/min               | M5       | M5       | hole in body | ▲             |                 | M                  |              | ▲              | 112      |
| <a href="#">TVO-3MP</a>    | Spool  | 6.8 scfm                | 1/8" NPT | #10-32   | hole in body | ▲             |                 | M                  | ▲            |                | 112      |
| <a href="#">TVO-3MFP</a>   | Spool  | 6.8 scfm                | 1/8" NPT | #10-32   | hole in body | ▲             |                 | M                  |              | ▲              | 112      |
| <a href="#">SMTV-3</a>     | Spool  | 1.4 scfm                | #3-56*   | #3-56*   | hole in body | ▲             | ▲               | D                  | ▲            |                | 113      |

Toggle Valves

\* With hose barbs uninstalled



# SELECTION CHARTS

## 3-Way Stem Valves

| Order No.                 | Style  | Flow (@ 100 psig/7 bar) | Ports     |           |               | Normally-Open | Normally-Closed | Momentary/Detented | Metal Toggle | Plastic Toggle | Page No.            |
|---------------------------|--------|-------------------------|-----------|-----------|---------------|---------------|-----------------|--------------------|--------------|----------------|---------------------|
|                           |        |                         | Inlet     | Outlet    | Exhaust       |               |                 |                    |              |                |                     |
| <a href="#">FV-3</a>      | Spool  | 10 scfm                 | #10-32    | #10-32    | #10-32        | ▲             | ▲               |                    |              |                | <a href="#">110</a> |
| <a href="#">FV-3-M5</a>   | Spool  | 240 l/min               | M5        | M5        | M5            | ▲             | ▲               |                    |              |                | <a href="#">110</a> |
| <a href="#">FV-3-MG</a>   | Spool  | 240 l/min               | G1/8      | G1/8      | G1/8          | ▲             | ▲               |                    |              |                | <a href="#">110</a> |
| <a href="#">FV-3D</a>     | Spool  | 10 scfm                 | #10-32    | #10-32    | #10-32        | ▲             | ▲               |                    |              |                | <a href="#">110</a> |
| <a href="#">FV-3D-M5</a>  | Spool  | 240 l/min               | M5        | M5        | M5            | ▲             | ▲               |                    |              |                | <a href="#">110</a> |
| <a href="#">FV-3DP</a>    | Spool  | 10.5 scfm               | 1/8" NPT  | 1/8" NPT  | 1/8" NPT      | ▲             | ▲               |                    |              |                | <a href="#">110</a> |
| <a href="#">FV-3DP-MG</a> | Spool  | 240 l/min               | G1/8      | G1/8      | G1/8          | ▲             | ▲               |                    |              |                | <a href="#">110</a> |
| <a href="#">FV-3P</a>     | Spool  | 10.5 scfm               | 1/8" NPT  | 1/8" NPT  | 1/8" NPT      | ▲             | ▲               |                    |              |                | <a href="#">110</a> |
| <a href="#">MAV-3</a>     | Poppet | 6.8 scfm                | #10-32    | #10-32    | through stem  |               | ▲               |                    |              |                | <a href="#">109</a> |
| <a href="#">MAV-3-M5</a>  | Poppet | 170 l/min               | M5        | M5        | through stem  |               | ▲               |                    |              |                | <a href="#">109</a> |
| <a href="#">MAV-3P</a>    | Poppet | 6.8 scfm                | 1/8" NPT  | #10-32    | through stem  |               | ▲               |                    |              |                | <a href="#">109</a> |
| <a href="#">MAV-3C</a>    | Poppet | 6 scfm                  | Cartridge | Cartridge | through stem  |               | ▲               |                    |              |                | <a href="#">109</a> |
| <a href="#">MAV-3R</a>    | Poppet | 6.8 scfm                | #10-32    | #10-32    | through stem  |               | ▲               |                    |              |                | <a href="#">109</a> |
| <a href="#">MAV-3R-M5</a> | Poppet | 193 l/min               | M5        | M5        | through stem  |               | ▲               |                    |              |                | <a href="#">109</a> |
| <a href="#">MAVO-3</a>    | Spool  | 10 scfm                 | #10-32    | #10-32    | holes in body | ▲             |                 |                    |              |                | <a href="#">109</a> |
| <a href="#">MAVO-3-M5</a> | Spool  | 245 l/min               | M5        | M5        | holes in body | ▲             |                 |                    |              |                | <a href="#">109</a> |
| <a href="#">MAVO-3P</a>   | Spool  | 10 scfm                 | #10-32    | #10-32    | holes in body | ▲             |                 |                    |              |                | <a href="#">109</a> |
| <a href="#">MAVO-3C</a>   | Spool  | 10 scfm                 | Cartridge | Cartridge | holes in body | ▲             |                 |                    |              |                | <a href="#">109</a> |
| <a href="#">MJV-3</a>     | Poppet | 25 scfm                 | 1/8" NPT  | 1/8" NPT  | through stem  |               | ▲               |                    |              |                | <a href="#">110</a> |
| <a href="#">MJV-3-MG</a>  | Poppet | 708 l/min               | G1/8      | G1/8      | through stem  |               | ▲               |                    |              |                | <a href="#">110</a> |
| <a href="#">MJV-3C</a>    | Poppet | 22 scfm                 | Cartridge | Cartridge | through stem  |               | ▲               |                    |              |                | <a href="#">110</a> |
| <a href="#">MJVO-3</a>    | Spool  | 12 scfm                 | 1/8" NPT  | 1/8" NPT  | holes in body | ▲             |                 |                    |              |                | <a href="#">109</a> |
| <a href="#">MJVO-3-MG</a> | Spool  | 600 l/min               | G1/8      | G1/8      | holes in body | ▲             |                 |                    |              |                | <a href="#">109</a> |
| <a href="#">MJVO-3C</a>   | Spool  | 15 scfm                 | Cartridge | Cartridge | holes in body | ▲             |                 |                    |              |                | <a href="#">110</a> |
| <a href="#">SMAV-3</a>    | Spool  | 1.4 scfm                | #3-56     | #3-56     | #3-56         | ▲             | ▲               |                    |              |                | <a href="#">113</a> |
| <a href="#">PAV-3</a>     | Poppet | 6.8 scfm                | #10-32    | #10-32    | holes in body |               | ▲               |                    |              |                | <a href="#">114</a> |
| <a href="#">PAV-3P</a>    | Poppet | 6.8 scfm                | #10-32    | 1/8" NPT  | holes in body |               | ▲               |                    |              |                | <a href="#">114</a> |
| <a href="#">PAVO-3</a>    | Spool  | 11.6 scfm               | #10-32    | #10-32    | holes in body | ▲             |                 |                    |              |                | <a href="#">114</a> |
| <a href="#">PAVO-3P</a>   | Spool  | 11.6 scfm               | #10-32    | 1/8" NPT  | holes in body | ▲             |                 |                    |              |                | <a href="#">114</a> |

Stem Valves





## 4-Way Toggle & Stem Valves

|                            | Order No.                  | Style     | Flow (@ 100 psig/7 bar) | Ports    |               |               | Normally-Open | Normally-Closed | Momentary/Detented | Metal Toggle | Plastic Toggle      | Page No.            |
|----------------------------|----------------------------|-----------|-------------------------|----------|---------------|---------------|---------------|-----------------|--------------------|--------------|---------------------|---------------------|
|                            |                            |           |                         | Inlet    | Outlet        | Exhaust       |               |                 |                    |              |                     |                     |
| <b>Toggle Valves</b>       | <a href="#">TV-4D(M)</a>   | Spool     | 7.5 scfm                | #10-32   | #10-32        | holes in body | ▲             | D               | ▲                  | ▲            | <a href="#">121</a> |                     |
|                            | <a href="#">TV-4D-M5</a>   | Spool     | 180 l/min               | M5       | M5            | holes in body | ▲             | D               | ▲                  | ▲            | <a href="#">121</a> |                     |
|                            | <a href="#">TV-4M(M)</a>   | Spool     | 7.5 scfm                | #10-32   | #10-32        | holes in body | ▲             | D               | ▲                  | ▲            | <a href="#">121</a> |                     |
|                            | <a href="#">TV-4DM(M)</a>  | Spool     | 7.5 scfm                | #10-32   | #10-32        | holes in body | ▲             | D               | ▲                  | ▲            | <a href="#">121</a> |                     |
|                            | <a href="#">TV-4DP(M)</a>  | Spool     | 7.5 scfm                | 1/8" NPT | 1/8" NPT      | holes in body | ▲             | D               | ▲                  | ▲            | <a href="#">121</a> |                     |
|                            | <a href="#">TV-4MP(M)</a>  | Spool     | 7.5 scfm                | 1/8" NPT | 1/8" NPT      | holes in body | ▲             | D               | ▲                  | ▲            | <a href="#">121</a> |                     |
|                            | <a href="#">TV-4DMP(M)</a> | Spool     | 7.5 scfm                | 1/8" NPT | 1/8" NPT      | holes in body | ▲             | D               | ▲                  | ▲            | <a href="#">121</a> |                     |
|                            | <a href="#">MTV-4</a>      | Spool     | 10 scfm                 | #10-32   | #10-32        | holes in body | ▲             | ▲               | D                  | ▲            |                     | <a href="#">120</a> |
|                            | <a href="#">MTV-4-M5</a>   | Spool     | 240 l/min               | M5       | M5            | holes in body | ▲             | ▲               | D                  | ▲            |                     | <a href="#">120</a> |
|                            | <a href="#">MTV-4F</a>     | Spool     | 10 scfm                 | #10-32   | #10-32        | holes in body | ▲             | ▲               | D                  |              | ▲                   | <a href="#">120</a> |
|                            | <a href="#">MTV-4F-M5</a>  | Spool     | 240 l/min               | M5       | M5            | holes in body | ▲             | ▲               | D                  |              | ▲                   | <a href="#">120</a> |
|                            | <a href="#">MJTV-4</a>     | Spool     | 10.5 scfm               | 1/8" NPT | 1/8" NPT      | holes in body | ▲             | ▲               | D                  | ▲            |                     | <a href="#">120</a> |
|                            | <a href="#">MJTV-4-MG</a>  | Spool     | 250 l/min               | G1/8     | G1/8          | holes in body | ▲             | ▲               | D                  | ▲            |                     | <a href="#">120</a> |
|                            | <a href="#">MJTV-4F</a>    | Spool     | 10.5 scfm               | 1/8" NPT | 1/8" NPT      | holes in body | ▲             | ▲               | D                  |              | ▲                   | <a href="#">120</a> |
|                            | <a href="#">MJTV-4F-MG</a> | Spool     | 250 l/min               | G1/8     | G1/8          | holes in body | ▲             | ▲               | D                  |              | ▲                   | <a href="#">120</a> |
|                            | <a href="#">MTV-5</a>      | Spool     | 10 scfm                 | #10-32   | #10-32        | #10-32        | ▲             | ▲               | D                  | ▲            |                     | <a href="#">120</a> |
|                            | <a href="#">MTV-5-M5</a>   | Spool     | 240 l/min               | M5       | M5            | M5            | ▲             | ▲               | D                  | ▲            |                     | <a href="#">120</a> |
|                            | <a href="#">MTV-5F</a>     | Spool     | 10 scfm                 | #10-32   | #10-32        | #10-32        | ▲             | ▲               | D                  |              | ▲                   | <a href="#">120</a> |
|                            | <a href="#">MTV-5F-M5</a>  | Spool     | 240 l/min               | M5       | M5            | M5            | ▲             | ▲               | D                  |              | ▲                   | <a href="#">120</a> |
|                            | <a href="#">MJTV-5</a>     | Spool     | 10.5 scfm               | 1/8" NPT | 1/8" NPT      | 1/8" NPT      | ▲             | ▲               | D                  | ▲            |                     | <a href="#">120</a> |
| <a href="#">MJTV-5-MG</a>  | Spool                      | 250 l/min | G1/8                    | G1/8     | G1/8          | ▲             | ▲             | D               | ▲                  |              | <a href="#">120</a> |                     |
| <a href="#">MJTV-5F</a>    | Spool                      | 10.5 scfm | 1/8" NPT                | 1/8" NPT | 1/8" NPT      | ▲             | ▲             | D               |                    | ▲            | <a href="#">120</a> |                     |
| <a href="#">MJTV-5F-MG</a> | Spool                      | 250 l/min | G1/8                    | G1/8     | G1/8          | ▲             | ▲             | D               |                    | ▲            | <a href="#">120</a> |                     |
| <a href="#">MAV-4</a>      | Spool                      | 8.5 scfm  | #10-32                  | #10-32   | holes in body | ▲             | ▲             |                 |                    |              | <a href="#">118</a> |                     |
| <a href="#">MAV-4-M5</a>   | Spool                      | 240 l/min | M5                      | M5       | holes in body | ▲             | ▲             |                 |                    |              | <a href="#">118</a> |                     |
| <b>Stem Valves</b>         | <a href="#">MAV-4D</a>     | Spool     | 8.5 scfm                | #10-32   | #10-32        | holes in body | ▲             | ▲               |                    |              |                     | <a href="#">118</a> |
|                            | <a href="#">MAV-4D-M5</a>  | Spool     | 240 l/min               | M5       | M5            | holes in body | ▲             | ▲               |                    |              |                     | <a href="#">118</a> |
|                            | <a href="#">MJV-4</a>      | Spool     | 14 scfm                 | 1/8" NPT | 1/8" NPT      | holes in body | ▲             | ▲               |                    |              |                     | <a href="#">118</a> |
|                            | <a href="#">MJV-4-MG</a>   | Spool     | 396 l/min               | G1/8     | G1/8          | holes in body | ▲             | ▲               |                    |              |                     | <a href="#">118</a> |
|                            | <a href="#">MJV-4D</a>     | Spool     | 14 scfm                 | 1/8" NPT | 1/8" NPT      | holes in body | ▲             | ▲               |                    |              |                     | <a href="#">118</a> |
|                            | <a href="#">MJV-4D-MG</a>  | Spool     | 396 l/min               | G1/8     | G1/8          | holes in body | ▲             | ▲               |                    |              |                     | <a href="#">118</a> |
|                            | <a href="#">FV-4</a>       | Spool     | 10 scfm                 | #10-32   | #10-32        | holes in body | ▲             | ▲               |                    |              |                     | <a href="#">118</a> |
|                            | <a href="#">FV-4-M5</a>    | Spool     | 240 l/min               | M5       | M5            | holes in body | ▲             | ▲               |                    |              |                     | <a href="#">118</a> |
|                            | <a href="#">FV-4-MG</a>    | Spool     | 250 l/min               | G1/8     | G1/8          | holes in body | ▲             | ▲               |                    |              |                     | <a href="#">118</a> |
|                            | <a href="#">FV-4P</a>      | Spool     | 10.5 scfm               | 1/8" NPT | 1/8" NPT      | holes in body | ▲             | ▲               |                    |              |                     | <a href="#">118</a> |
|                            | <a href="#">FV-4D</a>      | Spool     | 10 scfm                 | #10-32   | #10-32        | holes in body | ▲             | ▲               |                    |              |                     | <a href="#">118</a> |
|                            | <a href="#">FV-4D-M5</a>   | Spool     | 240 l/min               | M5       | M5            | holes in body | ▲             | ▲               |                    |              |                     | <a href="#">118</a> |



## 4-Way Stem Valves Cont'd.

|                    | Order No.                | Style | Flow (@ 100 psig/7 bar) | Ports    |          |               | Normally-Open | Normally-Closed | Momentary/Detented | Metal Toggle | Plastic Toggle | Page No.            |
|--------------------|--------------------------|-------|-------------------------|----------|----------|---------------|---------------|-----------------|--------------------|--------------|----------------|---------------------|
|                    |                          |       |                         | Inlet    | Outlet   | Exhaust       |               |                 |                    |              |                |                     |
| <b>Stem Valves</b> | <a href="#">FV-4DP</a>   | Spool | 10.5 scfm               | 1/8" NPT | 1/8" NPT | holes in body | ▲             | ▲               |                    |              |                | <a href="#">118</a> |
|                    | <a href="#">FV-4D-MG</a> | Spool | 250 l/min               | G1/8     | G1/8     | holes in body | ▲             | ▲               |                    |              |                | <a href="#">118</a> |
|                    | <a href="#">FV-5</a>     | Spool | 10 scfm                 | #10-32   | #10-32   | #10-32        | ▲             | ▲               |                    |              |                | <a href="#">119</a> |
|                    | <a href="#">FV-5-M5</a>  | Spool | 240 l/min               | M5       | M5       | #10-32        | ▲             | ▲               |                    |              |                | <a href="#">119</a> |
|                    | <a href="#">FV-5P</a>    | Spool | 10.5 scfm               | 1/8" NPT | 1/8" NPT | 1/8" NPT      | ▲             | ▲               |                    |              |                | <a href="#">119</a> |
|                    | <a href="#">FV-5-MG</a>  | Spool | 250 l/min               | G1/8     | G1/8     | G1/8          | ▲             | ▲               |                    |              |                | <a href="#">119</a> |
|                    | <a href="#">FV-5D</a>    | Spool | 10 scfm                 | #10-32   | #10-32   | #10-32        | ▲             | ▲               |                    |              |                | <a href="#">119</a> |
|                    | <a href="#">FV-5D-M5</a> | Spool | 240 l/min               | M5       | M5       | M5            | ▲             | ▲               |                    |              |                | <a href="#">119</a> |
|                    | <a href="#">FV-5DP</a>   | Spool | 10.5 scfm               | 1/8" NPT | 1/8" NPT | 1/8" NPT      | ▲             | ▲               |                    |              |                | <a href="#">119</a> |
|                    | <a href="#">FV-5D-MG</a> | Spool | 250 l/min               | G1/8     | G1/8     | G1/8          | ▲             | ▲               |                    |              |                | <a href="#">119</a> |

### Options

#### -ENP Electroless Nickel Plating

This option provides a low luster finish on brass parts for decorative purposes that also protects the surface from corrosion and tarnishing. It has a nominal thickness of 0.0002", and does not affect the fit or function of the part.

#### -V Viton

This option replaces the standard Buna-N seals with Viton seals either for high temperature (up to + 400°F) applications or those that require Viton for chemical compatibility. Consult factory for availability.

## CUSTOMer solutions

If you need a product that fits your application perfectly, Clippard has the capability to design or modify one of its products to suit your exact needs. We understand that a standard catalog product may be close but not be exactly what you need. **Let us know YOUR Need, and we will help to find YOUR Solution!**

### Temperature Range

All Control Valves in this section have a temperature range of 32 to 230°F (0 to 110°C)

Clippard miniature valves and associated products have evolved into a widely used system of fluid power control devices, known for quality, value and performance.

Over the past five decades, a diverse range of industries in the U.S. and throughout the world have come to rely on Minimatics



to control machines, systems, and processes through an unlimited list of applications. Clippard quality in design, engineering, manufacturing, as well as an expansive product offering, make Minimatics the preferred choice for miniature and subminiature pneumatic applications.

Recognized as the original and most complete line of miniature fluid power components, Clippard's Minimatic line is available across the globe through a network of fully-trained, stocking distributors. Clippard and our distributors stand ready to provide expert application assistance, support, and technical answers, to help you achieve the highest level of performance in your system.

## Maximatic® 3- & 4-Way Valves

### 3-Way Valves

| Series No.                | Inlet    | Ports<br>Outlet | Exhaust  | Function | Cv   | Flow @<br>100 psig | Page                |
|---------------------------|----------|-----------------|----------|----------|------|--------------------|---------------------|
| <a href="#">MMA-31NAS</a> | #10-32   | #10-32          | #10-32   | 3/2      | 0.58 | 27 scfm            | <a href="#">115</a> |
| <a href="#">MMA-31PAS</a> | 1/8" NPT | 1/8" NPT        | 1/8" NPT | 3/2      | 0.67 | 31 scfm            | <a href="#">115</a> |
| <a href="#">MMA-32QAS</a> | 1/4" NPT | 1/4" NPT        | 1/8" NPT | 3/2      | 0.89 | 49 scfm            | <a href="#">115</a> |
| <a href="#">MMA-33WAS</a> | 3/8" NPT | 3/8" NPT        | 1/4" NPT | 3/2      | 1.68 | 93 scfm            | <a href="#">115</a> |
| <a href="#">MMA-34ZAS</a> | 1/2" NPT | 1/2" NPT        | 1/2" NPT | 3/2      | 2.79 | 171 scfm           | <a href="#">115</a> |
| <a href="#">MMA-31NAA</a> | #10-32   | #10-32          | #10-32   | 3/2      | 0.58 | 27 scfm            | <a href="#">115</a> |
| <a href="#">MMA-31PAA</a> | 1/8" NPT | 1/8" NPT        | 1/8" NPT | 3/2      | 0.67 | 31 scfm            | <a href="#">115</a> |
| <a href="#">MMA-32QAA</a> | 1/4" NPT | 1/4" NPT        | 1/8" NPT | 3/2      | 0.89 | 49 scfm            | <a href="#">115</a> |
| <a href="#">MMA-33WAA</a> | 3/8" NPT | 3/8" NPT        | 1/4" NPT | 3/2      | 1.68 | 93 scfm            | <a href="#">115</a> |
| <a href="#">MMA-34ZAA</a> | 1/2" NPT | 1/2" NPT        | 1/2" NPT | 3/2      | 2.79 | 171 scfm           | <a href="#">115</a> |

### 4-Way Valves

| Series No.                 | Inlet    | Ports<br>Outlet | Exhaust  | Function | Cv   | Flow @<br>100 psig | Spool Configuration |                   |                    |
|----------------------------|----------|-----------------|----------|----------|------|--------------------|---------------------|-------------------|--------------------|
|                            |          |                 |          |          |      |                    | Closed<br>Center    | Exhaust<br>Center | Pressure<br>Center |
| <a href="#">MMA-41NAS</a>  | #10-32   | #10-32          | #10-32   | 5/2      | 0.58 | 27 scfm            |                     |                   |                    |
| <a href="#">MMA-41PAS</a>  | 1/8" NPT | 1/8" NPT        | 1/8" NPT | 5/2      | 0.67 | 31 scfm            |                     |                   |                    |
| <a href="#">MMA-42QAS</a>  | 1/4" NPT | 1/4" NPT        | 1/8" NPT | 5/2      | 0.89 | 49 scfm            |                     |                   |                    |
| <a href="#">MMA-43WAS</a>  | 3/8" NPT | 3/8" NPT        | 1/4" NPT | 5/2      | 1.68 | 93 scfm            |                     |                   |                    |
| <a href="#">MMA-44ZAS</a>  | 1/2" NPT | 1/2" NPT        | 1/2" NPT | 5/2      | 2.79 | 171 scfm           |                     |                   |                    |
| <a href="#">MMA-41NAA</a>  | #10-32   | #10-32          | #10-32   | 5/2      | 0.58 | 27 scfm            |                     |                   |                    |
| <a href="#">MMA-41PAA</a>  | 1/8" NPT | 1/8" NPT        | 1/8" NPT | 5/2      | 0.67 | 31 scfm            |                     |                   |                    |
| <a href="#">MMA-42QAA</a>  | 1/4" NPT | 1/4" NPT        | 1/8" NPT | 5/2      | 0.89 | 49 scfm            |                     |                   |                    |
| <a href="#">MMA-43WAA</a>  | 3/8" NPT | 3/8" NPT        | 1/4" NPT | 5/2      | 1.68 | 93 scfm            |                     |                   |                    |
| <a href="#">MMA-44ZAA</a>  | 1/2" NPT | 1/2" NPT        | 1/2" NPT | 5/2      | 2.79 | 171 scfm           |                     |                   |                    |
| <a href="#">MMA-41NAAC</a> | #10-32   | #10-32          | #10-32   | 5/3      | 0.50 | 23 scfm            |                     | •                 |                    |
| <a href="#">MMA-41PAAC</a> | 1/8" NPT | 1/8" NPT        | 1/8" NPT | 5/3      | 0.50 | 23 scfm            |                     | •                 |                    |
| <a href="#">MMA-42QAAC</a> | 1/4" NPT | 1/4" NPT        | 1/8" NPT | 5/3      | 0.89 | 49 scfm            |                     | •                 |                    |
| <a href="#">MMA-43WAAC</a> | 3/8" NPT | 3/8" NPT        | 1/4" NPT | 5/3      | 1.00 | 72 scfm            |                     | •                 |                    |
| <a href="#">MMA-44ZAAC</a> | 1/2" NPT | 1/2" NPT        | 1/2" NPT | 5/3      | 1.68 | 93 scfm            |                     | •                 |                    |
| <a href="#">MMA-41NAAP</a> | #10-32   | #10-32          | #10-32   | 5/3      | 0.50 | 23 scfm            |                     |                   | •                  |
| <a href="#">MMA-41PAAP</a> | 1/8" NPT | 1/8" NPT        | 1/8" NPT | 5/3      | 0.50 | 23 scfm            |                     |                   | •                  |
| <a href="#">MMA-42QAAP</a> | 1/4" NPT | 1/4" NPT        | 1/8" NPT | 5/3      | 0.89 | 49 scfm            |                     |                   | •                  |
| <a href="#">MMA-43WAAP</a> | 3/8" NPT | 3/8" NPT        | 1/4" NPT | 5/3      | 1.00 | 72 scfm            |                     |                   | •                  |
| <a href="#">MMA-44ZAAP</a> | 1/2" NPT | 1/2" NPT        | 1/2" NPT | 5/3      | 1.68 | 93 scfm            |                     |                   | •                  |
| <a href="#">MMA-41NAAE</a> | #10-32   | #10-32          | #10-32   | 5/3      | 0.50 | 23 scfm            |                     | •                 |                    |
| <a href="#">MMA-41PAAE</a> | 1/8" NPT | 1/8" NPT        | 1/8" NPT | 5/3      | 0.50 | 23 scfm            |                     | •                 |                    |
| <a href="#">MMA-42QAAE</a> | 1/4" NPT | 1/4" NPT        | 1/8" NPT | 5/3      | 0.89 | 49 scfm            |                     | •                 |                    |
| <a href="#">MMA-43WAAE</a> | 3/8" NPT | 3/8" NPT        | 1/4" NPT | 5/3      | 1.00 | 72 scfm            |                     | •                 |                    |
| <a href="#">MMA-44ZAAE</a> | 1/2" NPT | 1/2" NPT        | 1/2" NPT | 5/3      | 1.68 | 93 scfm            |                     | •                 |                    |





# 2-WAY STEM VALVES



## 2-Way Stem Valves

2-way valves are the simplest pneumatic component – their function is merely to turn an air supply on or off. They may be

compared to a light switch; in the “ON” position elec-

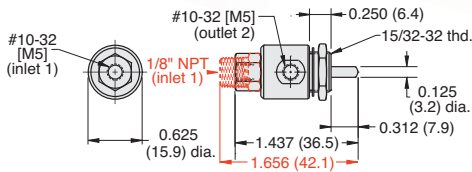
tricity flows from supply to the light, and in the “off” position the electrical current flow is stopped. 2-way stem valves may have a poppet or spool, and, by depressing the stem, a Normally-Closed (NC) valve is opened and a Normally-Open (NO) valve is closed. A variety of actuators may be attached to the valve such as roller cam followers, manual push buttons or pilot actuators; see the Valve Actuators section of this catalog.

**Medium:** Air, Water or Oil

**Materials:** Brass body, Buna-N seals, stainless steel stem and spring

**Stem Travel:** 1/8" (3.2)

## Normally-Closed Poppet 2-Way Valves



**Input Pressure:** 300 psig/21 bar max.

**Air Flow:** 4.0 scfm @ 50 psig; 6.8 scfm @ 100 psig; 170 l/min @ 6 bar

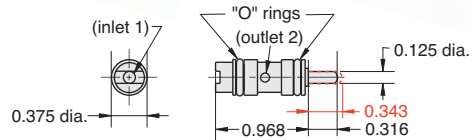
**Force For Full Stem Travel:** 24 oz. nominal

**Mounting:** 15/32-32 thread. Nut and lockwasher furnished.



| Part No.                 | Description                           |
|--------------------------|---------------------------------------|
| <a href="#">MAV-2</a>    | 2-Way Normally-Closed Valve, #10-32   |
| <a href="#">MAV-2-M5</a> | 2-Way Normally-Closed Valve, M5       |
| <a href="#">MAV-2P</a>   | 2-Way Normally-Closed Valve, 1/8" NPT |

## Miniature Cartridge Valves



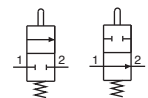
**Input Pressure:** 300 psig

**Air Flow:** 3.0 scfm @ 50 psig; 6.0 scfm @ 100 psig

**Force For Full Stem Travel:** 24 oz. nominal

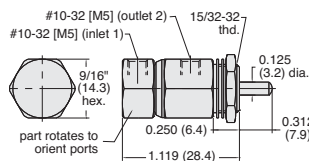
**Mounting:** Inserts into a 3/8" bore (0.375" ±0.001")

**Note:** See page 105 for mounting details



| Part No.                | Description                           |
|-------------------------|---------------------------------------|
| <a href="#">MAV-2C</a>  | 2-Way Normally-Closed Cartridge Valve |
| <a href="#">MAVO-2C</a> | 2-Way Normally-Open Cartridge Valve   |

## N.C. Poppet Valves with Rotatable Inlet



**Input Pressure:** 300 psig/21 bar max.

**Air Flow:** 4.0 scfm @ 50 psig; 6.8 scfm @ 100 psig; 170 l/min @ 6 bar

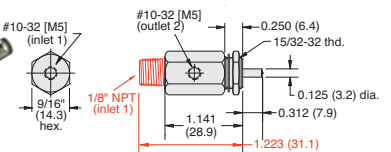
**Force For Full Stem Travel:** 24 oz. nominal

**Mounting:** 15/32-32 thread. Nut and lockwasher furnished.



| Part No.                  | Description                                     |
|---------------------------|---|
| <a href="#">MAV-2R</a>    | 2-Way Poppet Valve with Rotatable Inlet, #10-32 |
| <a href="#">MAV-2R-M5</a> | 2-Way Poppet Valve with Rotatable Inlet, M5     |

## Normally-Open Spool Valves



**Input Pressure:** 150 psig/10 bar max.

**Air Flow:** 6.0 scfm @ 50 psig; 10 scfm @ 100 psig; 245 l/min @ 6 bar

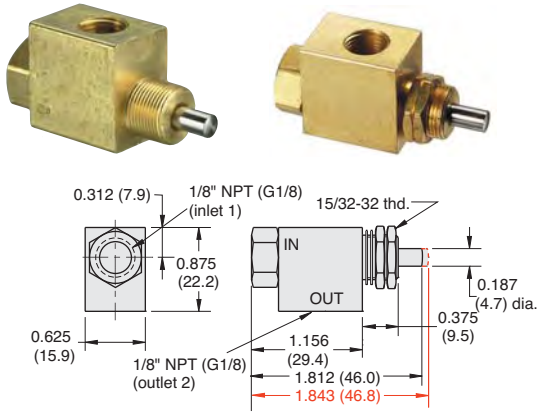
**Force For Full Stem Travel:** 32 oz. nominal

**Mounting:** 15/32-32 thread. Nut and lockwasher furnished.



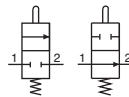
| Part No.                  | Description                               |
|---------------------------|---|
| <a href="#">MAVO-2</a>    | 2-Way Normally-Open Spool Valve, #10-32   |
| <a href="#">MAVO-2-M5</a> | 2-Way Normally-Open Spool Valve, M5       |
| <a href="#">MAVO-2P</a>   | 2-Way Normally-Open Spool Valve, 1/8" NPT |

## J-Series Miniature Valves



**Input Pressure:** MJV-2/MJV-2-MG - 300 psig/21 bar max.  
MJVO-2/MJVO-2-MG - 150 psig/10 bar max.

**Air Flow:** MJV-2/MJV-2-MG - 14.0 scfm @ 50 psig;  
25 scfm @ 100 psig; 600 l/min @ 6 bar  
MJVO-2/MJVO-2-MG - 7 scfm @ 50 psig;  
12 scfm @ 100 psig; 600 l/min @ 6 bar



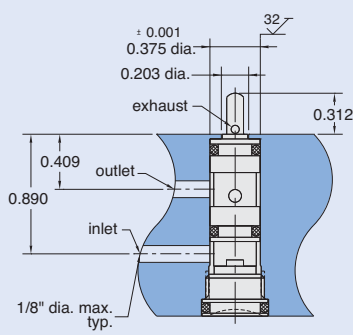
**Force For Full Stem Travel:** MJV-2/MJV-2-MG - 38 oz. nominal  
MJVO-2/MJVO-2-MG - 36 oz. nominal

**Mounting:** 15/32-32 thread. Nuts and lockwashers furnished.

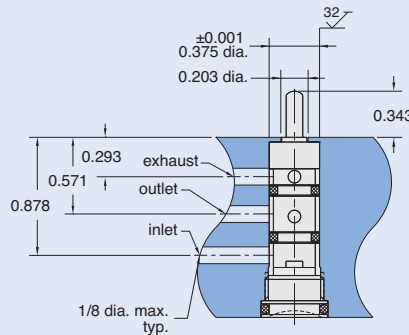
| Part No.                  | Description                            |
|---------------------------|--|
| <a href="#">MJV-2</a>     | Normally-Closed Poppet Valve, 1/8" NPT |
| <a href="#">MJV-2-MG</a>  | Normally-Closed Poppet Valve, G1/8     |
| <a href="#">MJVO-2</a>    | Normally-Open Spool Valve, 1/8" NPT    |
| <a href="#">MJVO-2-MG</a> | Normally-Open Spool Valve, G1/8        |

## Cartridge Valve Mounting

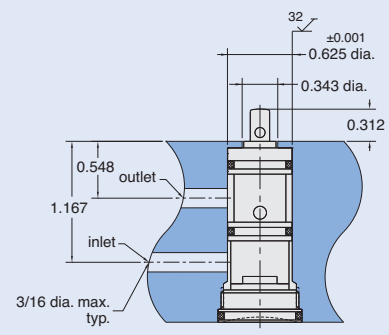
Clippard miniature cartridge valves offer the user flexibility in the application of 2-way and 3-way Normally-Open or Normally-Closed valves. Two sizes are provided: to fit either a 0.375" diameter bore or 0.625" diameter bore. They are used in Clippard heavy-duty limit switches and are suitable for pneumatic tools and manifolds or for any use where a valve needs to be built in.



MAV-2C/3C

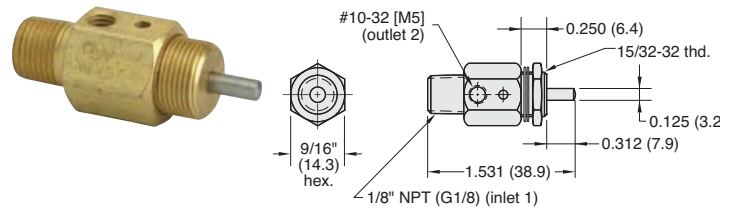


MAVO-2C/3C



MJV-2C/3C

## Normally-Open Spool Valve



**Input Pressure:** 150 psig max.

**Air Flow:** 6 scfm @ 50 psig; 100 scfm @ 100 psig

**Force For Full Stem Travel:** 32 oz. nominal

**Mounting:** 15/32-32 thread. Nut and lockwasher furnished.



| Part No.                | Description               |
|-------------------------|---------------------------|
| <a href="#">MAVO-2P</a> | Normally-Open Spool Valve |

## J-Series Cartridge Valves



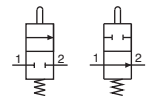
**Input Pressure:** 300 psig.

**Air Flow:** 11 scfm @ 50 psig; 22 scfm @ 100 psig

**Force For Full Stem Travel:** 24 oz. nominal

**Mounting:** Inserts into a 5/8" bore (0.625" ±0.001)

**Note:** See below for mounting details



| Part No.                | Description                     |
|-------------------------|---------------------------------|
| <a href="#">MJV-2C</a>  | Normally-Closed Cartridge Valve |
| <a href="#">MJVO-2C</a> | Normally-Open Cartridge Valve   |



# 2-WAY TOGGLE VALVES



## 2-WAY TOGGLE VALVES

2-way valves are the simplest pneumatic component—their function is

merely to turn an air supply on and off. They may best be compared to a water faucet; in the “on” position water

flows from inlet to outlet, and in the “off” position the water flow is stopped. 2-way toggle valves may have a poppet or spool, and may be either a 2 position or have a momentary actuation.

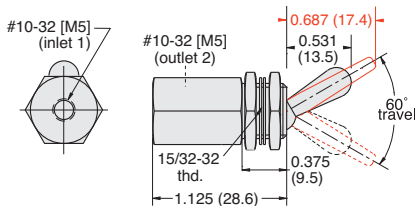
**Medium:** Air, Water or Oil

**Materials:** Brass body, Buna-N seals, stainless steel stem and spring

**Force For Full Stem Travel:** 12 oz. nominal

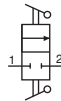
**Mounting:** 15/32-32 thread. Nuts and lockwashers furnished.

### 2 Position Spool Valves



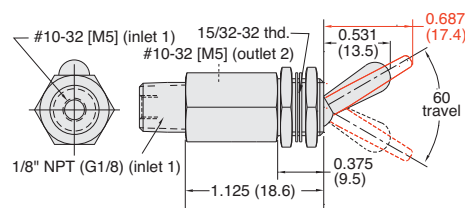
**Input Pressure:** 150 psig/10 bar max.

**Air Flow:** 4.5 scfm @ 50 psig; 8.0 scfm @ 100 psig;  
190 l/min @ 6 bar



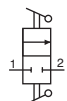
| Part No.                  | Description                                     |
|---------------------------|---|
| <a href="#">TV-2S</a>     | 2 Position Spool Valve, NP Steel Toggle, #10-32 |
| <a href="#">TV-2S-M5</a>  | 2 Position Spool Valve, NP Steel Toggle, M5     |
| <a href="#">TV-2SF</a>    | 2 Position Spool Valve, Plastic Toggle, #10-32  |
| <a href="#">TV-2SF-M5</a> | 2 Position Spool Valve, Plastic Toggle, M5      |

### 2 Pos. Spool Valves with 1/8" NPT Inlet



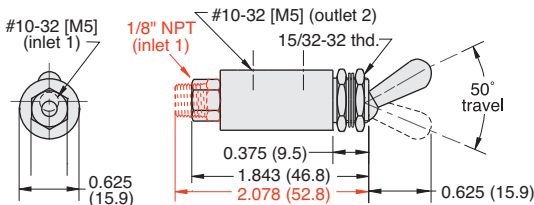
**Input Pressure:** 150 psig max.

**Air Flow:** 4.5 scfm @ 50 psig; 8.0 scfm @ 100 psig;



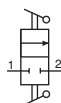
| Part No.                | Description                                       |
|-------------------------|---|
| <a href="#">TV-2SP</a>  | 2 Position Spool Valve, NP Steel Toggle, 1/8" NPT |
| <a href="#">TV-2SFP</a> | 2 Position Spool Valve, Plastic Toggle, 1/8" NPT  |

### 2 Position Poppet Valves



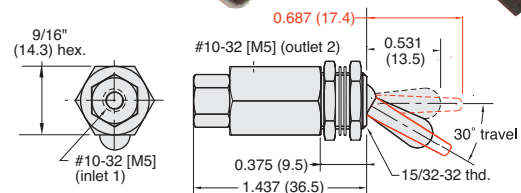
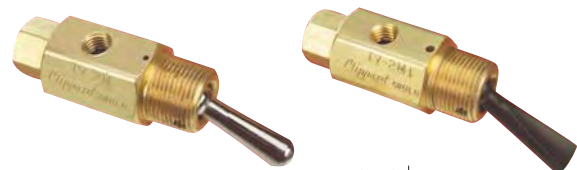
**Input Pressure:** 150 psig/10 bar max.

**Air Flow:** 4.0 scfm @ 50 psig; 7.3 scfm @ 100 psig;  
175 l/min @ 6 bar



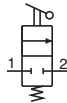
| Part No.                 | Description  |
|--------------------------|--|
| <a href="#">MTV-2</a>    | 2 Position Poppet Valve, NP Brass Toggle, #10-32   |
| <a href="#">MTV-2-M5</a> | 2 Position Poppet Valve, NP Brass Toggle, M5       |
| <a href="#">MTV-2P</a>   | 2 Position Poppet Valve, NP Brass Toggle, 1/8" NPT |

### 2 Pos. N.C. Poppet with Momentary Actuation



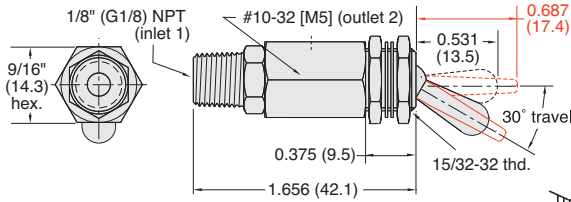
**Input Pressure:** 150 psig/10 bar max.

**Air Flow:** 4.5 scfm @ 50 psig; 8.0 scfm @ 100 psig;  
175 l/min @ 6 bar



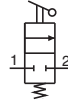
| Part No.                  | Description   |
|---------------------------|---|
| <a href="#">TV-2M</a>     | 2 Position N.C. Poppet Valve, NP Steel Toggle, #10-32 |
| <a href="#">TV-2M-M5</a>  | 2 Position N.C. Poppet Valve, NP Steel Toggle, M5     |
| <a href="#">TV-2MF</a>    | 2 Position N.C. Poppet Valve, Plastic Toggle, #10-32  |
| <a href="#">TV-2MF-M5</a> | 2 Position N.C. Poppet Valve, Plastic Toggle, M5      |

## 2 Pos. N.C. Poppet w/Momentary Actuation



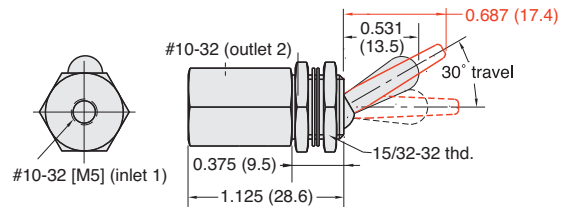
**Input Pressure:** 150 psig max.

**Air Flow:** 4.0 scfm @ 50 psig; 6.8 scfm @ 100 psig



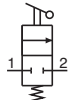
| Part No.                | Description  |
|-------------------------|--|
| <a href="#">TV-2MP</a>  | 2 Position Poppet Valve, NP Steel Toggle, 1/8" NPT |
| <a href="#">TV-2MFP</a> | 2 Position Poppet Valve, Plastic Toggle, 1/8" NPT  |

## 2 Pos. N.O. Spool w/Momentary Actuation



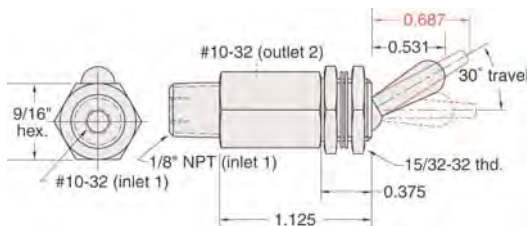
**Input Pressure:** 150 psig/10 bar max

**Air Flow:** 4.5 scfm @ 50 psig; 8.0 scfm @ 100 psig;  
190 l/min @ 6 bar



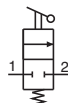
| Part No.                   | Description  |
|----------------------------|--|
| <a href="#">TVO-2M</a>     | 2 Position N.O. Spool Valve, NP Steel Toggle, #10-32 |
| <a href="#">TVO-2M-M5</a>  | 2 Position N.O. Spool Valve, NP Steel Toggle, M5     |
| <a href="#">TVO-2MF</a>    | 2 Position N.O. Spool Valve, Plastic Toggle, #10-32  |
| <a href="#">TVO-2MF-M5</a> | 2 Position N.O. Spool Valve, Plastic Toggle, M5      |

## 2 Pos. N.O. Spool with Momentary Actuation



**Input Pressure:** 150 psig max.

**Air Flow:** 4.0 scfm @ 50 psig; 6.8 scfm @ 100 psig



| Part No.                 | Description                             |
|--------------------------|---|
| <a href="#">TVO-2MP</a>  | 2 Position Spool Valve, NP Steel Toggle |
| <a href="#">TVO-2MFP</a> | 2 Position Spool Valve, Plastic Toggle  |

# CUSTOMer solutions

If you need a product that fits your application perfectly, Clippard has the capability to design or modify one of its products to suit your exact needs. We understand that a standard catalog product may be close but not be exactly what you need. **Let us know YOUR Need, and we will help to find YOUR Solution!**



### Specials!

Clippard has been and still is a pioneer in miniature pneumatics. This cartridge 2-way valve is small and packs a lot of flow into a very tight package. If you don't see what you need in this section, just call us!





# 2-WAY AIR-PILOTED VALVES

## 2-Way Air-Piloted Valves

2-way valves are the simplest pneumatic component – their function is merely to turn an air supply on or off. They may be compared to a beer tap, in the “on” position beer flows from the keg to the mug and in the “off” position the beer flow is stopped. 2-way air piloted valves may have a poppet or spool and when an air signal is applied to the pilot, a Normally-Closed (N.C.) valve is opened and a Normally-Open (N.O.) valve is closed. When the pilot signal is removed, the valve reverts back to its original position.

**Medium:** Air, Water or Oil

**Materials:** Brass body, Buna-N seals, stainless steel stem and spring

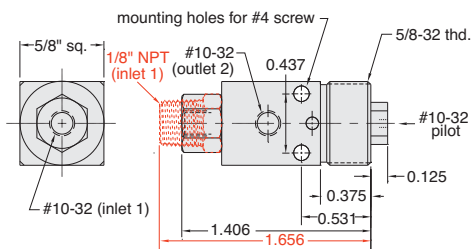
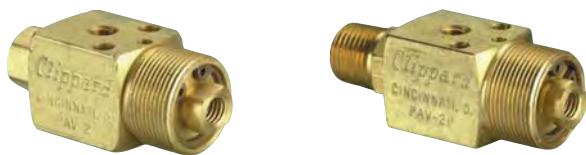
**Stem Travel:** 1/8" (3.2)

**Mounting:** 5/8-32 thread or #4 screw. Nut and lockwasher may be ordered separately. Part Number: PAV-MH

**Air Pilot Pressure:** 15 psig min.

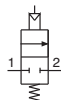
**Foot Bracket:** FB-1791

### Air-Piloted N.C. Poppet Valves



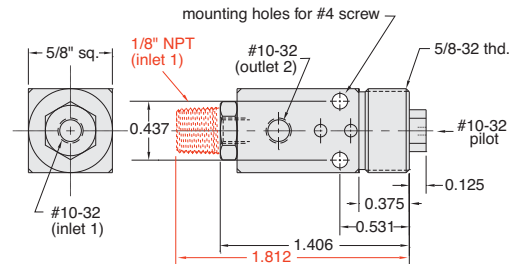
**Input Pressure:** 300 psig max.

**Air Flow:** 4.0 scfm @ 50 psig; 6.8 scfm @ 100 psig



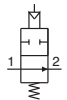
| Part No. | Description                            |
|----------|--|
| PAV-2    | Normally-Closed Poppet Valve, #10-32   |
| PAV-2P   | Normally-Closed Poppet Valve, 1/8" NPT |

### Air-Piloted N.O. Spool Valves



**Input Pressure:** 150 psig max.

**Air Flow:** 6.8 scfm @ 50 psig; 11.6 scfm @ 100 psig

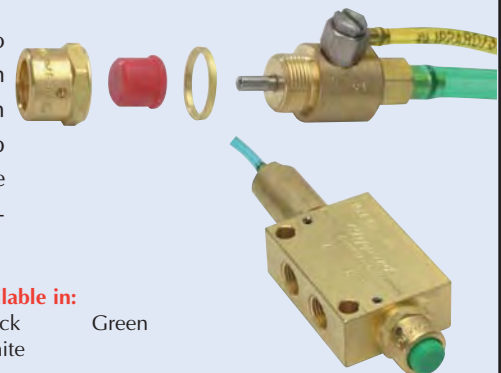


| Part No. | Description                         |
|----------|-------------------------------------|
| PAVO-2   | Normally-Open Spool Valve, #10-32   |
| PAVO-2P  | Normally-Open Spool Valve, 1/8" NPT |

## Captivated Push Buttons



The small compact size make the push buttons adaptable to panel mounting. Unlike set screw retained buttons, the screw-on design will not allow the button to fall off. Designed to work with Clippard MAV, MJV, and FV series valves, these buttons also help protect the valve by preventing over-traveling of the stem and the potential for side-load on the valve. See page 131 for more information.



**Button Housing Available in:**

Black Chrome Electroless  
Brass Nickel Plated

**Button Colors Available in:**

Yellow Black Green  
Red White





## 3-Way Stem Valves

3-way valves are 2-way valves with the added function of exhausting the outlet when the valve is closed. When the stem is depressed, the valve is in the "on" position allowing air to flow from the inlet to the outlet while

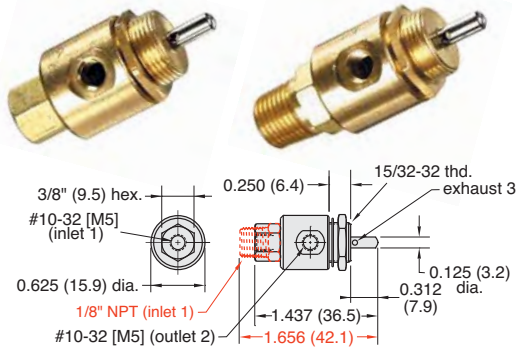
blocking the exhaust. Releasing the stem closes the inlet and opens the outlet to an exhaust port which vents the outlet to atmosphere. 3-way stem valves may have a poppet or spool and be Normally-Closed (N.C.) or Normally-Open (N.O.).

**Medium:** Air

**Stem Travel:** 1/8" (3.2)

**Materials:** Brass body, Buna-N seals, stainless steel stem and spring

## Miniature 3-Way Poppet Valves



**Input Pressure:** 300 psig/21 bar max.

**Air Flow:** 4.0 scfm @ 50 psig; 6.8 scfm @ 100 psig;  
170 l/min @ 6 bar

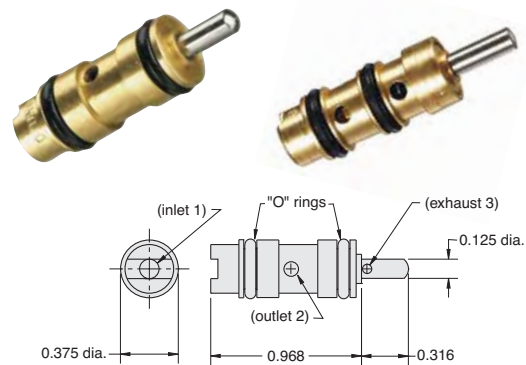
**Force For Full Stem Travel:** 24 oz. nominal

**Mounting:** 15/32-32 thread. Nut and lockwasher furnished.



| Part No.                 | Description                      |
|--------------------------|----------------------------------|
| <a href="#">MAV-3</a>    | Miniature Poppet Valve, #10-32   |
| <a href="#">MAV-3-M5</a> | Miniature Poppet Valve, M5       |
| <a href="#">MAV-3P</a>   | Miniature Poppet Valve, 1/8" NPT |

## Miniature Cartridge Valves



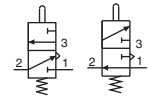
**Input Pressure:** 300 psig

**Air Flow:** 3.0 scfm @ 50 psig; 6.0 scfm @ 100 psig

**Force For Full Stem Travel:** 24 oz. nominal

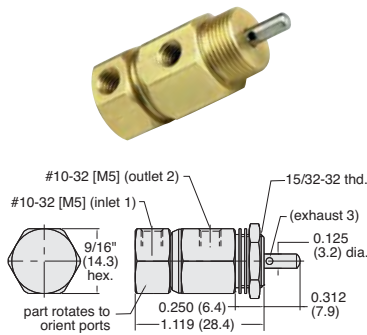
**Mounting:** Inserts into a 3/8" bore (0.375" 0.001")

**Note:** See page 105 for mounting details



| Part No.                | Description                            |
|-------------------------|--|
| <a href="#">MAV-3C</a>  | Normally-Closed Poppet Cartridge Valve |
| <a href="#">MAVO-3C</a> | Normally-Open Spool Cartridge Valve    |

## N.C. Poppet Valves with Rotatable Inlet



**Input Pressure:** 300 psig/21 bar max.

**Air Flow:** 4.0 scfm @ 50 psig; 6.8 scfm @ 100 psig;  
170 l/min @ 6 bar

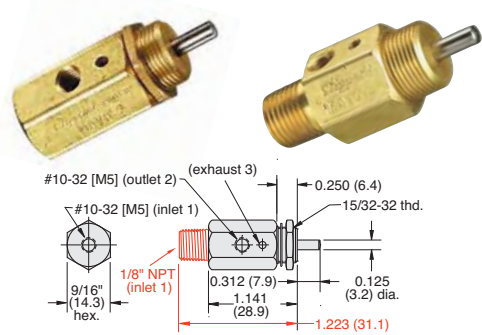
**Force For Full Stem Travel:** 24 oz. nominal

**Mounting:** 15/32-32 thread. Nut and lockwasher furnished.



| Part No.                  | Description  |
|---------------------------|--|
| <a href="#">MAV-3R</a>    | Normally-Closed Valve with Rotatable Inlet, #10-32 |
| <a href="#">MAV-3R-M5</a> | Normally-Closed Valve with Rotatable Inlet, M5     |

## Normally-Open Spool Valves



**Input Pressure:** 150 psig/10 bar max.

**Air Flow:** 6.0 scfm @ 50 psig; 10 scfm @ 100 psig;  
245 l/min @ 6 bar

**Force For Full Stem Travel:** 32 oz. nominal

**Mounting:** 15/32-32 thread. Nut and lockwasher furnished.

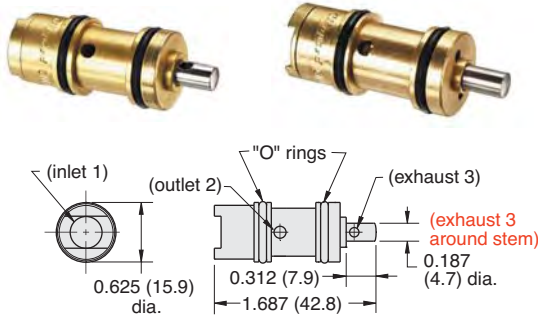


| Part No.                  | Description                         |
|---------------------------|-------------------------------------|
| <a href="#">MAVO-3</a>    | Normally-Open Spool Valve, #10-32   |
| <a href="#">MAVO-3-M5</a> | Normally-Open Spool Valve, M5       |
| <a href="#">MAVO-3P</a>   | Normally-Open Spool Valve, 1/8" NPT |



# 3-WAY STEM VALVES

## J-Series Poppet Cartridge Valves



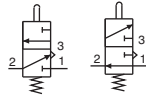
**Input Pressure:** 300 psig

**Air Flow:** 11 scfm @ 50 psig; 22 scfm @ 100 psig

**Force For Full Stem Travel:** 38 oz. nominal

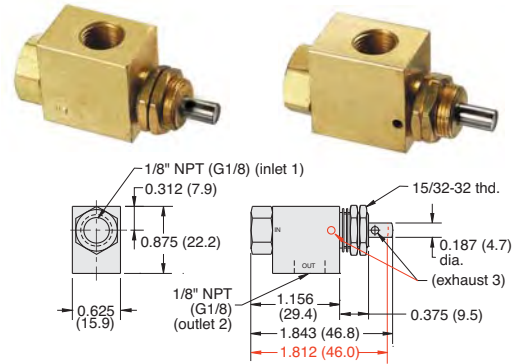
**Mounting:** Inserts into a 5/8" bore (0.625" ±0.001")

**Note:** See [page 105](#) for mounting details



| Part No.                | Description                                  |
|-------------------------|--|
| <a href="#">MIV-3C</a>  | 3-Way Normally-Closed Poppet Cartridge Valve |
| <a href="#">MIVO-3C</a> | 3-Way Normally-Open Poppet Cartridge Valve   |

## J-Series 3-Way Poppet Valves

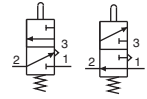


**Input Pressure:** MJV-3/MJV-3-MG - 300 psig/21 bar max.  
MJVO-3/MJVO-3-MG - 150 psig/10 bar max.

**Air Flow:** 14.0 scfm @ 50 psig; 25 scfm @ 100 psig;  
600 l/min @ 6 bar

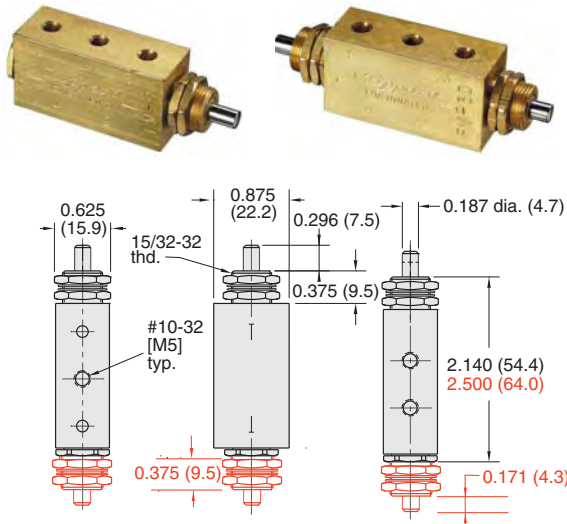
**Force For Full Stem Travel:** 38 oz. nominal

**Mounting:** 15/32-32 thread. Nuts and lockwashers furnished.



| Part No.                  | Description  |
|---------------------------|--|
| <a href="#">MIV-3</a>     | Normally-Closed Valve with Spring Return, 1/8" NPT |
| <a href="#">MIV-3-MG</a>  | Normally-Closed Valve with Spring Return, G1/8     |
| <a href="#">MIVO-3</a>    | Normally-Open Spool Valve, 1/8" NPT                |
| <a href="#">MIVO-3-MG</a> | Normally-Open Spool Valve, G1/8                    |

## FV-Series 3-Way Spool Valves



**Input Pressure:** Vacuum to 150 psig/10 bar max.

**Air Flow:** 6 scfm @ 50 psig; 10 scfm @ 100 psig;  
240 l/min @ 6 bar

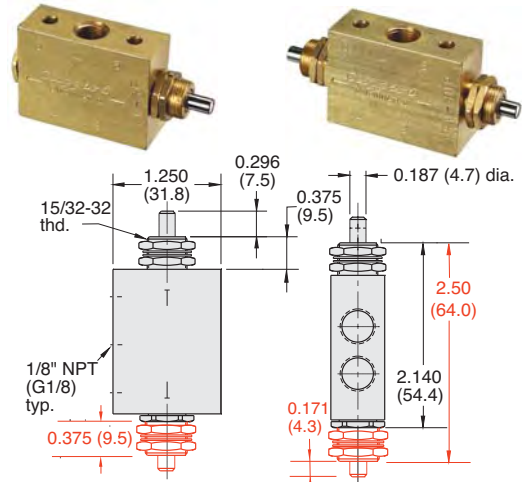
**Force For Full Stem Travel:** FV-3 & FV-3-M5 - 4 1/2 pounds nominal.  
FV-3D & FV-3D-M5 - 1 1/2 pounds nominal

**Mounting:** 5/32-32 thread. Nuts and lockwashers furnished.



| Part No.                 | Description                            |
|--------------------------|--|
| <a href="#">FV-3</a>     | 3-Way Spool Valve, #10-32              |
| <a href="#">FV-3-M5</a>  | 3-Way Spool Valve, M5                  |
| <a href="#">FV-3D</a>    | 3-Way Two Position Spool Valve, #10-32 |
| <a href="#">FV-3D-M5</a> | 3-Way Two Position Spool Valve, M5     |

## FV-Series 3-Way Spool Valves



**Input Pressure:** Vacuum to 150 psig/10 bar max.

**Air Flow:** 6.5 scfm @ 50 psig; 10.5 scfm @ 100 psig;  
240 l/min @ 6 bar

**Force For Full Stem Travel:** FV-3P & FV-3-MG - 4 1/2 pounds nominal.  
FV-3DP & FV-3D-MG - 1 1/2 pounds nominal

**Mounting:** 5/32-32 thread. Nuts and lockwashers furnished.



| Part No.                 | Description  |
|--------------------------|--|
| <a href="#">FV-3P</a>    | Spool Plunger Actuated Spring Return Valve, 1/8" NPT |
| <a href="#">FV-3-MG</a>  | Spool Plunger Actuated Spring Return Valve, G1/8     |
| <a href="#">FV-3DP</a>   | Spool Double Plunger 2 Position Valve, 1/8" NPT      |
| <a href="#">FV-3D-MG</a> | Spool Double Plunger 2 Position Valve, G1/8          |

# 3-WAY TOGGLE VALVES



## 3-Way Toggle Valves

3-way valves have a supply, outlet and exhaust port. When the toggle is in the "on" position air flows from the inlet to the outlet and the exhaust port is blocked. Moving the toggle to the "off" position closes the inlet and opens the outlet to an exhaust port which vents the outlet to atmosphere. 3-way toggle valves may have a poppet or spool and by movement

of the toggle may either be 2-position or have a momentary actuation.

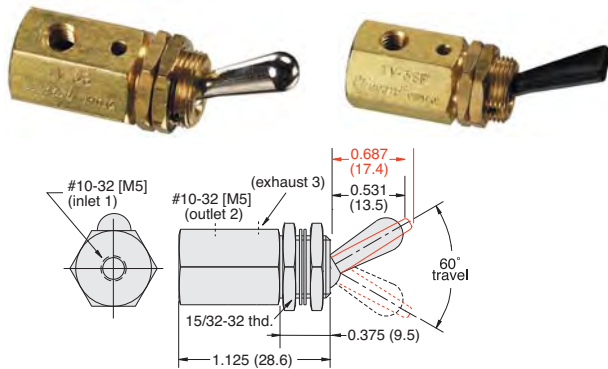
**Medium:** Air

**Materials:** Brass body, Buna-N seals, stainless steel stem and spring

**Stem Travel:** 1/8" (3.2)

**Mounting:** 15/32-32 thd. Nuts and lockwashers furnished

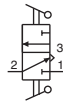
### 2 Position Spool Valves



**Input Pressure:** 150 psig/10 bar max.

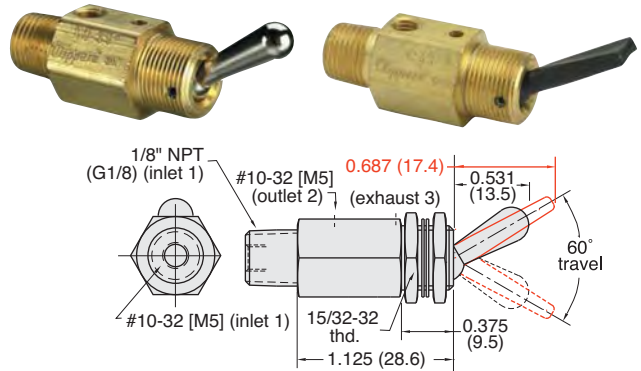
**Air Flow:** 4.5 scfm @ 50 psig; 8.0 scfm @ 100 psig;  
190 l/min @ 6 bar

**Force For Full Stem Travel:** 12 oz. nominal



| Part No.                  | Description                                     |
|---------------------------|---|
| <a href="#">TV-3S</a>     | 2 Position Spool Valve, NP Steel Toggle, #10-32 |
| <a href="#">TV-3S-M5</a>  | 2 Position Spool Valve, NP Steel Toggle, M5     |
| <a href="#">TV-3SE</a>    | 2 Position Spool Valve, Plastic Toggle, #10-32  |
| <a href="#">TV-3SE-M5</a> | 2 Position Spool Valve, Plastic Toggle, M5      |

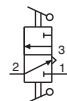
### 2 Pos. Spool Valve with 1/8" NPT Inlet



**Input Pressure:** 150 psig/10 bar max.

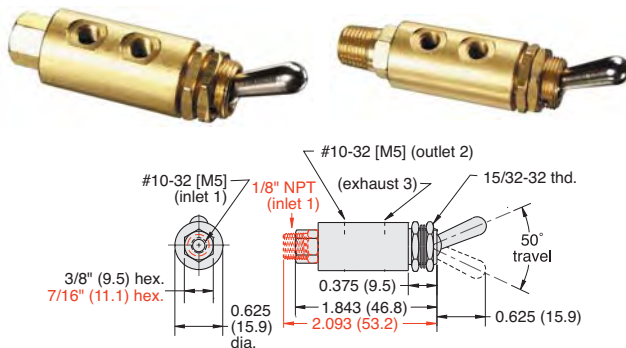
**Air Flow:** 4.5 scfm @ 50 psig; 8.0 scfm @ 100 psig;  
190 l/min @ 6 bar

**Force For Full Stem Travel:** 12 oz. nominal



| Part No.                 | Description                             |
|--------------------------|---|
| <a href="#">TV-3SP</a>   | 2 Position Spool Valve, NP Steel Toggle |
| <a href="#">TV-3SEFP</a> | 2 Position Spool Valve, Plastic Toggle  |

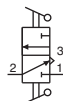
### 2 Position Poppet Valves



**Input Pressure:** 150 psig/10 bar max.

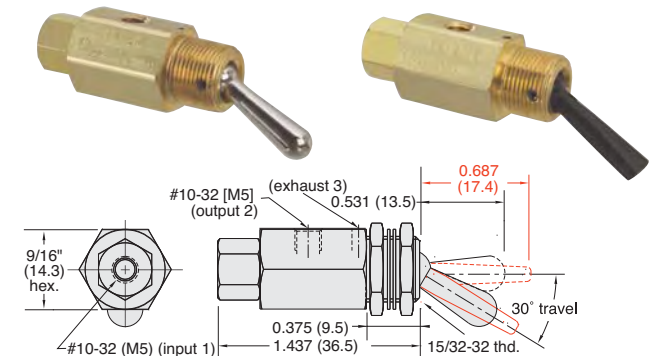
**Air Flow:** 4.0 scfm @ 50 psig; 6.8 scfm @ 100 psig;  
175 l/min @ 6 bar

**Force For Full Stem Travel:** 16 oz. nominal



| Part No.                 | Description  |
|--------------------------|--|
| <a href="#">MTV-3</a>    | 2 Position Poppet Valve, #10-32, NP Brass Toggle   |
| <a href="#">MTV-3-M5</a> | 2 Position Poppet Valve, M5, NP Brass Toggle       |
| <a href="#">MTV-3P</a>   | 2 Position Poppet Valve, 1/8" NPT, NP Brass Toggle |

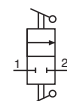
### 2 Pos. N.C. Poppet with Momentary Actuation



**Input Pressure:** 150 psig/10 bar max.

**Air Flow:** 4.0 scfm @ 50 psig; 6.8 scfm @ 100 psig;  
175 l/min @ 6 bar

**Force For Full Stem Travel:** 12 oz. nominal

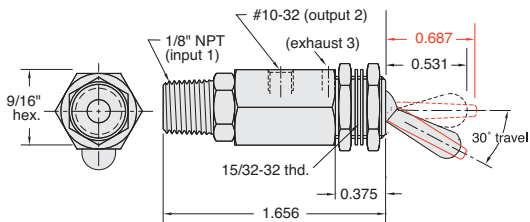
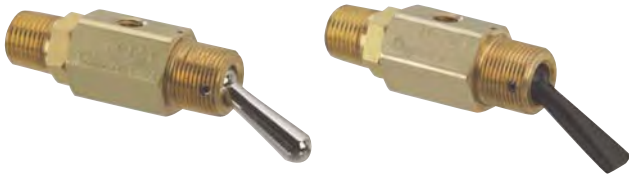


| Part No.                  | Description                                      |
|---------------------------|--|
| <a href="#">TV-3M</a>     | 2 Position Poppet Valve, NP Steel Toggle, #10-32 |
| <a href="#">TV-3M-M5</a>  | 2 Position Poppet Valve, NP Steel Toggle, M5     |
| <a href="#">TV-3MF</a>    | 2 Position Poppet Valve, Plastic Toggle, #10-32  |
| <a href="#">TV-3MF-M5</a> | 2 Position Poppet Valve, Plastic Toggle, M5      |



# 3-WAY TOGGLE VALVES

## 2 Pos. N.C. Poppet w/Momentary Actuation



**Input Pressure:** 300 psig max.

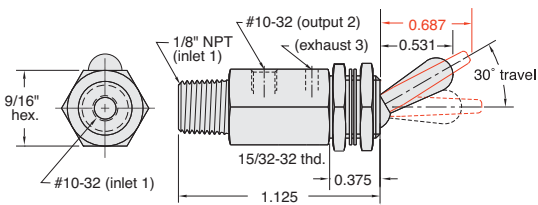
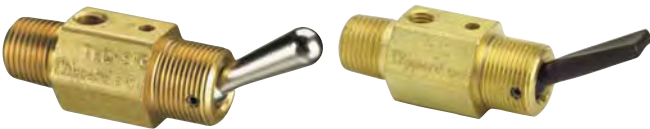
**Air Flow:** 4.0 scfm @ 50 psig; 6.8 scfm @ 100 psig

**Force For Full Stem Travel:** 12 oz. nominal



| Part No.                | Description                              |
|-------------------------|--|
| <a href="#">TV-3MP</a>  | 2 Position Poppet Valve, NP Steel Toggle |
| <a href="#">TV-3MFP</a> | 2 Position Poppet Valve, Plastic Toggle  |

## 2 Pos. N.O. Poppet w/Momentary Actuation



**Input Pressure:** 150 psig max.

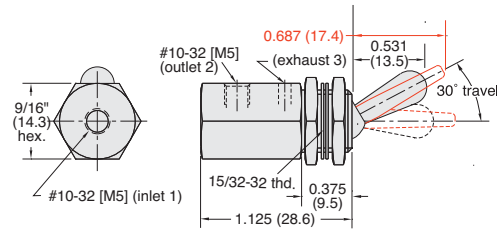
**Air Flow:** 4.0 scfm @ 50 psig; 6.8 scfm @ 100 psig

**Force For Full Stem Travel:** 12 oz. nominal



| Order Information        |   |
|--------------------------|---|
| <a href="#">TVO-3MP</a>  | 2 Position Spool Valve, NP Steel Toggle |
| <a href="#">TVO-3MFP</a> | 2 Position Spool Valve, Plastic Toggle  |

## 2 Pos. N.O. Poppet w/Momentary Actuation



**Input Pressure:** 150 psig/10 bar max.

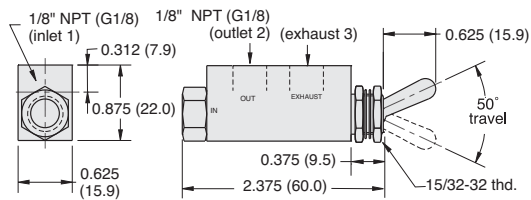
**Air Flow:** 4.0 scfm @ 50 psig; 6.8 scfm @ 100 psig;  
170 lpm @ 6 bar

**Force For Full Stem Travel:** 12 oz. nominal



| Part No.                   | Description                                     |
|----------------------------|---|
| <a href="#">TVO-3M</a>     | 2 Position Spool Valve, NP Steel Toggle, #10-32 |
| <a href="#">TVO-3M-M5</a>  | 2 Position Spool Valve, NP Steel Toggle, M5     |
| <a href="#">TVO-3MF</a>    | 2 Position Spool Valve, Plastic Toggle, #10-32  |
| <a href="#">TVO-3MF-M5</a> | 2 Position Spool Valve, Plastic Toggle, M5      |

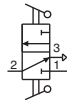
## 2 Position Poppet Valves



**Input Pressure:** 300 psig/21 bar max.

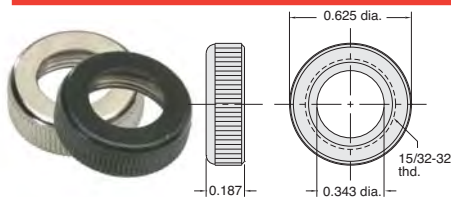
**Air Flow:** 14 scfm @ 50 psig; 25 scfm @ 100 psig;  
600 l/min @ 6 bar

**Force For Full Stem Travel:** 16 oz. nominal



| Part No.                  | Description                       |
|---------------------------|-----------------------------------|
| <a href="#">MITV-3</a>    | 2 Position Poppet Valve, 1/8" NPT |
| <a href="#">MITV-3-MG</a> | 2 Position Poppet Valve, G1/8     |

## 15/32 Panel Mounting Nut



Brass with black or bright nickel finish

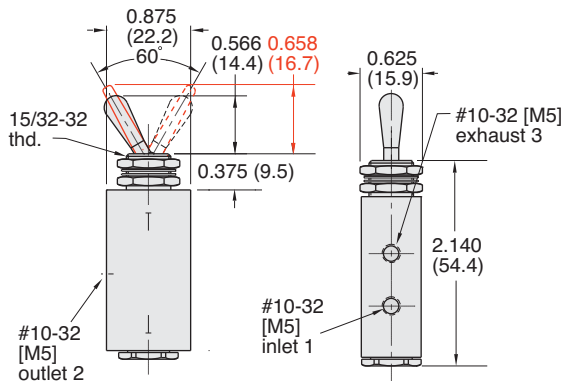
| Part No.                |        |
|-------------------------|--------|
| <a href="#">11406-1</a> | Black  |
| <a href="#">11406-2</a> | Bright |



# 3-WAY TOGGLE & STEM VALVES



## 2 Position Spool Valves

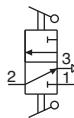


**Input Pressure:** 150 psig/10 bar max.

**Air Flow:** 6 scfm @ 50 psig; 10 scfm @ 100 psig;  
280 l/min @ 6 bar

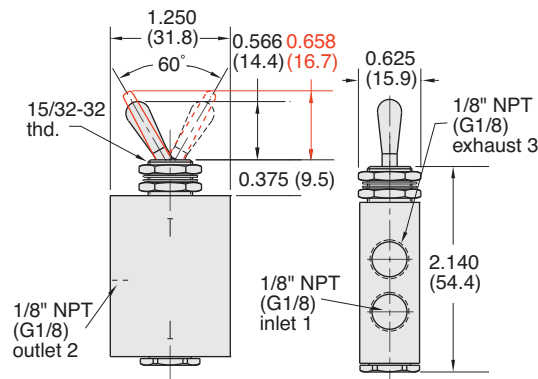
**Force For Full Stem Travel:** 16 oz. nominal

**Mounting:** 15/32-32 thread. Nuts and lockwashers furnished.



| Part No.                  | Description                                     |
|---------------------------|---|
| <a href="#">FTV-3</a>     | 2 Position Spool Valve, NP Steel Toggle, #10-32 |
| <a href="#">FTV-3-M5</a>  | 2 Position Spool Valve, NP Steel Toggle, M5     |
| <a href="#">FTV-3F</a>    | 2 Position Spool Valve, Plastic Toggle, #10-32  |
| <a href="#">FTV-3F-M5</a> | 2 Position Spool Valve, Plastic Toggle, M5      |

## 2 Position Spool Valves

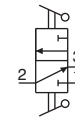


**Input Pressure:** Vacuum to 150 psig/10 bar max.

**Air Flow:** 6.5 scfm @ 50 psig; 10.5 scfm @ 100 psig;  
290 l/min @ 6 bar

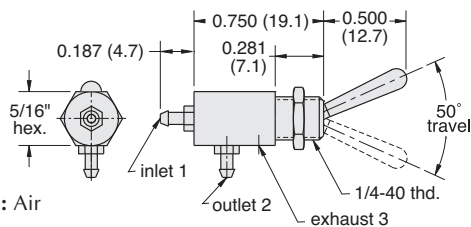
**Force For Full Stem Travel:** 16 oz. nominal

**Mounting:** 15/32-32 thread. Nuts and lockwashers furnished.



| Part No.                  | Description                                       |
|---------------------------|---|
| <a href="#">FTV-3P</a>    | 2 Position Spool Valve, NP Steel Toggle, 1/8" NPT |
| <a href="#">FTV-3-MG</a>  | 2 Position Spool Valve, NP Steel Toggle, G1/8     |
| <a href="#">FTV-3FP</a>   | 2 Position Spool Valve, Plastic Toggle, 1/8" NPT  |
| <a href="#">FTV-3F-MG</a> | 2 Position Spool Valve, Plastic Toggle, G1/8      |

## Sub-Miniature Spool Valve



**Medium:** Air

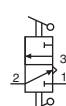
**Input Pressure:** 100 psig max.

**Ports:** 3-56 with 1/16" ID Hose Barbs

**Air Flow:** 1.4 scfm @ 100 psig

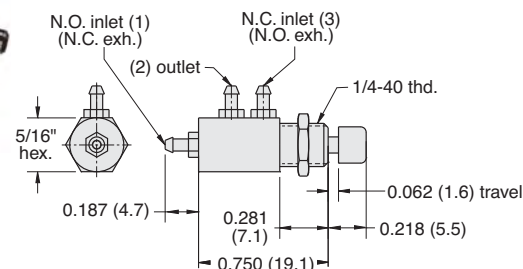
**Force For Full Stem Travel:** 24 oz. nominal

**Spool Material:** Delrin®



| Part No.               | Description               |
|------------------------|---------------------------|
| <a href="#">SMTV-3</a> | Sub-Miniature Spool Valve |

## Sub-Mini. N.O. or N.C. Spool Valve



**Medium:** Air

**Stem Travel:** 1/16"

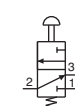
**Input Pressure:** 100 psig max.

**Ports:** 3-56 with 1/16" ID Hose Barbs

**Air Flow:** 1.4 scfm @ 100 psig

**Force For Full Stem Travel:** 20 oz. nominal

**Spool Material:** Delrin®



| Part No.               | Description                |
|------------------------|----------------------------|
| <a href="#">SMAV-3</a> | Sub-Miniature N.O. or N.C. |





# 3-WAY AIR-PILOTED & LIMIT VALVES



## 3-Way Air-Piloted Valves

3-way valves have an inlet, outlet and exhaust port. When an air signal is applied to the pilot of a Normally-Closed valve the inlet is open to the outlet and the exhaust is blocked; removing the pilot closes the inlet and the outlet is open to the exhaust port which vents to atmosphere. When an air signal is applied to the pilot of a Normally-Open valve the inlet is blocked and the outlet is vented; removing the pilot signal opens the inlet to the outlet and blocks the exhaust.

**Medium:** Air only

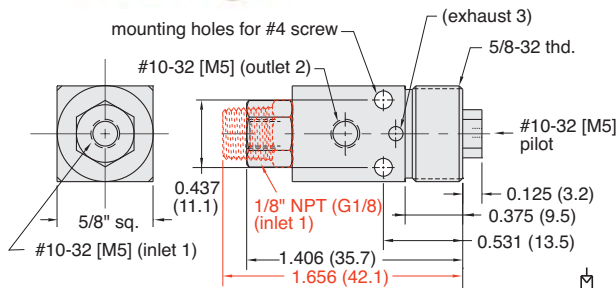
**Materials:** Brass body, Buna-N seals, stainless steel stem and spring

**Mounting:** 5/8-32 thread or #4 screw. Nut and lockwasher may be ordered separately. Part Number: [PAV-MH](#)

**Air Pilot Pressure:** 15 psig min.

**Foot Bracket:** [FB-1791](#)

### Air-Piloted N.C. Poppet Valves

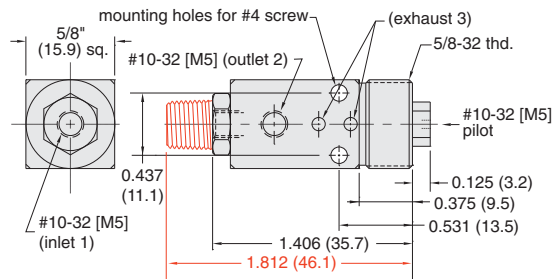


**Input Pressure:** 300 psig max.

**Air Flow:** 4.0 scfm @ 50 psig; 6.8 scfm @ 100 psig

| Part No.               | Description                            |
|------------------------|--|
| <a href="#">PAV-3</a>  | Normally-Closed Poppet Valve, #10-32   |
| <a href="#">PAV-3P</a> | Normally-Closed Poppet Valve, 1/8" NPT |

### Air-Piloted N.O. Spool Valves

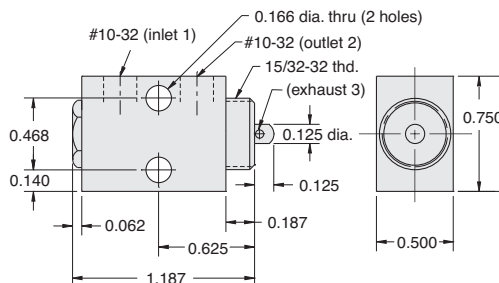


**Input Pressure:** 150 psig max.

**Air Flow:** 6.8 scfm @ 50 psig; 11.6 scfm @ 100 psig

| Part No.                | Description                         |
|-------------------------|-------------------------------------|
| <a href="#">PAVO-3</a>  | Normally-Open Spool Valve, #10-32   |
| <a href="#">PAVO-3P</a> | Normally-Open Spool Valve, 1/8" NPT |

### Miniature Limit Valve



**Stem Travel:** 1/8" (3.2)

**Input Pressure:** 150 psig max.

**Air Flow:** 4 scfm @ 50 psig; 7 scfm @ 100 psig

**Force for Full Stem Travel:** 48 oz. nominal

**Mounting:** Dual #20 holes or 15/32-32 thd. Nut and lockwasher furnished

| Part No.              | Description                           |
|-----------------------|---------------------------------------|
| <a href="#">MLV-3</a> | Normally-Closed Miniature Limit Valve |

# MAXIMATIC® 3-WAY AIR PILOT VALVES



## 2-Position Spring Return & Air Pilot Valves



**MMA-33WAA**



**MMA-33WAS**

Maximatic 3-way air piloted valves are either double pilot or single pilot, spring return in #10-32 thread to 1/2" NPT port sizes. These air piloted valves have 1/8" NPT external pilot ports.

**Type:** Spool

**Medium:** Air (40 micron filtration) or Inert Gas

**Operating Range:** Single Air Pilot: 20 to 125 psig; Double Air Pilot: 0 to 125 psig.

**Pilot Pressure:** See chart

**Maximum Pressure:** 125 psig

**Number of Ports:** 3

**Materials:** Aluminum, Stainless Steel, Thermoplastic

**Mounting:** Body Ported, Manifold Mount

**Temperature Range:** 32 to 150°F (0 to 65°C)

**Seals:** Buna-N

### Minimum Pilot Pressure

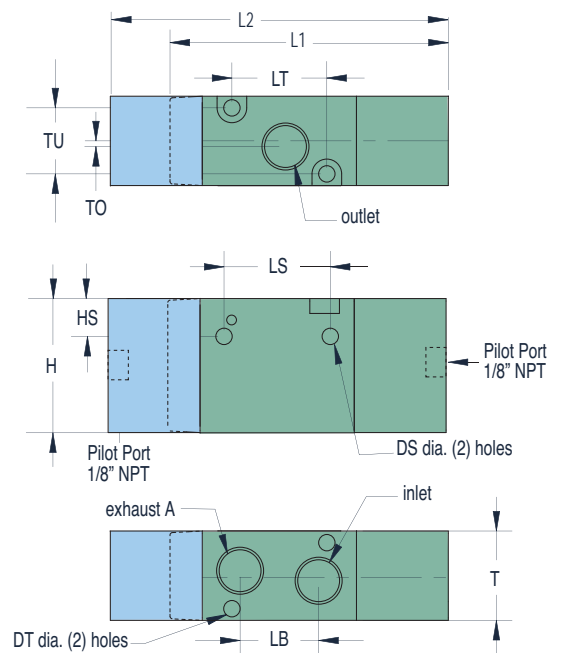
|                           | Single Pilot |    | Double Pilot |    |
|---------------------------|--------------|----|--------------|----|
| Operating Pressure (psig) | 20           | 80 | 20           | 80 |
| Pilot Pressure (psig)     | 20           | 35 | 5            | 8  |

| Dim. | MMA-31      | MMA-32      | MMA-33      | MMA-34       |
|------|-------------|-------------|-------------|--------------|
| DS   | 0.13 (3.3)  | 0.17 (4.3)  | 0.17 (4.3)  | 0.22 (5.6)   |
| DT   | 0.13 (3.3)  | 0.13 (3.3)  | 0.17 (4.3)  | 0.17 (4.3)   |
| H    | 1.07 (27.2) | 1.38 (35.1) | 1.58 (40.1) | 1.97 (50.0)  |
| HS   | 0.30 (7.6)  | 0.31 (7.9)  | 0.41 (10.4) | 0.53 (13.5)  |
| L1   | 2.23 (56.6) | 3.06 (77.7) | 3.17 (80.5) | 3.80 (96.5)  |
| L2   | 2.71 (68.8) | 3.46 (87.9) | 3.80 (96.5) | 4.72 (119.9) |
| LB   | 0.63 (16.0) | 0.71 (18.0) | 0.94 (23.9) | 1.42 (36.1)  |
| LS   | 0.83 (21.1) | 0.98 (24.9) | 1.18 (30.0) | 2.01 (51.1)  |
| LT   | 0.75 (19.1) | 1.30 (33.0) | 1.38 (35.1) | 1.73 (43.9)  |
| T    | 0.71 (18.0) | 0.86 (22.1) | 1.06 (26.9) | 1.34 (34.0)  |
| TO   | 0.06 (1.5)  | 0.06 (1.5)  | 0.16 (4.1)  | 0.16 (4.1)   |
| TU   | 0.71 (18.0) | 0.65 (16.5) | 1.06 (26.9) | 1.34 (34.0)  |

# Maximatic®

| Port     | Cv   | Flow Rate |            |
|----------|------|-----------|------------|
|          |      | @ 50 psig | @ 100 psig |
| #10-32   | 0.58 | 16 scfm   | 27 scfm    |
| 1/8" NPT | 0.67 | 18 scfm   | 31 scfm    |
| 1/4" NPT | 0.89 | 26 scfm   | 49 scfm    |
| 3/8" NPT | 1.68 | 51 scfm   | 93 scfm    |
| 1/2" NPT | 2.79 | 91 scfm   | 171 scfm   |

Conforms to ISO 19973-2 test standards



| Spring Return Valves      |  | Double Air Pilot Valves   |  | Inlet    | Outlet   | Exhaust  | Cv/scfm* |
|---------------------------|--|---------------------------|--|----------|----------|----------|----------|
| <a href="#">MMA-31NAS</a> |  | <a href="#">MMA-31NAA</a> |  | #10-32   | #10-32   | #10-32   | 0.58/27  |
| <a href="#">MMA-31PAS</a> |  | <a href="#">MMA-31PAA</a> |  | 1/8" NPT | 1/8" NPT | 1/8" NPT | 0.67/31  |
| <a href="#">MMA-32QAS</a> |  | <a href="#">MMA-32QAA</a> |  | 1/4" NPT | 1/4" NPT | 1/4" NPT | 0.89/49  |
| <a href="#">MMA-33WAS</a> |  | <a href="#">MMA-33WAA</a> |  | 3/8" NPT | 3/8" NPT | 3/8" NPT | 1.68/93  |
| <a href="#">MMA-34ZAS</a> |  | <a href="#">MMA-34ZAA</a> |  | 1/2" NPT | 1/2" NPT | 1/2" NPT | 2.79/171 |

\* scfm based on flow @ 100 psig



# MANUALLY-OPERATED 3-WAY AIR VALVES

## Push/Pull Valves



Push/Pull spool valves are 3-way configurations. The Detent version maintains spool position by friction, while the Momentary spring returns to the home position.

**Operating Pressure:** 0 to 115 psig

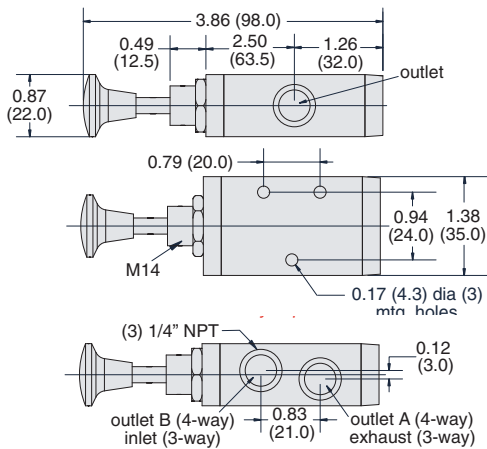
**Cv:** 0.89

**Ports:** 1/4" NPT, 1/8" NPT exhaust

**Operating Temperature:** 32 to 140°F (0 to 60°C)

**Mounting:** Panel or base mount

| Part No.        | Description                            |
|-----------------|--|
| <u>MMV-P3QD</u> | 3-Way, 3 Port Detented Push/Pull Valve |



## Lever Valves



Lever valves are 3-way spool valves with 1/4" NPT ports. They have either a Detented or Momentary manual operation.

**Operating Pressure:** 0 to 150 psig

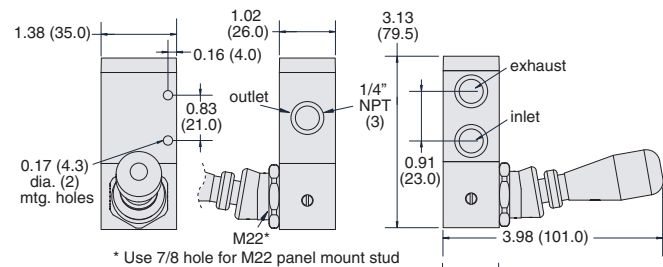
**Cv:** Detented: 1.0; Momentary: 0.89

**Port Size:** 1/4" NPT

**Operating Temperature:** 32 to 140°F (0 to 60°C)

**Mounting:** Panel or base mount

| Part No.        | Description                       |
|-----------------|-----------------------------------|
| <u>MMV-L3QD</u> | 3-Way, 2-Position Detented Valve  |
| <u>MMV-L3QM</u> | 3-Way, 2-Position Momentary Valve |



## Foot Pedal Valves

Foot Pedal Valve is a 3-way valve with 1/4" NPT ports with a low-profile flat pedal.

**Operating Pressure:** 0 to 150 psig

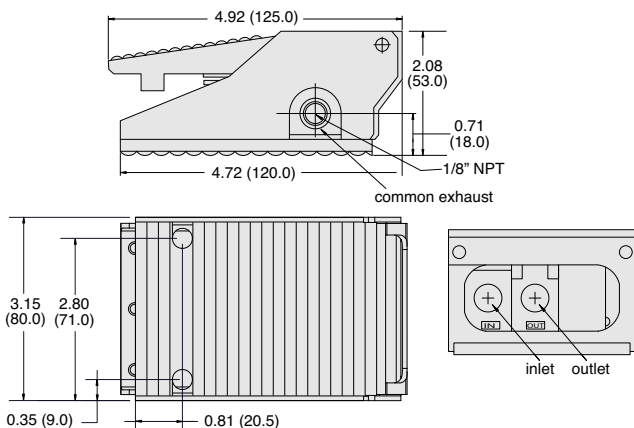
**Cv:** 1.4

**Ports:** 1/4" NPT

**Mounting:** Base mount

**Operating Temperature:** 32 to 140°F (0 to 60°C)

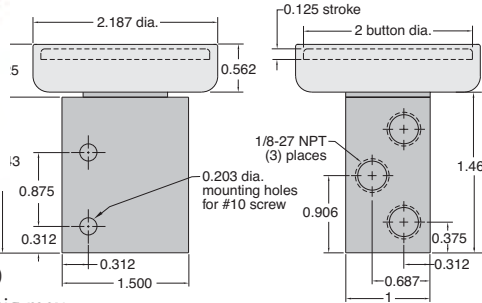
| Part No.          | Description                 |
|-------------------|-----------------------------|
| <u>MMV-F3QM-F</u> | 3-Way Valve with Flat Pedal |



## 3-Way Poppet Palm Button Valves



3-Way Poppet (MAV-3C) Normally-Closed - Bubble Tight Poppet Cartridge Valve (- replaceable cartridge)



Medium: Air

Stem Travel: 1/8" (3.2)

Input Pressure: 100 psig max.

Air Flow: 3.5 scfm @ 150 psig; 6.0 scfm @ 100 psig

Force to Actuate: 1.75 lb. manual

Ports: 1/8" NPT - exhaust may be muffled or piped away but NOT restricted

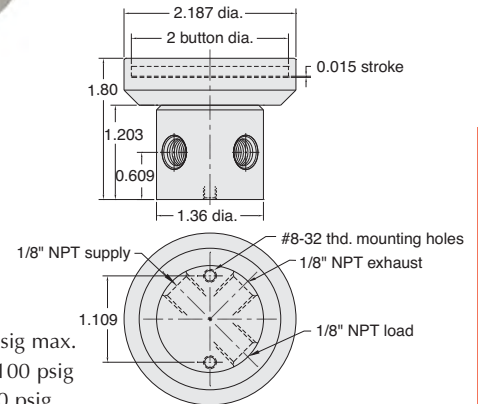
Mounting: Mounting holes provided; optional Bracket Kit #12959 provides additional mounting versatility; valve available with anodized color buttons

| Part No.                | Description                            |
|-------------------------|--|
| <a href="#">PB-1-RD</a> | 3-Way Poppet Poppet Valve, Red         |
| <a href="#">PB-1-GN</a> | 3-Way Poppet Poppet Valve, Green       |
| <a href="#">PB-1-BK</a> | 3-Way Poppet Poppet Valve, Black       |
| <a href="#">12959</a>   | 90° Mounting Bracket Kit (shown below) |

## Low Force 3-Way Palm Button Valves



3-way low force poppet valve; Normally-Closed; depressing button blocks the sensing port causing rapid valve opening



Medium: Air

Input Pressure: 100 psig max.

Air Flow: 22 scfm @ 100 psig

Bleed: 0.1 scfm @ 100 psig

Force to Actuate: 1 oz. manual

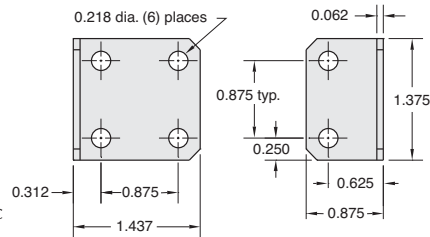
Mounting: Mounting holes provided; optional Bracket Kit #2010-50 provides additional mounting versatility; valve available with anodized color buttons

| Part No.                 | Description                         |
|--------------------------|-------------------------------------|
| <a href="#">PB-2-RD</a>  | Low Force 3-Way Poppet Valve, Red   |
| <a href="#">PB-2-GN</a>  | Low Force 3-Way Poppet Valve, Green |
| <a href="#">PB-2-BK</a>  | Low Force 3-Way Poppet Valve, Black |
| <a href="#">2010-050</a> | Mounting Bracket Kit (shown below)  |

## 90° Mounting Bracket



90° angle, heavy-duty versatile Mounting Bracket for Clippard palm button valves



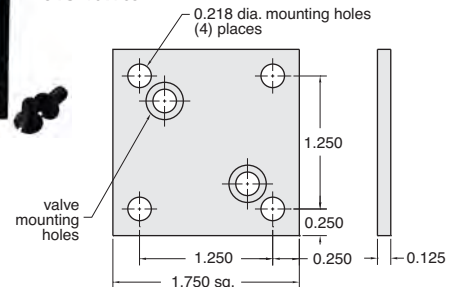
Mounting: Six 7/32" dia. holes on 1/8" centers for attaching valves to bracket  
Construction: Stamped from 1/8" thick steel, zinc plated

| Part No.              | Description              |
|-----------------------|--------------------------|
| <a href="#">12959</a> | 90° Mounting Bracket Kit |

## Mounting Bracket



Bracket to mount 2010, 2011-1, 2012 and 2013 valves



Black anodized finish, two mounting screws furnished

| Part No.                 | Description          |
|--------------------------|----------------------|
| <a href="#">2010-050</a> | Mounting Bracket Kit |





# 4-WAY STEM VALVES

## 4-Way Stem Valves

4-way valves can supply and exhaust two different outlets, and are commonly used with double-acting cylinders. When the stem is in one position air flows from the inlet to one of the outlets. The second outlet is open to the exhaust port. Moving the stem to the opposite position opens the inlet to the second

outlet while exhausting the first outlet. 4-way stem valves are spool valves that may either be spring return or double acting.

**Medium:** Air

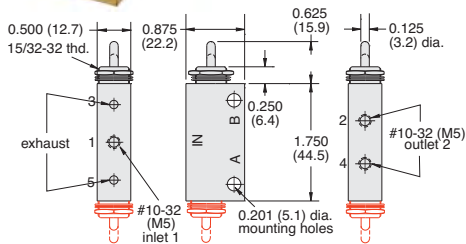
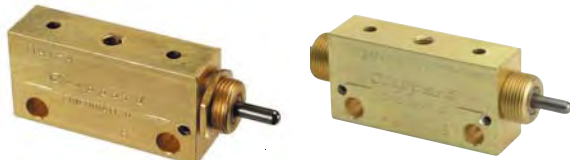
**Stem Travel:** 1/8" (3.2)

**Materials:** Brass body, Buna-N seals, stainless steel stem and spring

**Input Pressure:** 150 psig/10 bar max.

**Mounting:** 15/32-32 thread. Nut and lockwasher furnished.

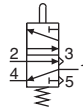
### Miniature 4-Way Spool Valves



**Air Flow:** 5.0 scfm @ 50 psig; 8.5 scfm @ 100 psig;  
240 l/min @ 6 bar

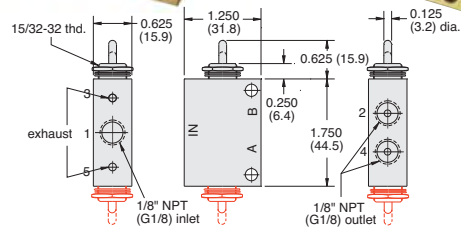
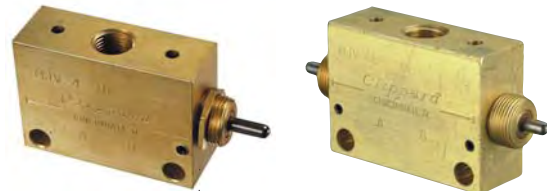
**Force For Full Stem Travel:** MAV-4 - 38 oz. nominal;  
MAV-4D - 12 oz. nominal

**Mounting:** Also two 0.201" dia. mounting holes in valve body.



| Part No.                  | Description                            |
|---------------------------|--|
| <a href="#">MAV-4</a>     | Spool Valve with Spring Return, #10-32 |
| <a href="#">MAV-4-M5</a>  | Spool Valve with Spring Return, M5     |
| <a href="#">MAV-4D</a>    | 2 Position Spool Valve, #10-32         |
| <a href="#">MAV-4D-M5</a> | 2 Position Spool Valve, M5             |

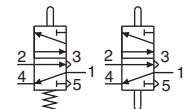
### J-Series 4-Way Spool Valves



**Air Flow:** 8.0 scfm @ 50 psig; 14.0 scfm @ 100 psig;  
390 l/min @ 6 bar

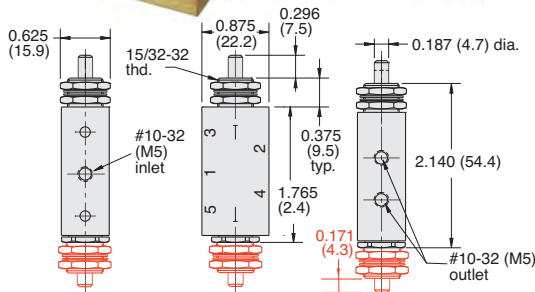
**Force For Full Stem Travel:** MJV-4 - 38 oz. nominal;  
MJV-4D - 12 oz. nominal

**Mounting:** Also two 0.201" dia. mounting holes in valve body.



| Part No.                  | Description                              |
|---------------------------|--|
| <a href="#">MJV-4</a>     | Spool Valve with Spring Return, 1/8" NPT |
| <a href="#">MJV-4-MG</a>  | Spool Valve with Spring Return, G1/8     |
| <a href="#">MJV-4D</a>    | 2 Position Spool Valve, 1/8" NPT         |
| <a href="#">MJV-4D-MG</a> | 2 Position Spool Valve, G1/8             |

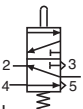
### FV-Series 4-Way Spool Valves



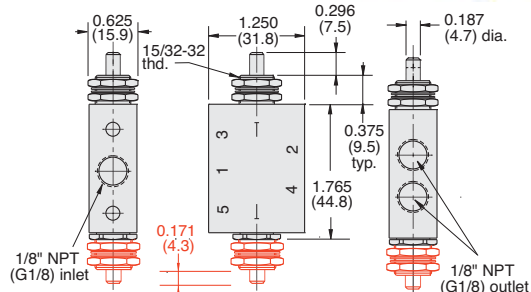
**Air Flow:** 6.0 scfm @ 50 psig; 10 scfm @ 100 psig;  
240 l/min @ 6 bar

**Force For Full Stem Travel:** FV-4 & FV-4-M5 - 4 1/2 lb. nominal;  
FV-4D & FV-4D-M5 - 1 1/2 lb. nominal

| Part No.                 | Description                                  |
|--------------------------|--|
| <a href="#">FV-4</a>     | Plunger Actuated Spring Return Valve, #10-32 |
| <a href="#">FV-4-M5</a>  | Plunger Actuated Spring Return Valve, M5     |
| <a href="#">FV-4D</a>    | 2 Position Double Plunger Valve, #10-32      |
| <a href="#">FV-4D-M5</a> | 2 Position Double Plunger Valve, M5          |



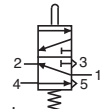
### FV-Series 4-Way Spool Valves



**Air Flow:** 6.5 scfm @ 50 psig; 10 scfm @ 100 psig;  
250 l/min @ 6 bar

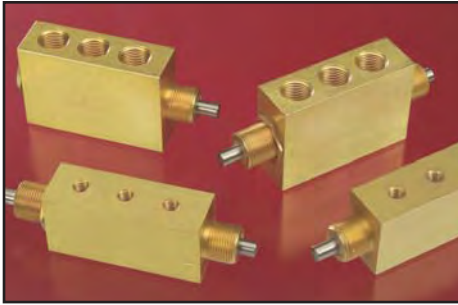
**Force For Full Stem Travel:** FV-4P & FV-4-MG - 4 1/2 lb. nominal;  
FV-4D & FV-4D-MG - 1 1/2 lb. nominal

| Part No.                 | Description                                    |
|--------------------------|--|
| <a href="#">FV-4P</a>    | Plunger Actuated Spring Return Valve, 1/8" NPT |
| <a href="#">FV-4-MG</a>  | Plunger Actuated Spring Return Valve, G1/8     |
| <a href="#">FV-4DP</a>   | 2 Position Double Plunger Valve, 1/8" NPT      |
| <a href="#">FV-4D-MG</a> | 2 Position Double Plunger Valve, G1/8          |





# 4-WAY FULLY-PORTED STEM VALVES

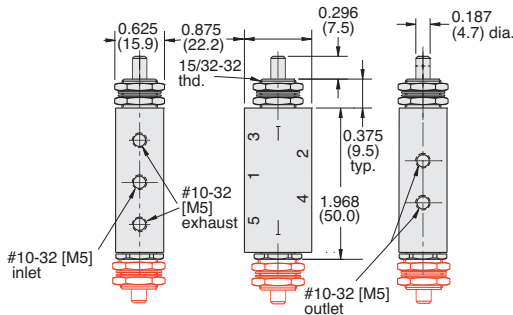
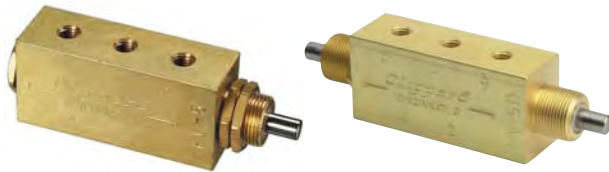


## 4-Way Fully-Ported Stem Valves

4-way fully-ported valves have two inlets, two

outlets and one exhaust port. When the stem is in one position air flows from one inlet to its outlet while the other inlet is blocked. Moving the stem to the opposite position reverses this action. This may be defined as two 3-way valves, one Normally-Closed and one Normally-Open operating simultaneously. 4-way fully-ported stem valves may either be spring return or double acting. A double acting stem must be moved from one position to the other, a spring return stem will move to the opposite position when released.

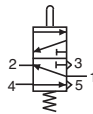
## 4-Way Fully-Ported Valves



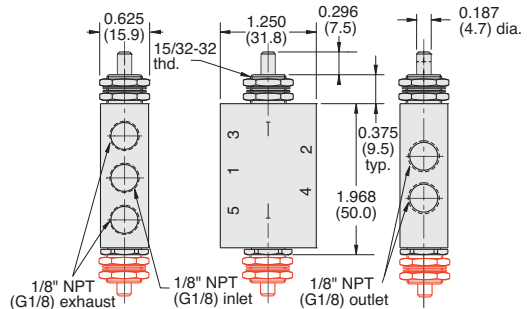
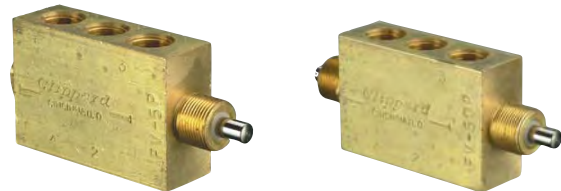
**Medium:** Air or Oil

**Air Flow:** 6.0 scfm @ 50 psig; 10 scfm @ 100 psig; 240 l/min @ 6 bar

**Force For Full Stem Travel:** FV-5 & FV-5-M5 - 4 1/2 lb. nominal; FV-5D & FV-5D-M5 - 1 1/2 lb. nominal



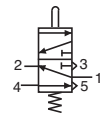
## 4-Way Fully-Ported Valves



**Medium:** Air or Oil

**Air Flow:** 6.5 scfm @ 50 psig; 10.5 scfm @ 100 psig; 250 l/min @ 6 bar

**Force For Full Stem Travel:** FV-5P & FV-5-MG - 4 1/2 lb. nominal; FV-5DP & FV-5D-MG - 1 1/2 lb. nominal

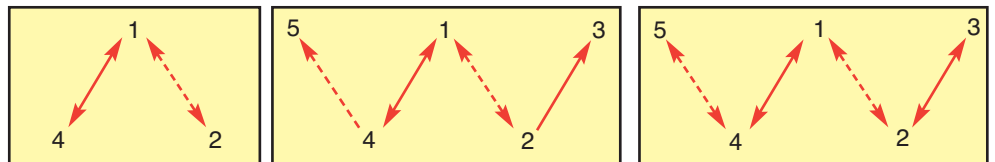


| Part No.                 | Description                                  |
|--------------------------|--|
| <a href="#">FV-5</a>     | Plunger Actuated Spring Return Valve, #10-32 |
| <a href="#">FV-5-M5</a>  | Plunger Actuated Spring Return Valve, M5     |
| <a href="#">FV-5D</a>    | 2 Position Double Plunger Valve, #10-32      |
| <a href="#">FV-5D-M5</a> | 2 Position Double Plunger Valve, M5          |

| Part No.                 | Description                                    |
|--------------------------|--|
| <a href="#">FV-5P</a>    | Plunger Actuated Spring Return Valve, 1/8" NPT |
| <a href="#">FV-5-MG</a>  | Plunger Actuated Spring Return Valve, G1/8     |
| <a href="#">FV-5DP</a>   | 2 Position Double Plunger Valve, 1/8" NPT      |
| <a href="#">FV-5D-MG</a> | 2 Position Double Plunger Valve, G1/8          |

## Flow Paths for "FTV & FV" Series

Solid lines indicate flow paths with toggle or stem in one direction. Dotted lines indicate flow paths when the toggle or stem are shifted.





# 4-WAY TOGGLE VALVES

## 4-Way Toggle Valves

4-way valves can supply and exhaust two different outlets, and are commonly used with double-acting cylinders. When the toggle is in one position air flows from the inlet to one of the outlets. The second outlet is open to the exhaust port which is vented to atmosphere. Moving the toggle to the opposite position opens the inlet to the second outlet

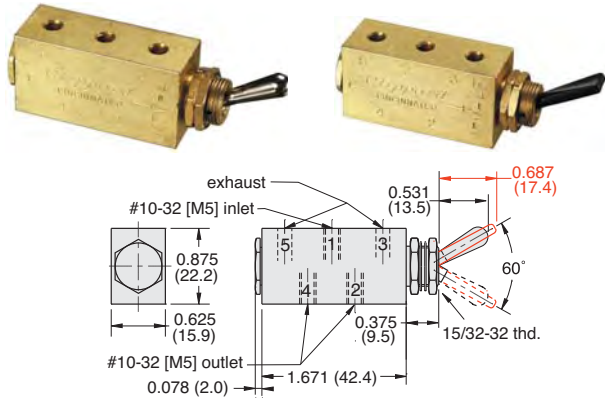
while exhausting the first outlet. 4-way toggle valves are spool valves that by movement of the toggle may either be 2-position or have a momentary actuation.

**Medium:** Air **Stem Travel:** 1/8" (3.2)

**Materials:** Brass body, Buna-N seals, stainless steel stem and spring

**Mounting:** 15/32-32 thread. Nuts and lockwashers furnished.

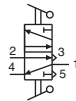
### 2 Position Spool Valves



**Input Pressure:** 150 psig/10 bar max.

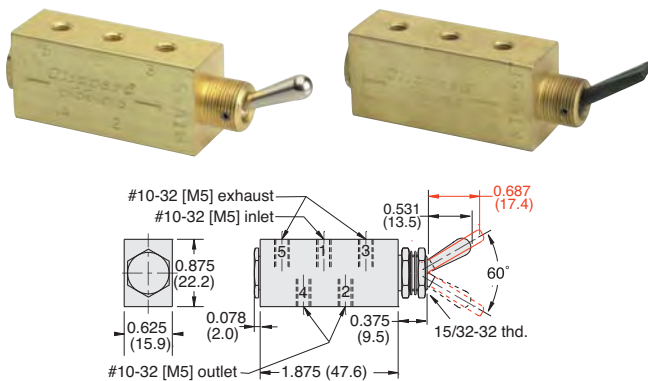
**Air Flow:** 6 scfm @ 50 psig; 10 scfm @ 100 psig;  
240 l/min @ 6 bar

**Force For Full Stem Travel:** 12 oz. nominal



| Part No.                  | Description                                     |
|---------------------------|---|
| <a href="#">MTV-4</a>     | 2 Position Spool Valve, NP Steel Toggle, #10-32 |
| <a href="#">MTV-4-M5</a>  | 2 Position Spool Valve, NP Steel Toggle, M5     |
| <a href="#">MTV-4F</a>    | 2 Position Spool Valve, Plastic Toggle, #10-32  |
| <a href="#">MTV-4F-M5</a> | 2 Position Spool Valve, Plastic Toggle, M5      |

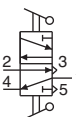
### 2 Position Fully-Ported Spool Valves



**Input Pressure:** 150 psig/10 bar max.

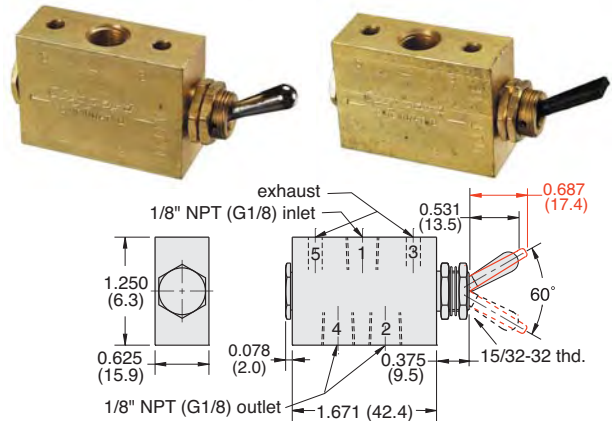
**Air Flow:** 6 scfm @ 50 psig; 10 scfm @ 100 psig;  
240 l/min @ 6 bar

**Force For Full Stem Travel:** 16 oz. nominal



| Part No.                  | Description                                     |
|---------------------------|---|
| <a href="#">MTV-5</a>     | 2 Position Spool Valve, NP Steel Toggle, #10-32 |
| <a href="#">MTV-5-M5</a>  | 2 Position Spool Valve, NP Steel Toggle, M5     |
| <a href="#">MTV-5F</a>    | 2 Position Spool Valve, Plastic Toggle, #10-32  |
| <a href="#">MTV-5F-M5</a> | 2 Position Spool Valve, Plastic Toggle, M5      |

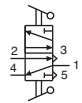
### J-Series 2 Position Spool Valves



**Input Pressure:** 150 psig/10 bar max.

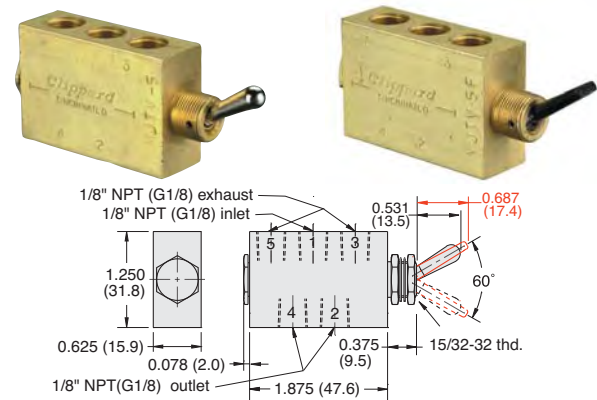
**Air Flow:** 6.5 scfm @ 50 psig; 10.5 scfm @ 100 psig;  
250 l/min @ 6 bar

**Force For Full Stem Travel:** 12 oz. nominal



| Part No.                   | Description                                       |
|----------------------------|---|
| <a href="#">MITV-4</a>     | 2 Position Spool Valve, NP Steel Toggle, 1/8" NPT |
| <a href="#">MITV-4-MG</a>  | 2 Position Spool Valve, NP Steel Toggle, G1/8     |
| <a href="#">MITV-4F</a>    | 2 Position Spool Valve, Plastic Toggle, 1/8" NPT  |
| <a href="#">MITV-4F-MG</a> | 2 Position Spool Valve, Plastic Toggle, G1/8      |

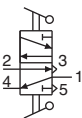
### J-Series 2 Position Fully-Ported Spool



**Input Pressure:** 150 psig/10 bar max.

**Air Flow:** 6.5 scfm @ 50 psig; 10.5 scfm @ 100 psig;  
250 l/min @ 6 bar

**Force For Full Stem Travel:** 16 oz. nominal



| Part No.                   | Description                                       |
|----------------------------|---|
| <a href="#">MITV-5</a>     | 2 Position Spool Valve, NP Steel Toggle, 1/8" NPT |
| <a href="#">MITV-5-MG</a>  | 2 Position Spool Valve, NP Steel Toggle, G1/8     |
| <a href="#">MITV-5F</a>    | 2 Position Spool Valve, Plastic Toggle, 1/8" NPT  |
| <a href="#">MITV-5F-MG</a> | 2 Position Spool Valve, Plastic Toggle, G1/8      |

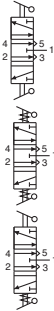
# 4-WAY TOGGLE VALVES



## 3 Position Toggle Valves

By choosing valves with different toggle position options the user can customize the application to best suit the needs. For example, the DM model can be used on the momentary side as a "jog" or "manual" control, and with the detented side for "automatic" or "run" mode.

Valves are made of solid brass, bright dipped finish to resist corrosion; stems and springs are of stainless steel, toggle of black acetyl plastic or ENP brass, and seals of Buna-N rubber.



| Model Number |          |           |   |           |
|--------------|----------|-----------|---|-----------|
| TV-4D        | #10-32   | Detented  | SPRING CENTERED supply blocked both sides exhausted | Detented  |
| TV-4DP       | 1/8" NPT |           |   | Detented  |
| TV-4M        | #10-32   | Momentary |   | Momentary |
| TV-4MP       | 1/8" NPT |           |   | Momentary |
| TV-4DM       | #10-32   | Detented  |   | Momentary |
| TV-4DMP      | 1/8" NPT |           |   | Momentary |

**Medium:** Air

**Materials:** Brass body, Buna-N seals, stainless steel stem and spring

**Input Pressure:** 150 psig/10 bar max.

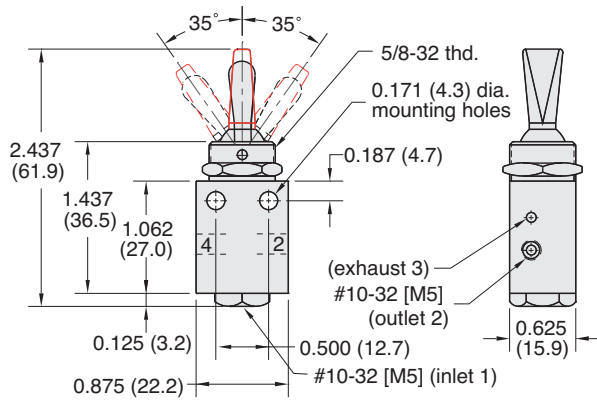
**Air Flow:** 4.5 scfm @ 50 psig; 7.5 scfm @ 100 psig;  
180 l/min @ 6 bar

**Force For Full Stem Travel:** 8 oz. nominal

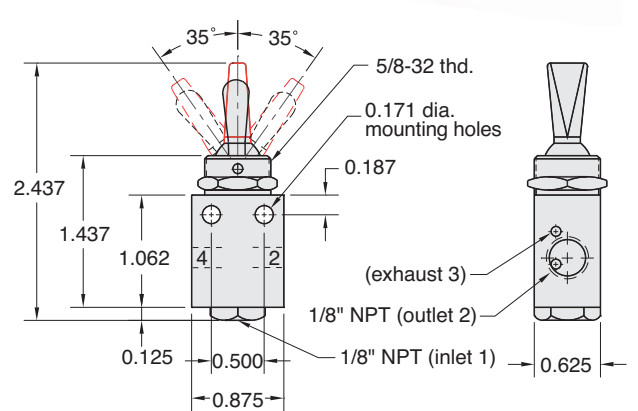
**Toggle:** Plastic or ENP Brass

**Mounting:** 5/8-32 thread. Nut and lockwashers furnished.

## 3 Position Toggle Valves, #10-32



## 3 Position Toggle Valves, 1/8" NPT



| Part No.                 | Description                                 |
|--------------------------|---|
| <a href="#">TV-4D</a>    | Plastic Toggle Valve, Detented/Detented     |
| <a href="#">TV-4M</a>    | Plastic Toggle Valve, Momentary/Momentary   |
| <a href="#">TV-4DM</a>   | Plastic Toggle Valve, Detented/Momentary    |
| <a href="#">TV-4D-H</a>  | ENP Brass Toggle Valve, Detented/Detented   |
| <a href="#">TV-4M-H</a>  | ENP Brass Toggle Valve, Momentary/Momentary |
| <a href="#">TV-4DM-H</a> | ENP Brass Toggle Valve, Detented/Momentary  |

| Part No.                  | Description                                 |
|---------------------------|---|
| <a href="#">TV-4DP</a>    | Plastic Toggle Valve, Detented/Detented     |
| <a href="#">TV-4MP</a>    | Plastic Toggle Valve, Momentary/Momentary   |
| <a href="#">TV-4DMP</a>   | Plastic Toggle Valve, Detented/Momentary    |
| <a href="#">TV-4DP-H</a>  | ENP Brass Toggle Valve, Detented/Detented   |
| <a href="#">TV-4MP-H</a>  | ENP Brass Toggle Valve, Momentary/Momentary |
| <a href="#">TV-4DMP-H</a> | ENP Brass Toggle Valve, Detented/Momentary  |



# FILL & BLEED TOGGLE VALVES

## Fill and Bleed Applications

The FBV-3 may be used to pressurize or "fill" a chamber or bladder by depressing the toggle in one direction and then de-pressurize or "bleed" that same chamber or bladder by depressing the toggle in the other direction. Toggling back and forth between the inlet and exhaust provides a fine adjustment of the required pressure in the chamber or bladder.

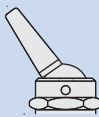
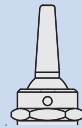
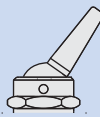
**Medium:** Air

**Materials:** Brass body, Buna-N seals, stainless steel stem and spring

**Input Pressure:** 120 psig max.

### Air Flow:

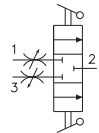
| Adjustable          | Full-Flow (-F)      |
|---------------------|---------------------|
| 3.0 scfm @ 50 psig  | 4.5 scfm @ 50 psig  |
| 5.0 scfm @ 100 psig | 7.5 scfm @ 100 psig |

| Model Number                   |                    |  |  |  |
|--------------------------------|--------------------|--|---|---|
| FBV-3D & FBV-3DF<br>FBV-3DP    | #10-32<br>1/8" NPT | Detented   | SPRING<br>CENTERED<br>all ports<br>blocked  | Detented  |
| FBV-3M & FBV-3MF<br>FBV-3MP    | #10-32<br>1/8" NPT | Momentary  |   | Momentary   |
| FBV-3DM & FBV-3DMF<br>FBV-3DMP | #10-32<br>1/8" NPT | Detented   |   | Momentary   |

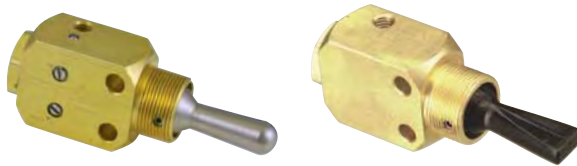
**Force For Full Stem Travel:** 8 oz. nominal

**Toggle:** Plastic or ENP Brass

**Mounting:** 5/8-32 thread. Nut and lockwashers furnished.  
Two 0.171 mounting holes in body or may be mounted directly on a cylinder

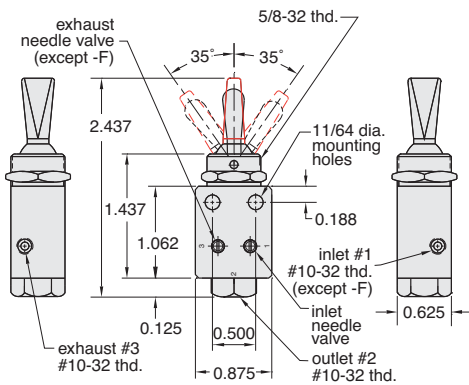


## 3 Position Fill & Bleed Valves, #10-32

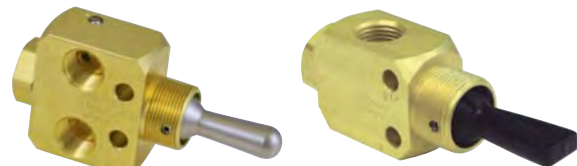


**Adjustable**  
(NP Brass Toggle shown)

**Full-Flow**  
(Plastic Toggle shown)

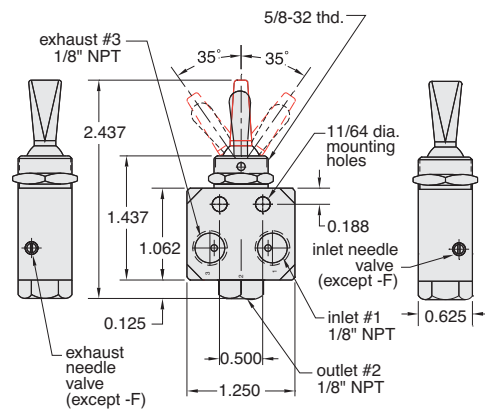


## 3 Position Fill & Bleed Valves, 1/8" NPT



**Adjustable**  
(NP Brass Toggle shown)

**Full-Flow**  
(Plastic Toggle shown)



| Part No.                   | Description  |
|----------------------------|--|
| <a href="#">FBV-3D</a>     | Adj. Valve, Detented/Detented, Plastic Toggle        |
| <a href="#">FBV-3DF</a>    | Full-Flow Valve, Detented/Detented, Plastic Toggle   |
| <a href="#">FBV-3M</a>     | Adj. Valve, Momentary/Momentary, Plastic Toggle      |
| <a href="#">FBV-3MF</a>    | Full-Flow Valve, Momentary/Momentary, Plastic Toggle |
| <a href="#">FBV-3DM</a>    | Adj. Valve, Detented/Momentary, Plastic Toggle       |
| <a href="#">FBV-3DMF</a>   | Full-Flow Valve, Detented/Momentary, Plastic Toggle  |
| <a href="#">FBV-3D-H</a>   | Adj. Valve, Detented/Detented, ENP Brass Toggle      |
| <a href="#">FBV-3DF-H</a>  | Full-Flow, Detented/Detented, ENP Brass Toggle       |
| <a href="#">FBV-3M-H</a>   | Adj. Valve, Momentary/Momentary, ENP Brass Toggle    |
| <a href="#">FBV-3MF-H</a>  | Full-Flow, Momentary/Momentary, ENP Brass Toggle     |
| <a href="#">FBV-3DM-H</a>  | Adj. Valve, Detented/Momentary, ENP Brass Toggle     |
| <a href="#">FBV-3DMF-H</a> | Full-Flow, Detented/Momentary, ENP Brass Toggle      |

| Part No.                    | Description   |
|-----------------------------|---|
| <a href="#">FBV-3DP</a>     | Adjustable Valve, Detented/Detented, Plastic Toggle     |
| <a href="#">FBV-3DPF</a>    | Full-Flow Valve, Detented/Detented, Plastic Toggle      |
| <a href="#">FBV-3MP</a>     | Adjustable Valve, Momentary/Momentary, Plastic Toggle   |
| <a href="#">FBV-3MPF</a>    | Full-Flow Valve, Momentary/Momentary, Plastic Toggle    |
| <a href="#">FBV-3DMP</a>    | Adjustable Valve, Detented/Momentary, Plastic Toggle    |
| <a href="#">FBV-3DMPF</a>   | Full-Flow Valve, Detented/Momentary, Plastic Toggle     |
| <a href="#">FBV-3DP-H</a>   | Adjustable Valve, Detented/Detented, ENP Brass Toggle   |
| <a href="#">FBV-3DPF-H</a>  | Full-Flow Valve, Detented/Detented, ENP Brass Toggle    |
| <a href="#">FBV-3MP-H</a>   | Adjustable Valve, Momentary/Momentary, ENP Brass Toggle |
| <a href="#">FBV-3MPF-H</a>  | Full-Flow Valve, Momentary/Momentary, ENP Brass Toggle  |
| <a href="#">FBV-3DM-H</a>   | Adjustable Valve, Detented/Momentary, ENP Brass Toggle  |
| <a href="#">FBV-3DMPF-H</a> | Full-Flow Valve, Detented/Momentary, ENP Brass Toggle   |



# MAXIMATIC® 4-WAY AIR PILOT VALVES



## 2-Position Spring Return & Air Pilot Valves



MMA-42QAS



MMA-44ZAA

Maximatic® 4-way air piloted valves are either double pilot or single pilot, spring return in #10-32 thread to 1/2" NPT port sizes. These air piloted valves have 1/8" NPT pilot ports.

**Type:** Spool

**Medium:** Air (40 micron filtration) or Inert Gas

**Operating Range:** Single Air Pilot: 20 to 125 psig, Double Air Pilot: 0 to 125 psig. Refer to Minimum Pilot Pressure Chart below.

**Pilot Pressure:** See chart      **Maximum Pressure:** 125 psig

**Number of Ports:** 5      **Mounting:** Body Ported, Manifold

**Materials:** Aluminum, Stainless Steel, Thermoplastic

**Seals:** Buna-N

### Minimum Pilot Pressure

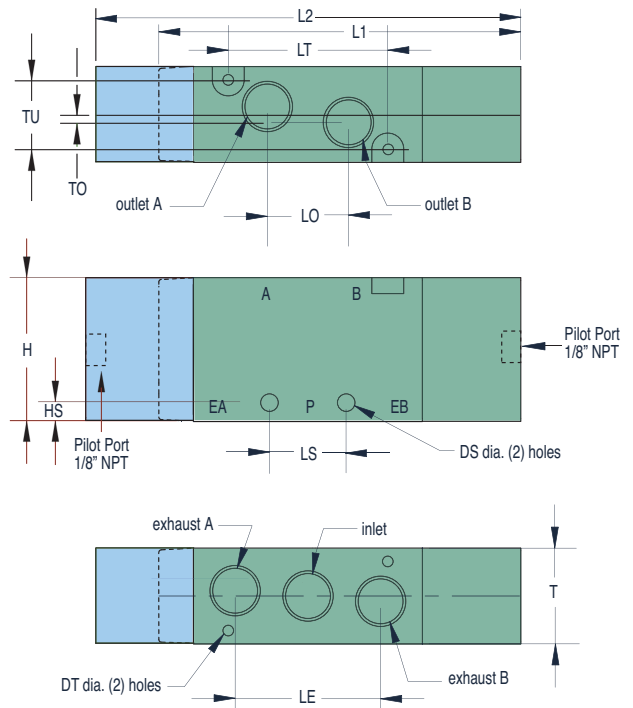
|                           | Single Pilot | Double Pilot | Three Position |
|---------------------------|--------------|--------------|----------------|
| Operating Pressure (psig) | 20 80        | 20 80        | 20 80          |
| Pilot Pressure (psig)     | 20 35        | 5 8          | 20* 20*        |

\* 30 on MMA-41 Series

| Dim. | MMA-41      | MMA-42      | MMA-43       | MMA-44       |
|------|-------------|-------------|--------------|--------------|
| DS   | 0.13 (3.3)  | 0.17 (4.3)  | 0.17 (4.3)   | 0.21 (5.3)   |
| DT   | 0.13 (3.3)  | 0.13 (3.3)  | 0.17 (4.3)   | 0.17 (4.3)   |
| H    | 1.07 (27.2) | 1.38 (35.1) | 1.58 (40.1)  | 1.97 (50.0)  |
| HS   | 0.16 (4.1)  | 0.28 (7.1)  | 0.26 (6.6)   | 0.29 (7.4)   |
| L1   | 2.71 (68.8) | 3.06 (77.7) | 3.76 (95.5)  | 4.87 (123.7) |
| L2   | 3.16 (80.3) | 3.62 (91.9) | 4.37 (111.0) | 5.43 (137.9) |
| LE   | 1.09 (27.7) | 1.42 (36.1) | 1.77 (45.0)  | 2.48 (63.0)  |
| LO   | 0.63 (16.0) | 0.74 (18.8) | 0.96 (24.4)  | 1.42 (36.1)  |
| LS   | 0.63 (16.0) | 0.98 (24.9) | 0.95 (24.1)  | 1.11 (28.2)  |
| LT   | 1.18 (30.0) | 1.40 (35.6) | 1.97 (50.0)  | 2.82 (71.6)  |
| T    | 0.71 (18.0) | 0.86 (21.8) | 1.06 (26.9)  | 1.34 (34.0)  |
| TO   | 0.11 (2.8)  | 0.13 (3.3)  | 0.16 (4.1)   | 0.19 (4.8)   |
| TU   | 0.50 (12.7) | 0.65 (16.5) | 0.80 (20.3)  | 1.07 (27.2)  |

| Port     | Cv   | Flow Rate |            |
|----------|------|-----------|------------|
|          |      | @ 50 psig | @ 100 psig |
| #10-32   | 0.58 | 16 scfm   | 27 scfm    |
| 1/8" NPT | 0.67 | 18 scfm   | 31 scfm    |
| 1/4" NPT | 0.89 | 26 scfm   | 49 scfm    |
| 3/8" NPT | 1.68 | 51 scfm   | 93 scfm    |
| 1/2" NPT | 2.79 | 91 scfm   | 171 scfm   |

Conforms to ISO 19973-2 test standards



| Spring Return Valves      |  | Double Air Pilot Valves   |  | Inlet    | Outlet   | Exhaust  | Cv/scfm* |
|---------------------------|--|---------------------------|--|----------|----------|----------|----------|
| <a href="#">MMA-41NAS</a> |  | <a href="#">MMA-41NAA</a> |  | #10-32   | #10-32   | #10-32   | 0.58/27  |
| <a href="#">MMA-41PAS</a> |  | <a href="#">MMA-41PAA</a> |  | 1/8" NPT | 1/8" NPT | 1/8" NPT | 0.67/31  |
| <a href="#">MMA-42QAS</a> |  | <a href="#">MMA-42QAA</a> |  | 1/4" NPT | 1/4" NPT | 1/4" NPT | 0.89/49  |
| <a href="#">MMA-43WAS</a> |  | <a href="#">MMA-43WAA</a> |  | 3/8" NPT | 3/8" NPT | 1/4" NPT | 1.68/93  |
| <a href="#">MMA-44ZAS</a> |  | <a href="#">MMA-44ZAA</a> |  | 1/2" NPT | 1/2" NPT | 1/2" NPT | 2.79/171 |

\* scfm based on flow @ 100 psig





# MAXIMATIC® 4-WAY AIR PILOT VALVES

## 3-Position Spring Centered Double Air Pilot Valves Closed Center, Pressure Center & Exhaust Center



**MMA-44ZAAC**

Maximatic® 4-way 3-position double air pilot valves with closed center, pressure center or exhaust center spools are available in #10-32 thread to 1/2" NPT port sizes. These air piloted valves have 1/8" NPT external pilot ports.

**MAXIMUM**  
Value.   
Performance.

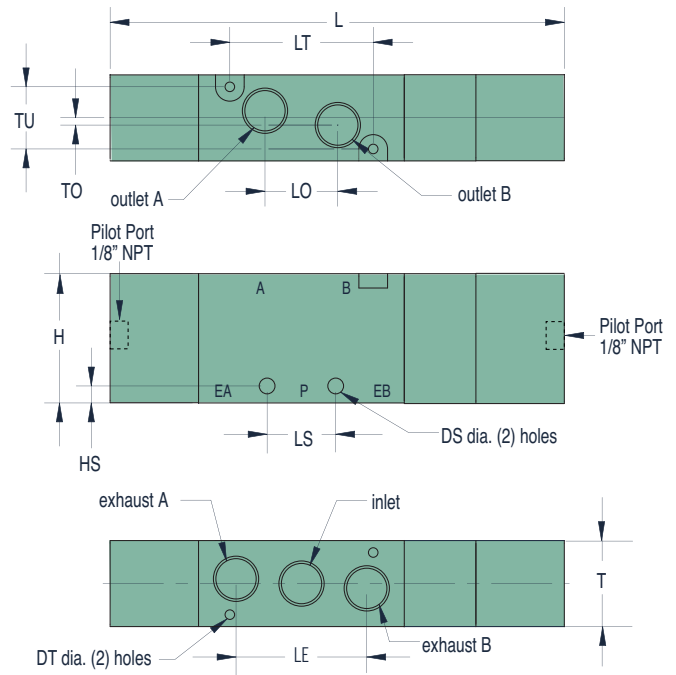
**Operating Range:** 0 to 125 psig


**Pilot Pressure:** See previous page

**Number of Ports:** 5

**Mounting:** Body Ported, Manifold Mount

| Dim. | MMA-41      | MMA-42       | MMA-43       | MMA-44       |
|------|-------------|--------------|--------------|--------------|
| DS   | 0.13 (3.3)  | 0.17 (4.3)   | 0.17 (4.3)   | 0.21 (5.3)   |
| DT   | 0.13 (3.3)  | 0.13 (3.3)   | 0.17 (4.3)   | 0.17 (4.3)   |
| H    | 1.07 (27.2) | 1.38 (35.1)  | 1.58 (40.1)  | 1.97 (50.0)  |
| HS   | 0.16 (4.1)  | 0.28 (7.1)   | 0.26 (6.6)   | 0.29 (7.4)   |
| L    | 3.78 (96.0) | 4.37 (111.0) | 5.13 (130.3) | 5.43 (137.9) |
| LE   | 1.09 (27.7) | 1.42 (36.1)  | 1.77 (45.0)  | 2.48 (63.0)  |
| LO   | 0.63 (16.0) | 0.74 (18.8)  | 0.96 (24.4)  | 1.42 (36.1)  |
| LS   | 0.56 (14.2) | 0.98 (24.9)  | 0.95 (24.1)  | 1.11 (28.2)  |
| LT   | 1.18 (30.0) | 1.40 (35.6)  | 1.97 (50.00) | 2.82 (71.6)  |
| T    | 0.71 (18.0) | 0.86 (21.8)  | 1.06 (26.9)  | 1.34 (34.0)  |
| TO   | 0.11 (2.8)  | 0.13 (3.3)   | 0.16 (4.1)   | 0.19 (4.8)   |
| TU   | 0.50 (12.7) | 0.65 (16.5)  | 0.80 (20.3)  | 1.07 (27.2)  |





**Exhaust Mufflers**  
For quiet system operation, see pages 164 and 312 for standard and speed control mufflers.



| Closed Center                     | Pressure Center                   | Exhaust Center                     | Inlet    | Outlet   | Exhaust  | Cv/scfm* |
|-----------------------------------|-----------------------------------|------------------------------------|----------|----------|----------|----------|
| <a href="#"><u>MMA-41NAAC</u></a> | <a href="#"><u>MMA-41NAAP</u></a> | <a href="#"><u>MMA-41NAAE</u></a>  | #10-32   | #10-32   | #10-32   | 0.50/23  |
| <a href="#"><u>MMA-41PAAC</u></a> | <a href="#"><u>MMA-41PAAP</u></a> | <a href="#"><u>MMA-41PAAE</u></a>  | 1/8" NPT | 1/8" NPT | 1/8" NPT | 0.50/23  |
| <a href="#"><u>MMA-42QAAC</u></a> | <a href="#"><u>MMA-42QAAP</u></a> | <a href="#"><u>MMA-42QA AE</u></a> | 1/4" NPT | 1/4" NPT | 1/8" NPT | 0.89/49  |
| <a href="#"><u>MMA-43WAAC</u></a> | <a href="#"><u>MMA-43WAAP</u></a> | <a href="#"><u>MMA-43WA AE</u></a> | 3/8" NPT | 3/8" NPT | 1/4" NPT | 1.00/72  |
| <a href="#"><u>MMA-44ZAAC</u></a> | <a href="#"><u>MMA-44ZAAP</u></a> | <a href="#"><u>MMA-44ZA AE</u></a> | 1/2" NPT | 1/2" NPT | 1/2" NPT | 1.68/93  |

\* scfm based on flow @ 100 psig

# MANUALLY-OPERATED 4-WAY AIR VALVES



## Push/Pull Valves



Push/Pull spool valves 4-way configurations. The Detent version maintains spool position by friction, while the Momentary spring returns to the home position.

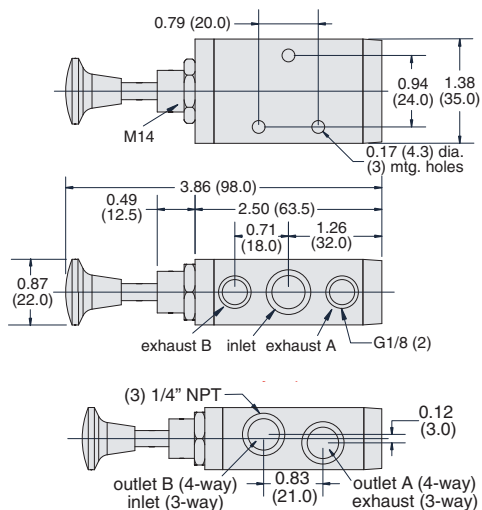
**Operating Pressure:** 0 to 115 psig      **Cv:** 0.89

**Ports:** 1/4" NPT, 1/8" NPT exhaust

**Operating Temperature:** 32 to 140°F (0 to 60°C)

**Mounting:** Panel or base mount

| Part No.        | Description                             |
|-----------------|---|
| <u>MMV-P4QD</u> | 4-Way, 5 Port Detented Push/Pull Valve  |
| <u>MMV-P4QM</u> | 4-Way, 5 Port Momentary Push/Pull Valve |



## Lever Valves

Lever valves are 4-way spool valves with 1/4" NPT ports. They have either a Detented or Momentary manual operation.

**Operating Pressure:** 0 to 150 psig

**Cv:** Detented: 1.0  
Momentary: 0.89

**Port Size:** 1/4" NPT

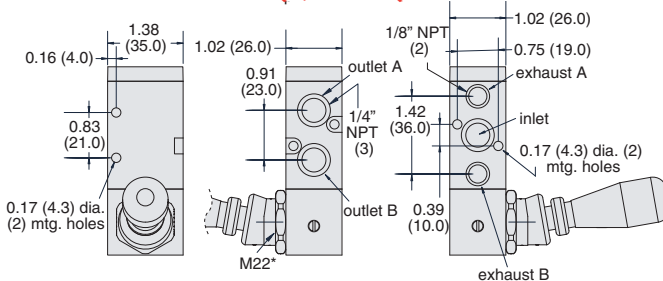
**Operating Temperature:** 32 to 140°F (0 to 60°C)

**Mounting:** Panel or base mount

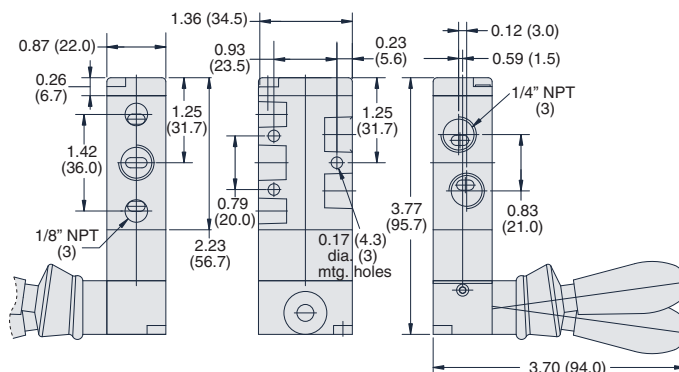


| Part No.          | Description                                     |
|-------------------|---|
| <u>MMV-L4QD</u>   | 4-Way, 2-Position Detented Valve                |
| <u>MMV-L4QM</u>   | 4-Way, 2-Position Momentary Valve               |
| <u>MMV-L4QD-C</u> | 4-Way, 3-Position Detented Valve, Closed Center |

MMV-L4QD/MMV-L4QM



MMV-L4QM-C



## Did you know...

Clippard Instrument Laboratory, Inc. began as a manufacturer of radio coils and test instruments in 1941.



# MANUALLY-OPERATED 4-WAY AIR VALVES

## Rotary Valves



Rotary Valves are 4-way valves with 1/4" NPT ports. They are manually-operated 3-position closed center valves.

**Operating Pressure:** 0 to 150 psig

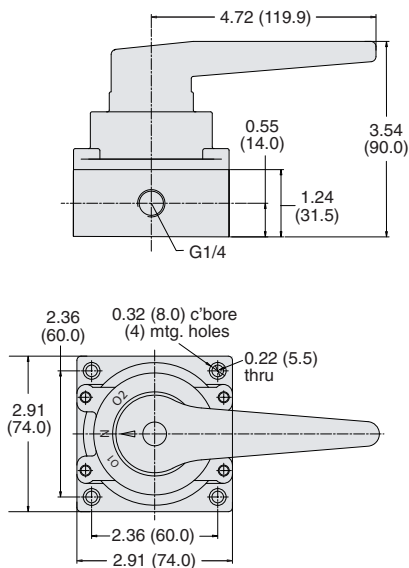
**Port Size:** 1/4" NPT

**Cv:** 1.68

**Mounting:** Base mount

**Operating Temperature:** 32 to 140°F (0 to 60°C)

| Part No.          | Description                                 |
|-------------------|---|
| <u>MMV-R4QN-C</u> | 4-Way, 3-Position Non-Detented Rotary Valve |
| <u>MMV-R4QD-C</u> | 4-Way, 3-Position Detented Rotary Valve     |



## Foot Pedal Valves



Foot Pedal Valves are 4-way valves with 1/4" NPT ports. Two versions are offered; either a low-profile flat pedal or standard pedal with or without guard.

**Operating Pressure:** 0 to 150 psig

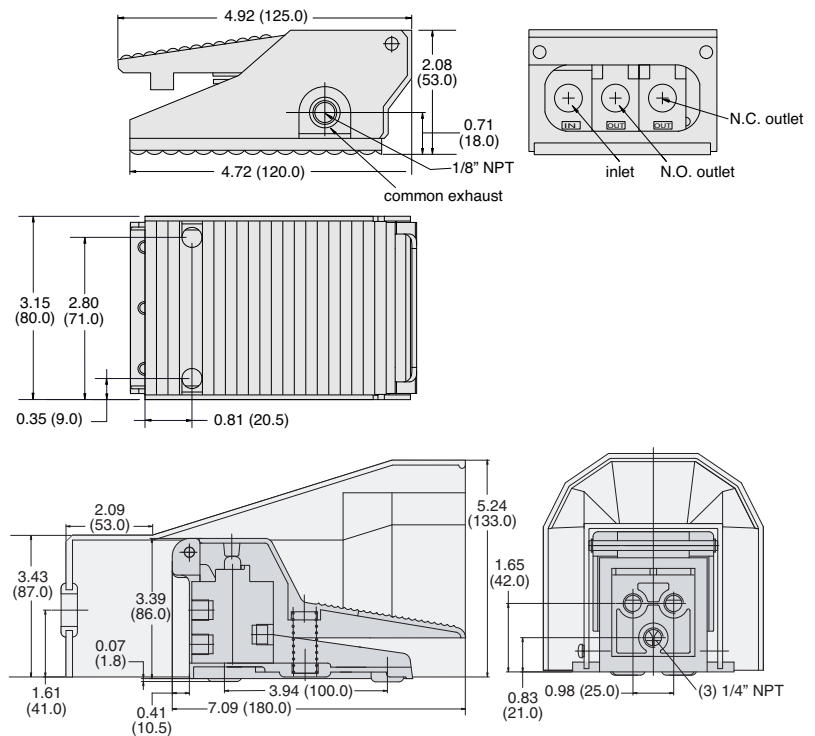
**Cv:** 1.4

**Ports:** 1/4" NPT

**Mounting:** Base mount

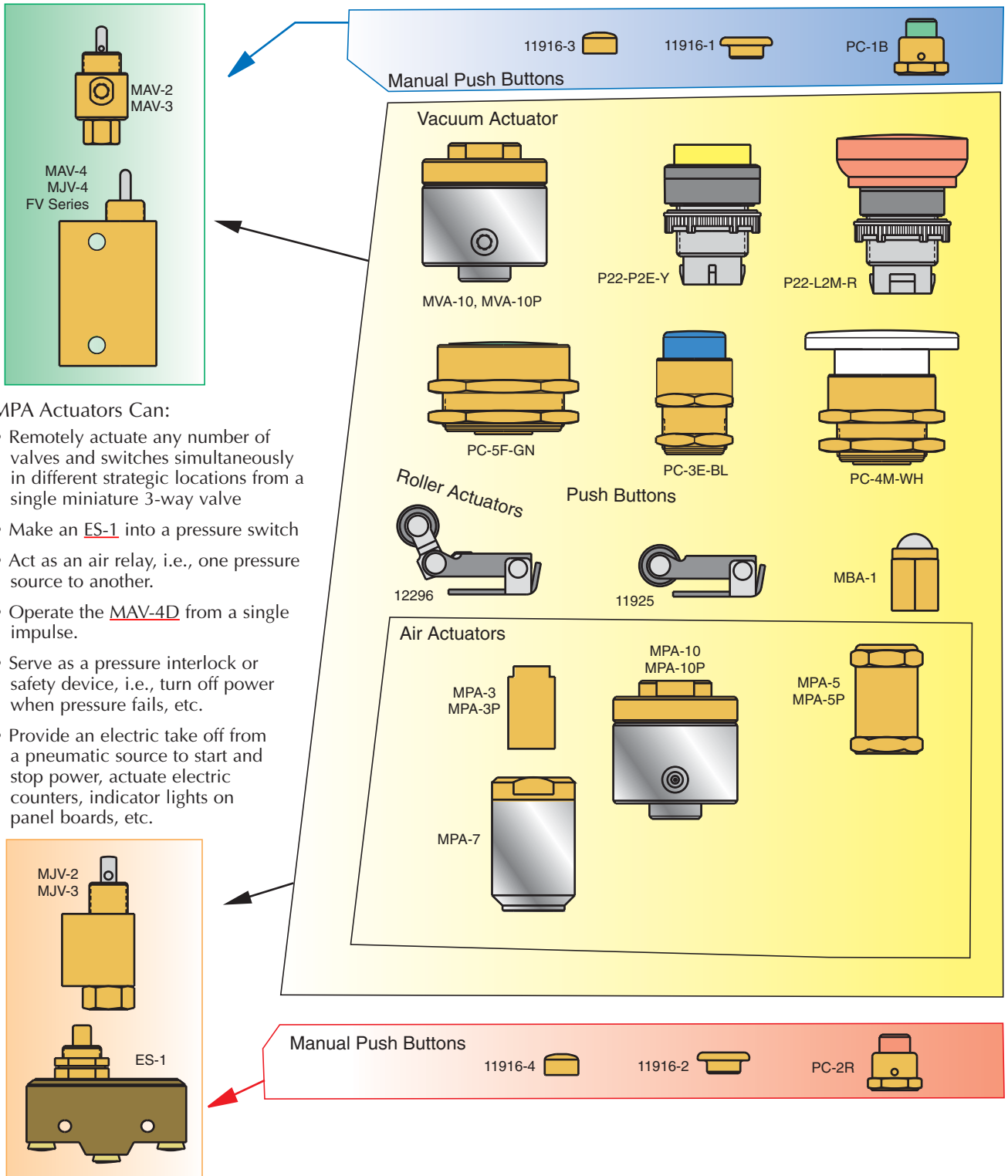
**Operating Temperature:** 32 to 140°F (0 to 60°C)

| Part No.          | Description                         |
|-------------------|-------------------------------------|
| <u>MMV-F4QM-F</u> | 4-Way Valve with Flat Pedal         |
| <u>MMV-F4QM</u>   | 4-Way Valve with Standard Pedal     |
| <u>MMV-F4QM-G</u> | 4-Way Valve with Plastic Foot Guard |



The following valve actuators are compatible with all Clippard MAV, MAVO, MJV, MJVO, ES-1, & FV series valves.

One of the most versatile items in the Clippard line. Permits wide circuit flexibility and allows many control functions to be accomplished pneumatically with less cost, hazards and complexity. Threads onto the tops of our Miniature 2-way, 3-way, and 4-way valves and ES-1 electric switch to provide fast pilot actuation from a pneumatic signal.



### MPA Actuators Can:

- Remotely actuate any number of valves and switches simultaneously in different strategic locations from a single miniature 3-way valve
- Make an ES-1 into a pressure switch
- Act as an air relay, i.e., one pressure source to another.
- Operate the MAV-4D from a single impulse.
- Serve as a pressure interlock or safety device, i.e., turn off power when pressure fails, etc.
- Provide an electric take off from a pneumatic source to start and stop power, actuate electric counters, indicator lights on panel boards, etc.



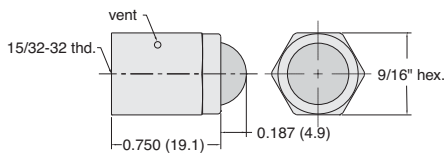


# VALVE ACTUATORS

## Ball Cam Actuator



Ball Cam Actuator permits the valves and electrical switch to be operated by mechanical movement depressing the ball from any direction



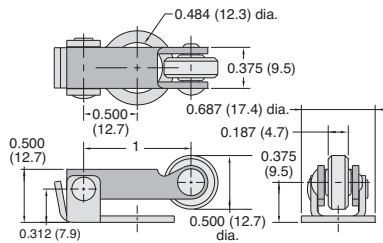
**Construction:** Body - brass  
Ball - stainless steel retained in housing

**Operation:** Will actuate valve while depressed from any (360°) direction

**Mounting:** #15/32-32 female to mount to Clippard miniature valves and electric switch

| Part No.     | Description       |
|--------------|-------------------|
| <u>MBA-1</u> | Ball Cam Actuator |

## Roller Cam Actuator



**Construction:** Stainless steel with nylon roller

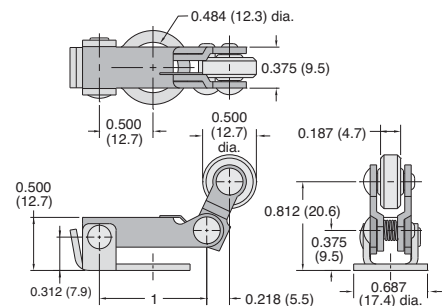
**Temperature Range:** 32 to 230°F

**Mounting:** 31/64" dia. mounting hole fits #15/32-32 threaded mounting section of valve bodies

**Operation:** Mounts to valve body, actuates valve when mechanically depressed; valve spring provides return

| Part No.     | Description                  |
|--------------|------------------------------|
| <u>11925</u> | Roller Cam Follower Actuator |

## Double-Pivoted Actuator



**Construction:** Stainless steel with nylon roller

**Mounting:** 31/64" dia. mounting hole fits #15/32-32 threaded mounting section of valve bodies

**Operation:** Mounts to valve body, actuates valve when depressed by activating cam or linear travel device in one direction only; no actuation on return travel

| Part No.     | Description  |
|--------------|--|
| <u>12296</u> | Roller, Double-Pivoted One-Way Cam Follower Actuator |

### Note for MBA-1, 11925 & 12296:

When mounting on a valve, a space should be provided between the body and the actuator according to the chart to the right:

| Valve Mtg. Thd.   | MBA-1  | 11925  | 12296  |
|-------------------|--------|--------|--------|
| 0.250 thd. length | 0.125" | 0.062" | 0.062" |
| 0.373 thd. length | 0.218" | 0.188" | 0.188" |

A mounting nut (supplied with valve), mounting bracket or washers should be used to obtain the required spacing.

## CUSTOMer solutions



A valve used in dental applications features ports located straight out of the back for ease-of-assembly in a tight space. It also incorporates a special toggle to match the customers' aesthetic requirements.

Use any combination of Clippard's electronic valves to actuate any Clippard control valve with an external supply.



In system subassemblies, manifold-mounted components are desirable for an integrator. In this design, Clippard utilizes the miniature regulator series and an air-piloted 2-way valve mounted on a manifold adjacent to our electronic valve.



For more information, visit [www.clippard.com/customsolutions](http://www.clippard.com/customsolutions)

| MINIMUM PRESSURE REQUIRED (psig)* |                 |         |         |          |          |               |                |                 |         |         |          |          |               |
|-----------------------------------|-----------------|---------|---------|----------|----------|---------------|----------------|-----------------|---------|---------|----------|----------|---------------|
| Clippard Valve                    | Pressure (psig) |         |         |          |          | Vacuum (" Hg) | Clippard Valve | Pressure (psig) |         |         |          |          | Vacuum (" Hg) |
|                                   | w/MPA3          | w/MPA-5 | w/MPA-7 | w/MPA-10 | w/MVA-10 |               |                | w/MPA3          | w/MPA-5 | w/MPA-7 | w/MPA-10 | w/MVA-10 |               |
| ES-1 Switch                       | 12              | 4       | 2       | n/a      | n/a      |               | FV-3           | 41              | 15      | 7.5     | 4.0      | 8.2      |               |
| MAV-2 Valve                       | 23              | 8       | 4       | 2.0      | 4.2      |               | FV-3P          | 41              | 15      | 7.5     | 4.0      | 8.2      |               |
| MAV-3 Valve                       | 23              | 8       | 4       | 2.0      | 4.2      |               | FV-4           | 41              | 15      | 7.5     | 4.0      | 8.2      |               |
| MAV-4 Valve                       | 36              | 11      | 5.5     | 3.5      | 7.2      |               | FV-4P          | 41              | 15      | 7.5     | 4.0      | 8.2      |               |
| MJV-4 Valve                       | 36              | 11      | 5.5     | 3.5      | 7.2      |               | FV-5           | 41              | 15      | 7.5     | 4.0      | 8.2      |               |
| MAV-4D Valve                      | 13              | 4       | 1.5     | 1.0      | 2.0      |               | FV-5P          | 41              | 15      | 7.5     | 4.0      | 8.2      |               |
| MJV-4D Valve                      | 13              | 4       | 1.5     | 1.0      | 2.0      |               | FV-3D          | 14              | 5       | 2.5     | 1.5      | 3.2      |               |
| MJV-2 Valve                       | 30              | 10      | 5       | 3.0      | 6.2      |               | FV-3DP         | 14              | 5       | 2.5     | 1.5      | 3.2      |               |
| MJV-3 Valve                       | 30              | 10      | 5       | 3.0      | 6.2      |               | FV-4D          | 14              | 5       | 2.5     | 1.5      | 3.2      |               |
| MAVO-2 Valve                      | 27              | 9       | 4.5     | 2.5      | 5.2      |               | FV-4DP         | 14              | 5       | 2.5     | 1.5      | 3.2      |               |
| MAVO-3 Valve                      | 27              | 9       | 4.5     | 2.5      | 5.2      |               | FV-5D          | 14              | 5       | 2.5     | 1.5      | 3.2      |               |
| MJVO-2 Valve                      | 30              | 10      | 5       | 3.0      | 6.2      |               | FV-5DP         | 14              | 5       | 2.5     | 1.5      | 3.2      |               |
| MJVO-3 Valve                      | 30              | 10      | 5       | 3.0      | 6.2      |               |                |                 |         |         |          |          |               |

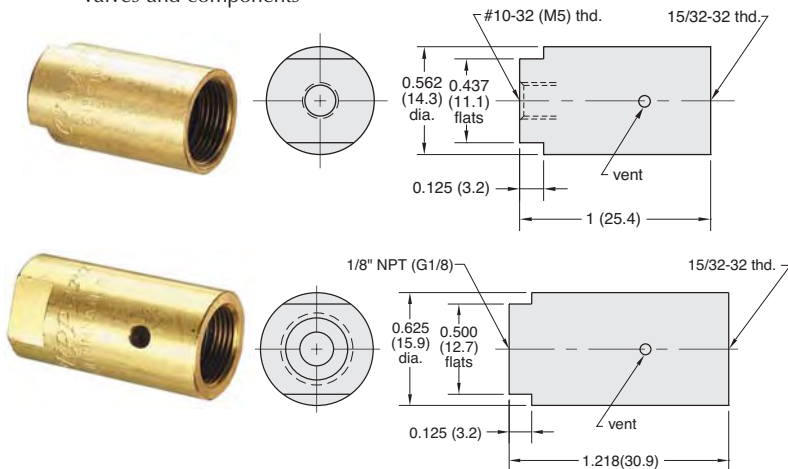
\*with 100 psig to valve inlet

## Single Acting Air Pilot Actuators

**Input Pressure:** 250 psig/17 bar max.

**Construction:** Body - brass; Springs - stainless steel; Seals - Buna-N rubber; Piston - Delrin®

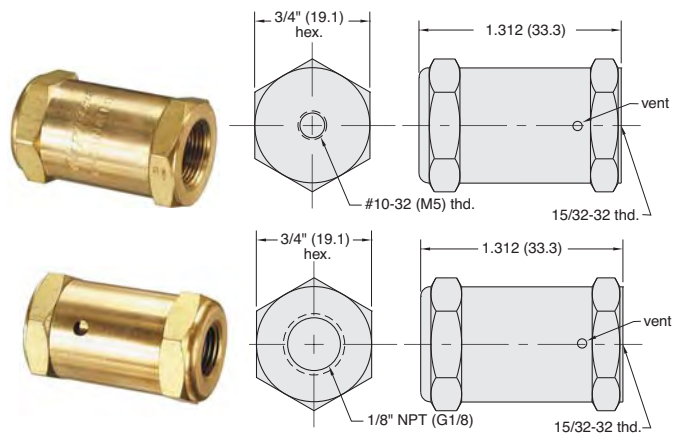
**Mounting:** #15/32-32 female thread to mount to Clippard miniature valves and components



**Bore Size:** 0.375 (9.5)

**Force Factor:** 0.1

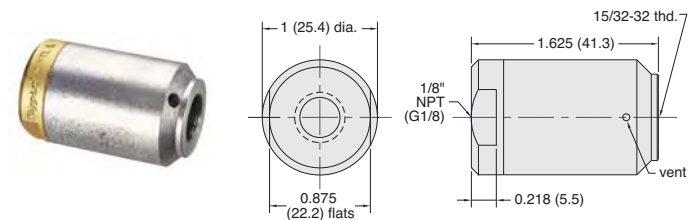
| Part No.                 | Description                                     |
|--------------------------|---|
| <a href="#">MPA-3</a>    | Single Acting, Spring Return Actuator, #10-32   |
| <a href="#">MPA-3-M5</a> | Single Acting, Spring Return Actuator, M5       |
| <a href="#">MPA-3P</a>   | Single Acting, Spring Return Actuator, 1/8" NPT |
| <a href="#">MPA-3-MG</a> | Single Acting, Spring Return Actuator, G1/8     |



**Bore Size:** 0.625 (15.9)

**Force Factor:** 0.3

| Part No.                 | Description                                      |
|--------------------------|--|
| <a href="#">MPA-5</a>    | Single Acting, Spring Return Actuator, #10-32    |
| <a href="#">MPA-5-M5</a> | Single Acting, Spring Return Actuator, M5 Metric |
| <a href="#">MPA-5P</a>   | Single Acting, Spring Return Actuator, 1/8" NPT  |
| <a href="#">MPA-5-MG</a> | Single Acting, Spring Return Actuator, G1/8      |



**Bore Size:** 0.875" (22.2) dia.

**Force Factor:** 0.6

| Part No.                 | Description                                     |
|--------------------------|---|
| <a href="#">MPA-7</a>    | Single Acting, Spring Return Actuator, 1/8" NPT |
| <a href="#">MPA-7-MG</a> | Single Acting, Spring Return Actuator, G1/8     |

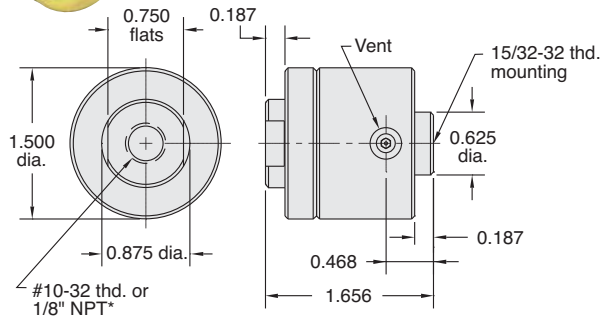


# VALVE ACTUATORS

## Pilot Actuators



Single Acting Spring Return Pilot Actuator



**Bore Size:** 1.250" dia.

**Input Pressure:** 150 psig max.

**Mounting:** #15/32-32 female thread to mount to Clippard Minimatic® valves and components; no spacers or washers are required when assembled to any Clippard valve; may be used with 15018-2 mounting bracket

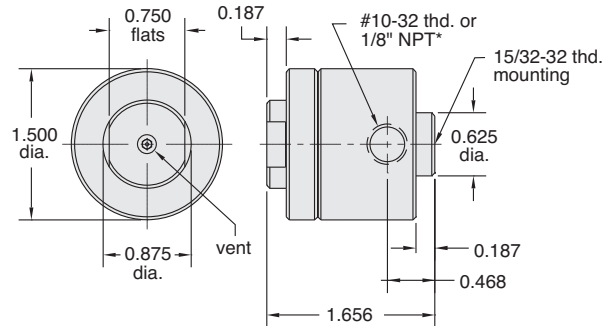
**Force Factor:** 1.2

| Part No.       | Description                                     |
|----------------|---|
| <u>MPA-10</u>  | Single Acting, Spring Return Actuator, #10-32   |
| <u>MPA-10P</u> | Single Acting, Spring Return Actuator, 1/8" NPT |

## Vacuum Actuators



Single Acting Spring Return Vacuum Actuator



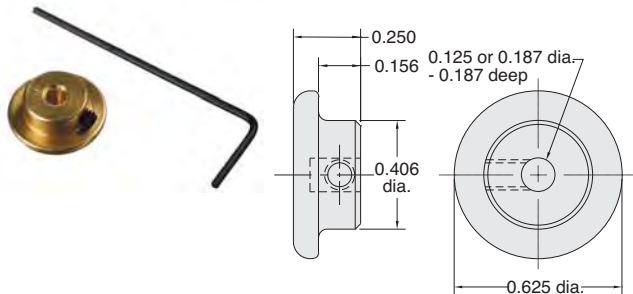
**Input Pressure:** 30 in. Hg

**Mounting:** #15/32-32 female thread to mount to Clippard Minimatic® valves and components; no spacers or washers are required when assembled to any Clippard valve; may be used with 15018-2 mounting bracket

| Part No.       | Description                                     |
|----------------|---|
| <u>MVA-10</u>  | Single Acting, Spring Vacuum Actuator, #10-32   |
| <u>MVA-10P</u> | Single Acting, Spring Vacuum Actuator, 1/8" NPT |

## Push Button Actuators, 5/8"

Round Solid Brass 5/8" dia. Push Button



**Use:** Mounts directly on valve stem for manual operation of valve; prevents over-travel of valve stem by providing a positive stop

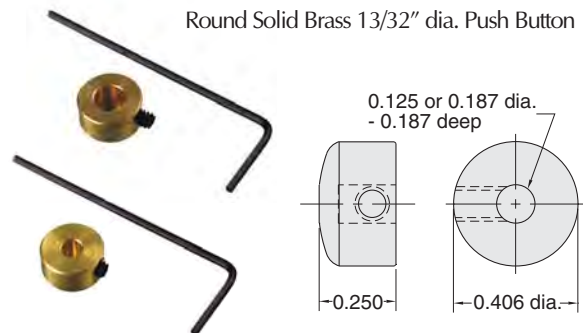
**Mounting:** 1/8" or 3/16" dia. mounting hole fits valve stems; locks in place by set screw (Allen wrench furnished)

**Note:** Individually packaged or bulk quantities available

| Part No.       | Description                        |
|----------------|------------------------------------|
| <u>11916-1</u> | 5/8" Brass Push Button, 1/8" Stem  |
| <u>11916-2</u> | 5/8" Brass Push Button, 3/16" Stem |

## Push Button Actuators, 13/32"

Round Solid Brass 13/32" dia. Push Button



**Use:** Mounts directly on valve stem for manual operation of valve; small size permits attachment to valve before valve is mounted through 15/32" dia. hole; prevents over-travel of valve stem by providing a positive stop

**Mounting:** 1/8" or 3/16" dia. mounting hole fits valve stems; locks in place by set screw (Allen wrench furnished)

**Note:** Individually packaged or bulk quantities available

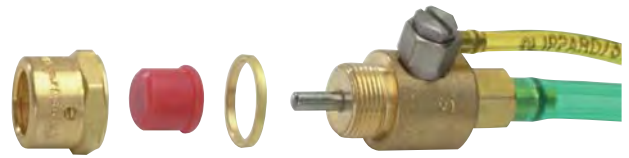
| Part No.       | Description                          |
|----------------|--------------------------------------|
| <u>11916-3</u> | 13/32" Brass Push Button, 1/8" Stem  |
| <u>11916-4</u> | 13/32" Brass Push Button, 3/16" Stem |

## Captivated Push Buttons

Clippard also offers the captivated push button for use with a large variety of stem operated valves. Captivated push buttons are sold as kits, adaptable to either 1/8" diameter stems or 3/16" diameter stems. Each kit includes a colored acetyl push button, brass housing nut, 1/16" brass spacer, and lock washer for assembly. The standard furnished mounting nut has a bright chromate finish. Black chrome or nickel-plated finishes are also available by adding the suffix -BC or -ENP to the part number.

Captivated push buttons can be used on individual stem operated valves or in panel mount application by omitting the 1/16" brass spacer. These push buttons are available in a variety of colors, allowing you to color code, or easily differentiate between valves when designing control systems. The design of these push buttons allows maximum actuation of the valve with no over-travel or side load to the valve stem. This assures superior performance and long life.

Captivated push buttons are commonly used as limit valves in conjunction with pneumatic cylinders, slides, and any variety of mechanical actuators. The rugged design coupled with precise actuation of stem operated valves make it perfect for applications where repetitive cycling of the valve is necessary. Designed to work with Clippard MAV, MJV, and FV series, these push buttons integrate easily into Minimatic® systems, providing optimal quality and efficiency in Miniature pneumatic control.



**P C - □ □ (- □)**

**Push Button Captivated**

**Push Button Color**

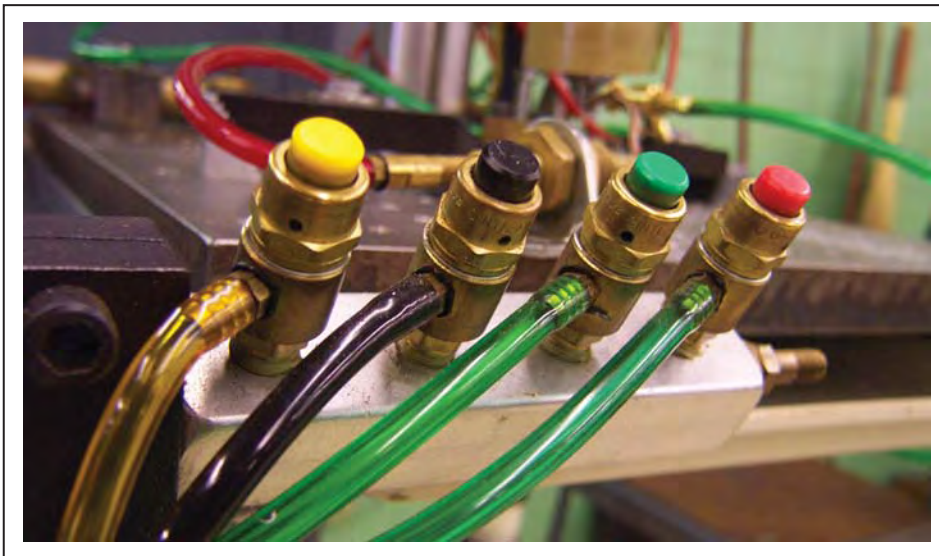
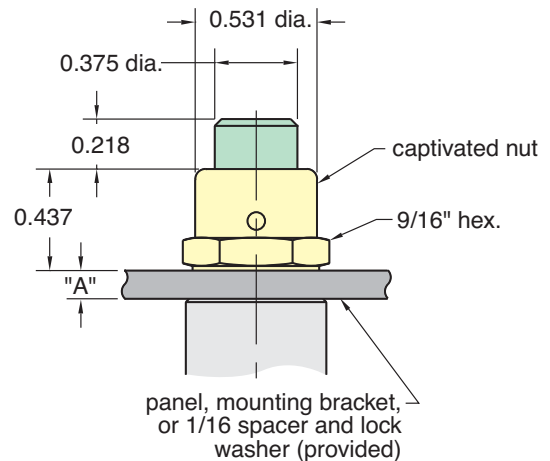
- B** - Black
- G** - Green
- R** - Red
- W** - White
- Y** - Yellow

**Options**

- BC** - Black chrome
- ENP** - Electroless Nickel Plated

**Valve Stem dia.**

- 1 1/8" dia.
- 2 3/16" dia.



### Spacing Required for Proper Actuation of Push Button

| Valve  | "A" Dim. |
|--|----------|
| MAV-2, MAV-3<br>MAVO-2, MAVO-3                     | 3/32"    |
| MAV-4, MAV-4D<br>MJV-4, MJV-4D                     | 5/32"    |
| MJV-2, MJV-3<br>MJVO-2, MJVO-3<br>FV-3, FV-4, FV-5 | 7/32"    |



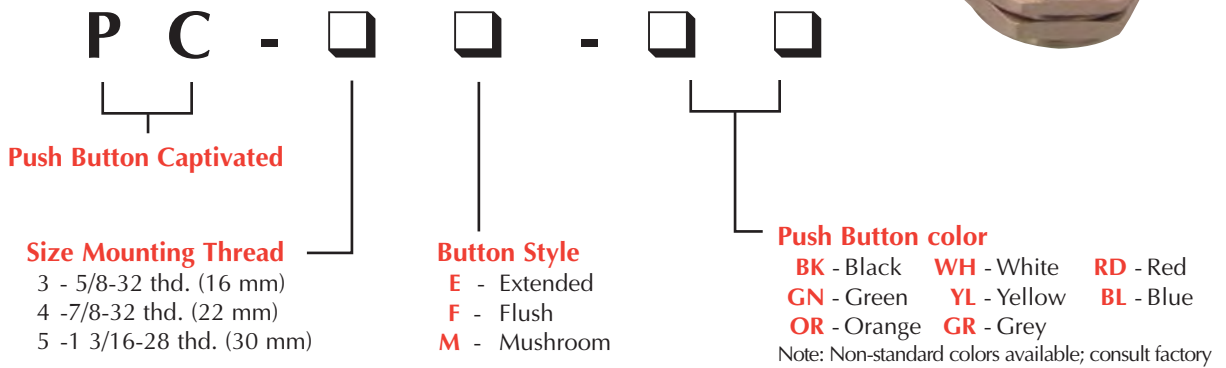


# PUSH BUTTON ACTUATORS

## Heavy-Duty Push Button Actuators

Heavy-Duty Push Button Actuators can be used on individual stem operated valves or in panel mounting applications. These push buttons are available in a variety of colors, allowing you to color code, or easily differentiate between valves when designing control systems. They feature a built-in spring so the button always returns to the extended position when released with no additional load on the valve.

The design of these push buttons allows complete actuation of the valve with no over-travel or side load to the valve assuring superior performance and long life.



**Part No.** **Description**  
PC-3E-(color) 5/8-32 Thd., Extended  
*(specify color)*



**Part No.** **Description**  
PC-4E-(color) 7/8-32 Thd., Extended  
*(specify color)*



**Part No.** **Description**  
PC-5E-(color) 1 3/16-28 Thd., Extended  
*(specify color)*



**Part No.** **Description**  
PC-3F-(color) 5/8-32 Thd., Flush  
*(specify color)*



**Part No.** **Description**  
PC-4F-(color) 7/8-32 Thd., Flush  
*(specify color)*



**Part No.** **Description**  
PC-5F-(color) 1 3/16-28 Thd., Flush  
*(specify color)*



**Part No.** **Description**  
PC-3M-(color) 5/8-32 Thd., Mushroom  
*(specify color)*



**Part No.** **Description**  
PC-4M-(color) 7/8-32 Thd., Mushroom  
*(specify color)*



**Part No.** **Description**  
PC-5M-(color) 1 3/16-28 Thd., Mushroom  
*(specify color)*

## Features

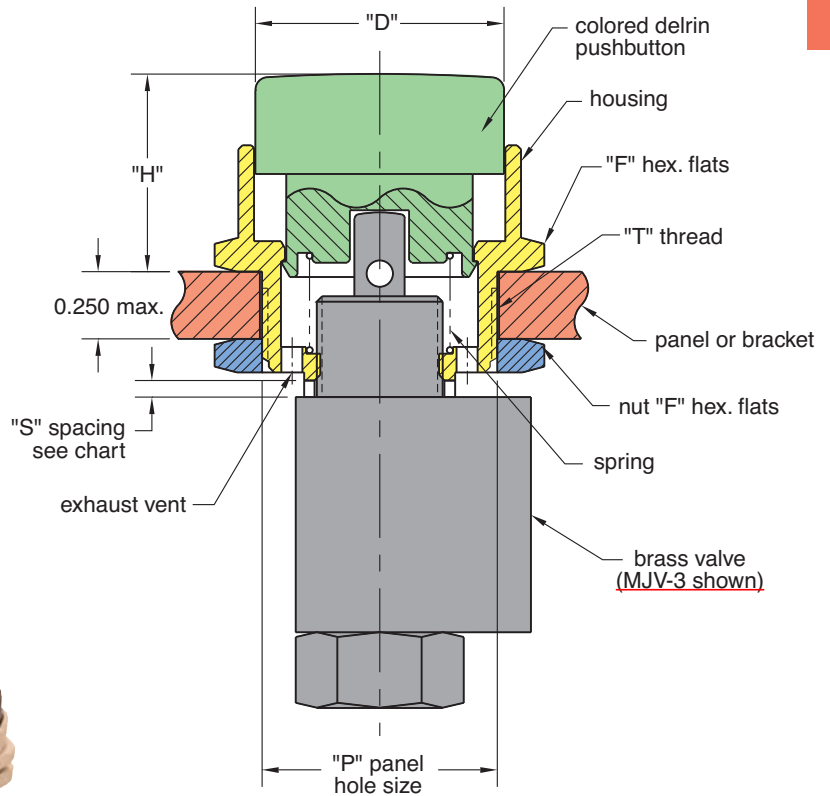
- Assembles directly to the valve; no adapters required
- Ideal for mounting on panels or brackets, up to 1/4" thick panel
- Self-contained assembly; no loose parts
- Stainless steel spring returns button to extended position with no added load to the valve stem
- Three sizes: 16 mm (5/8" dia.), 22 mm (7/8" dia.) and 30 mm (1-3/16" dia.)
- Flush, extended and mushroom style buttons
- Five bright colors for visibility and operator recognition. Other colors available upon request
- Electroless nickel plated brass housing and nut, molded Delrin® button and stainless steel spring for long life and corrosion resistance
- Protects the valve from over-travel and side load

Different valve models vary in mounting thread length, stem extension and stroke. To accommodate these differences, the chart below lists the recommended spacing ("S") to insure complete valve actuation. Provided with each button is a 1/16" thick spacer ring that may be used in place of a panel or bracket to obtain proper spacing. The lockwasher provided may be used with no significant effect on spacing.



## DIMENSIONS

| SIZE                              | MODEL    | "D"<br>Dia. | "H"<br>Hgt. | "T"<br>Thd. | "P" Panel Hole<br><sup>+1/32</sup> <sub>-0</sub> | "F"<br>Hex Flats |
|-----------------------------------|----------|-------------|-------------|-------------|--|------------------|
| 5/8-32<br>(16 mm)<br>mtg. thd.    | PC-3E-□□ | 0.625"      | 0.734"      |             |  |                  |
|                                   | PC-3F-□□ | 0.625"      | 0.500"      | 5/8-32      | 5/8" dia.  | 3/4"             |
|                                   | PC-3M-□□ | 1.165"      | 0.906"      |             |  |                  |
| 7/8-32<br>(22 mm)<br>mtg. thd.    | PC-4E-□□ | 0.925"      | 0.734"      |             |  |                  |
|                                   | PC-4F-□□ | 0.925"      | 0.500"      | 7/8-32      | 7/8" dia.  | 1-1/16"          |
|                                   | PC-4M-□□ | 1.500"      | 0.906"      |             |  |                  |
| 1 3/16-28<br>(30 mm)<br>mtg. thd. | PC-5E-□□ | 1.165"      | 0.734"      |             |  |                  |
|                                   | PC-5F-□□ | 1.165"      | 0.500"      | 1 3/16-28   | 1-3/16" dia.                                     | 1-5/16"          |
|                                   | PC-5M-□□ | 1.500"      | 0.906"      |             |  |                  |



| SPACING "S" REQUIRED FOR PROPER VALVE ACTUATION |                |                  |                |                  |   |
|---|----------------|------------------|----------------|------------------|---|
| Valve series                                    | MAV-2<br>MAV-3 | MAVO-2<br>MAVO-3 | MAV-4<br>MJV-4 | MAV-4D<br>MJV-4D | MJV-2,-3<br>MJVO-2,-3<br>FV-3, FV-4, FV-5 |
| • Mounting thd.                                 | 1/4"           |                  | 1/4"           |                  | 3/8"                                      |
| • Stem extension                                | 5/16"          |                  | 3/8"           |                  | 5/16"                                     |
| • Valve stroke                                  | 1/8"           |                  | 3/16"          |                  | 1/8"                                      |
| "S" Minimum                                     | none           |                  | none           |                  | 1/16"                                     |
| Maximum   | 1/16"          |                  | 1/16"          |                  | 1/8"                                      |



# CONTROL VALVE & ACTUATOR ASSEMBLIES

## Minimatic® Actuators

Clippard's line of 22 mm and 30 mm actuators may be coupled with a variety of Clippard control valves with a simple adapter system providing a single assembly of a panel-mounted actuator and air valve.

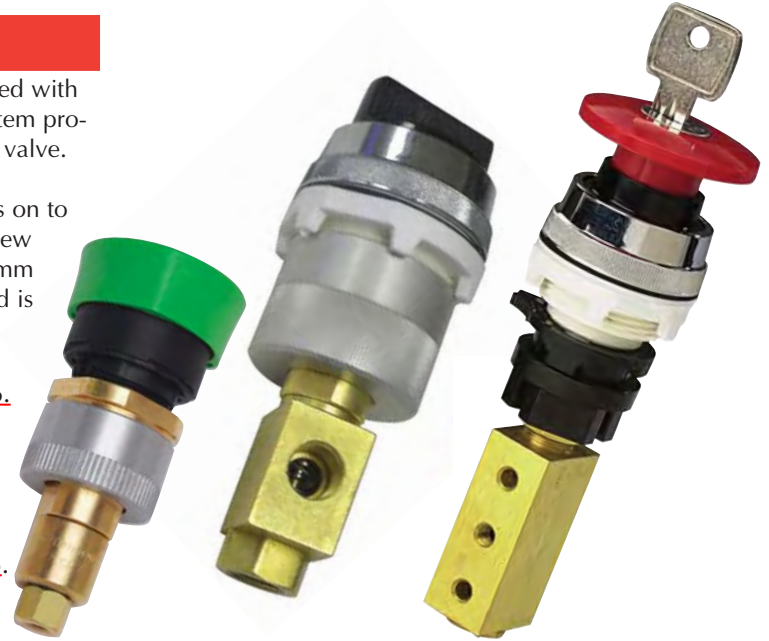
The PB-22 and PB-30 have an aluminum housing that threads on to the actuator, and integral brass sleeve. The PB-22-X fits the new 22 mm series actuators (P22-XXX), and the PB-30 fits the 30 mm series of actuators (PL-XXX). The PB-85 is made of plastic, and is compatible with 30 mm actuators only.

**Step #1.** Select **Actuator** on [pages 135 through 136](#).

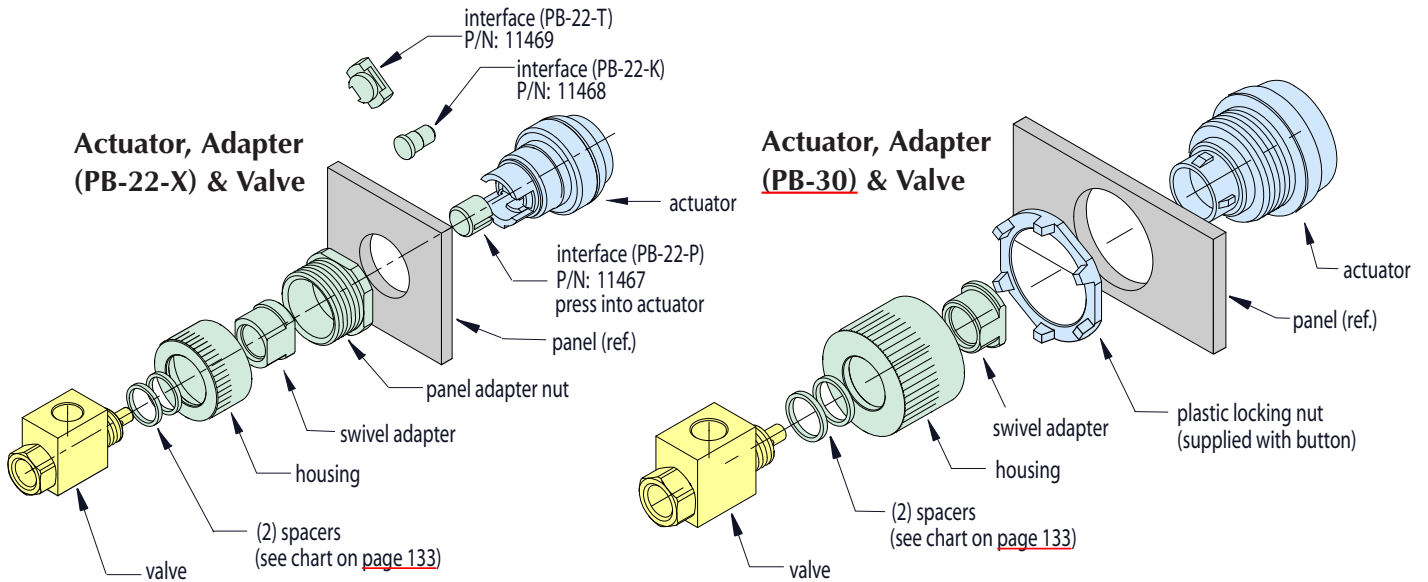
**Step #2.** Determine spacing requirements using the chart on [page 135](#).

**Step #3.** Determine **Adapter** on [pages 135 and 136](#).

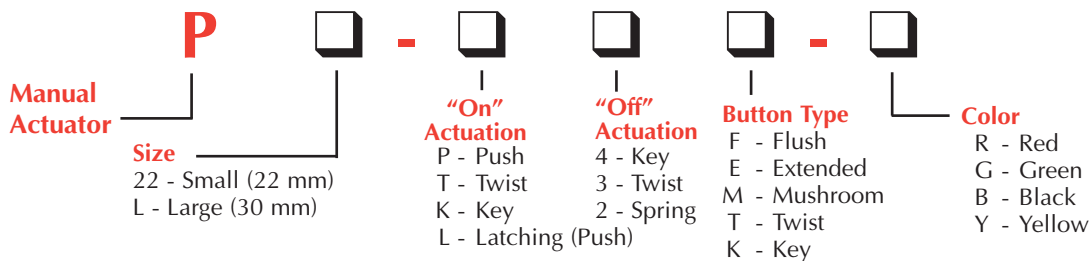
**Step #4.** Add **Accessories** on [page 137](#).



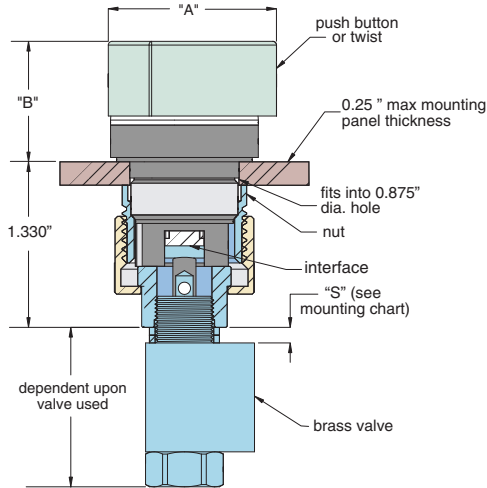
PB-22-X Adapter (22 mm) PB-30 Adapter (30 mm) PB-85 Adapter (30 mm)



## Actuator Ordering Guide



## Size 22 mm Actuators



| PB-22-X Adapter |         |        |        |
|-----------------|---------|--------|--------|
| Actuator        | Adapter | "A"    | "B"    |
| P22-P2F-        | PB-22-P | 1.200" | 0.450" |
| P22-P2E-        | PB-22-P | 1.200" | 0.650" |
| P22-P2M-        | PB-22-P | 1.600" | 0.850" |
| P22-L3M-        | PB-22-K | 1.450" | 1.000" |
| P22-L4M-        | PB-22-K | 1.450" | 1.200" |
| P22-T2T-        | PB-22-T | 1.200" | 0.925" |
| P22-T3T-        | PB-22-T | 1.200" | 0.925" |
| P22-T3K-        | PB-22-T | 1.200" | 1.000" |
| P22-K3K-        | PB-22-T | 1.200" | 1.000" |

### Mounting Chart for Clippard Valves

The following chart gives the necessary spacing required between the shoulder of the valve and the base of the adapter. Two 1/16" spacers are furnished with each adapter.

#### Spacer Requirements

| Valves   | "S"  |
|--|------|
| MAV-2, -2P, -2R, -3R, -3, -3P<br>MAVO-2, -3                          | None |
| MJV-2, -3<br>MJVO-2, -3  | 1/8" |
| MAV-4, -4D<br>MJV-4, -4D   | None |
| ES-1   | None |
| FV-3, -3P, -3D, -3DP<br>FV-4, -4P, -4D, -4DP<br>FV-5, -5P, -5D, -5DP | 1/8" |



**Flush Push Button.** Manual Push "In". Spring Return.

| Part No.                  | Description |
|---------------------------|-------------|
| <a href="#">P22-P2F-R</a> | Red         |
| <a href="#">P22-P2F-G</a> | Green       |
| <a href="#">P22-P2F-B</a> | Black       |
| <a href="#">P22-P2F-Y</a> | Yellow      |



**Extended Push Button.** Manual Push "In". Spring Return.

| Part No.                  | Description |
|---------------------------|-------------|
| <a href="#">P22-P2E-R</a> | Red         |
| <a href="#">P22-P2E-G</a> | Green       |
| <a href="#">P22-P2E-B</a> | Black       |
| <a href="#">P22-P2E-Y</a> | Yellow      |



**Automatic Push/Turn Mushroom.** Manual push "In". Latches "In". Turn clockwise to unlatch. Spring return.

| Part No.                  | Description |
|---------------------------|-------------|
| <a href="#">P22-L3M-R</a> | Red         |
| <a href="#">P22-L3M-G</a> | Green       |
| <a href="#">P22-L3M-B</a> | Black       |



**Maintained Twist 90°.** Turn clockwise to latch "In". Turn counterclockwise to release. Black only.

| Part No.                  | Description |
|---------------------------|-------------|
| <a href="#">P22-T3T-B</a> | Black       |



**Spring Return Twist 45°.** Turn clockwise and hold for "In". Release for spring return. Black only.

| Part No.                  | Description |
|---------------------------|-------------|
| <a href="#">P22-T2T-B</a> | Black       |



**Manual Push Mushroom.** Manual Push "In". Spring Return.

| Part No.                  | Description |
|---------------------------|-------------|
| <a href="#">P22-P2M-R</a> | Red         |
| <a href="#">P22-P2M-G</a> | Green       |
| <a href="#">P22-P2M-B</a> | Black       |



**Key Twist 90° Maintained.**

(P22-T3K-B) Turn key clockwise to latch "In". Turn key counterclockwise to release. Key with-drawable in both positions. Black only.

P22-K3K-B same as P22-T3K-B except key is withdrawable in "Out" position only.

| Part No.                  | Description |
|---------------------------|-------------|
| <a href="#">P22-T3K-B</a> | Black       |
| <a href="#">P22-K3K-B</a> | Black       |



**Push Key Mushroom.** Manual push "In".

Automatic latches "In". Turn key clockwise to release. Spring return. Key withdrawable "Out" position only. Red only.

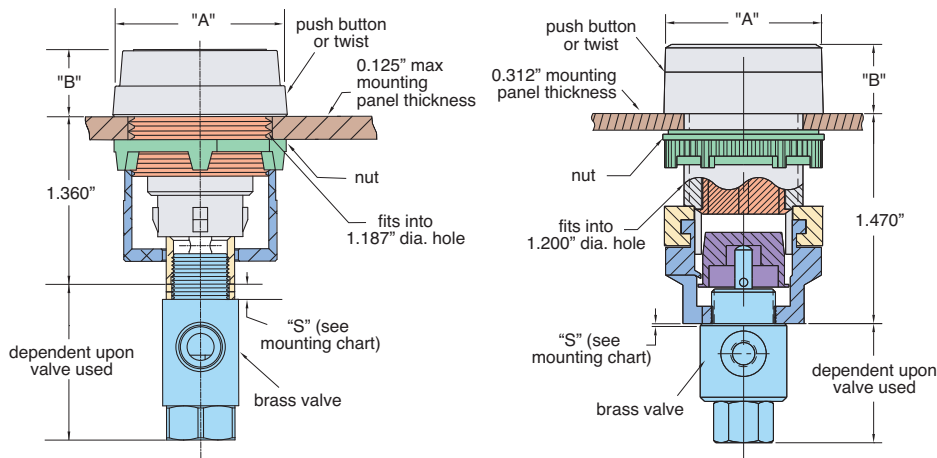
| Part No.                  | Description |
|---------------------------|-------------|
| <a href="#">P22-L4M-R</a> | Red         |





# CONTROL VALVE & ACTUATOR ASSEMBLIES

## Size 30 mm Actuators



| PB-30 Aluminum Adapter |        |        |
|------------------------|--------|--------|
| Actuator               | "A"    | "B"    |
| PL-P2F-                | 1.440" | 0.580" |
| PL-P2E-                | 1.440" | 0.880" |
| PL-P2M-                | 1.560" | 1.050" |
| PL-L3M-                | 1.560" | 1.050" |
| PL-P4K-                | 1.440" | 1.400" |
| PL-L4M-                | 1.580" | 1.300" |
| PL-T2T-                | 1.440" | 1.070" |
| PL-T3T-                | 1.440" | 1.070" |
| PL-T3K-                | 1.440" | 1.200" |
| PL-K3K-                | 1.440" | 1.200" |

| PB-85 Plastic Adapter |        |        |
|-----------------------|--------|--------|
| Actuator              | "A"    | "B"    |
| PL-P2F-               | 1.440" | 0.550" |
| PL-P2E-               | 1.440" | 0.960" |
| PL-P2M-               | 1.575" | 1.043" |
| PL-L3M-               | 1.575" | 1.043" |
| PL-P4K-               | 1.440" | 2.280" |
| PL-L4M-               | 1.575" | 2.280" |
| PL-T2T-               | 1.440" | 1.403" |
| PL-T3T-               | 1.440" | 1.043" |
| PL-T3K-               | 1.440" | 2.280" |
| PL-K3K-               | 1.440" | 2.280" |

| Part No. | Description      |
|----------|------------------|
| PB-30    | Aluminum Adapter |
| PB-85    | Plastic Adapter  |



**Flush Push Button.** Manual push "In". Spring return.

| Part No. | Description |
|----------|-------------|
| PL-P2F-R | Red         |
| PL-P2F-G | Green       |
| PL-P2F-B | Black       |
| PL-P2F-Y | Yellow      |



**Maintained Twist 90°.** Turn clockwise to latch "In". Turn counterclockwise to release. Black only.

| Part No. | Description |
|----------|-------------|
| PL-T3T-B | Black       |



**Extended Push Button.** Manual push "In". Spring return.

| Part No. | Description |
|----------|-------------|
| PL-P2E-R | Red         |
| PL-P2E-G | Green       |
| PL-P2E-B | Black       |
| PL-P2E-Y | Yellow      |



**Push Key Mushroom.** Manual push "In". Automatic latches "In". Turn key clockwise to release. Spring return. Key withdrawable "Out" position only.

| Part No. | Description |
|----------|-------------|
| PL-L4M-R | Red         |



**Automatic Push/Turn Mushroom.** Manual push "In". Latches "In". Turn clockwise to unlatch. Spring return.

| Part No. | Description |
|----------|-------------|
| PL-L3M-R | Red         |
| PL-L3M-G | Green       |
| PL-L3M-B | Black       |



**Manual Push Mushroom.** Manual push "In". Spring return.

| Part No. | Description |
|----------|-------------|
| PL-P2M-R | Red         |
| PL-P2M-G | Green       |
| PL-P2M-B | Black       |



**Spring Return Twist 45°.** Turn clockwise and hold for "In". Release for spring return. Black only.

| Part No. | Description |
|----------|-------------|
| PL-T2T-B | Black       |



**Push Key Push Button.** Manual push "In". Spring return. Turn key counterclockwise to lock "Out"; clockwise to unlock. Key withdrawable locked or unlocked. Black only.

| Part No. | Description |
|----------|-------------|
| PL-P4K-B | Black       |



**Key Twist 90° Maintained.** (PL-T3K-B) Turn key clockwise to latch "In". Turn key counterclockwise to release. Key withdrawable in both positions. Black only.

| Part No. | Description |
|----------|-------------|
| PL-T3K-B | Black       |
| PL-K3K-B | Black       |

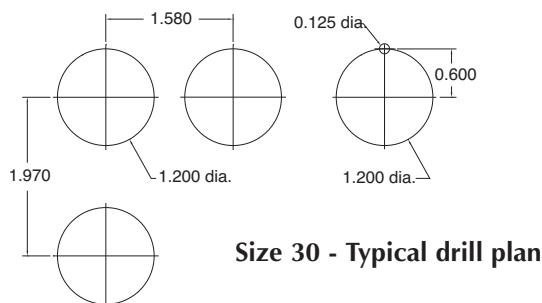
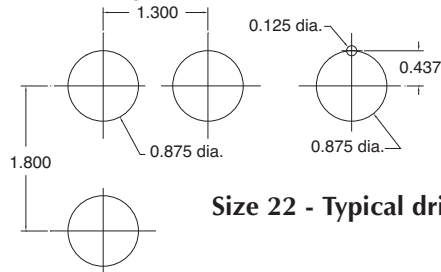
PL-K3K-B same as PL-T3K-B except key is withdrawable in "Out" position only.

## Legend Plates

| Legend Text          | 22 Size Part # | 30 Size Part # |
|----------------------|----------------|----------------|
| Blank                | P22-01         | PL-01          |
| Start                | P22-02         | PL-02          |
| Stop (red)           | P22-03         | PL-03          |
| Forward              | P22-04         | PL-04          |
| Reverse              | P22-05         | PL-05          |
| Fast                 | P22-06         | PL-06          |
| Slow                 | P22-07         | PL-07          |
| On                   | P22-08         | PL-08          |
| Off (red)            | P22-09         | PL-09          |
| Reset                | P22-10         | PL-10          |
| Raise                | P22-11         | PL-11          |
| Lower                | P22-12         | PL-12          |
| Emergency Stop (red) | P22-13         | PL-13          |
| Run / Jog            | P22-31         | PL-31          |
| Auto / Hand          | P22-32         | PL-32          |
| Forward / Reverse    | P22-33         | PL-33          |
| Fast / Slow          | P22-34         | PL-34          |
| Open / Close         | P22-35         | PL-35          |
| Up / Down            | P22-36         | PL-36          |
| Off / On             | P22-37         | PL-37          |

## Mounting Clippard Manual Actuators

These drill plans are for units fitted with optional anti-rotation ring



## Legend Plates

Plastic legend plate, two sizes, with a black field and white inscription (red as noted). Inscription plates are interchangeable in both sizes.



## Accessories for Manual Actuators

### Mounting Wrench

Fits 30 mm size manual actuators.

| Part No.              | Description     |
|-----------------------|-----------------|
| <a href="#">PB-60</a> | Mounting Wrench |



### Replacement Interface

| Part No.              | Description       |
|-----------------------|-------------------|
| <a href="#">11468</a> | PB-22-K Interface |
| <a href="#">11467</a> | PB-22-P Interface |
| <a href="#">11469</a> | PB-22-T Interface |



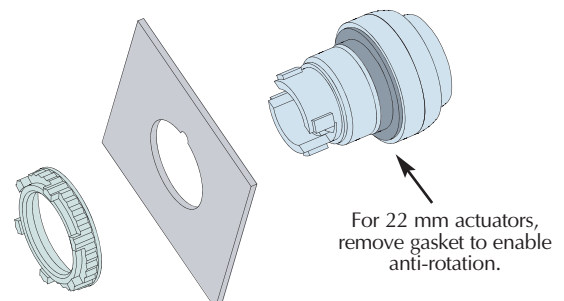
### Replacement 30 mm Anti-Rotation Ring

Holds 30 mm adapter in one position. Included with all 30 mm twist manual actuators.

| Part No.              | Description               |
|-----------------------|---------------------------|
| <a href="#">PL-50</a> | Anti-Rotation Ring, 30 mm |



### 22 mm Anti-Rotation Feature



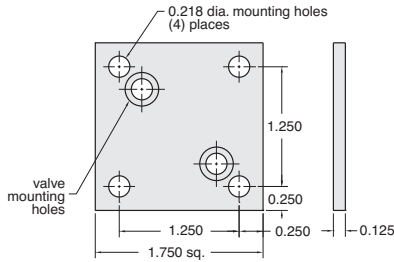


# VALVE MOUNTING BRACKETS & ACCESSORIES

## Flat Bracket



Flat bracket designed to mount 2010, 2011-1, 2012 and 2013 valves



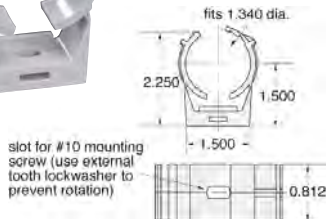
**Construction:** Black anodized finish, two mounting screws furnished.

| Part No.                 | Description  |
|--------------------------|--------------|
| <a href="#">2010-050</a> | Flat Bracket |

## Bracket for Action Relays



Mounting bracket for 3200-A snap action relays.

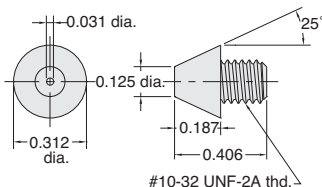


| Part No.                 | Description               |
|--------------------------|---------------------------|
| <a href="#">3200-006</a> | Snap Action Relay Bracket |

## Rubber Nozzles



#10-32 rubber nozzles for replacement 2011-1 limit valves. #10-32 thread, five to a package

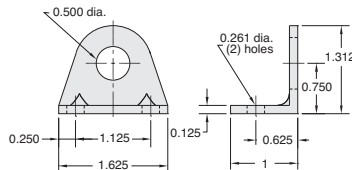


| Part No.                 | Description    |
|--------------------------|----------------|
| <a href="#">2011-012</a> | Rubber Nozzles |

## Metal Foot Bracket



90° angle, metal foot bracket for Clippard miniature valves



**Mounting:** 1/2" dia. hole for valve; two 0.261" dia. holes for attaching bracket

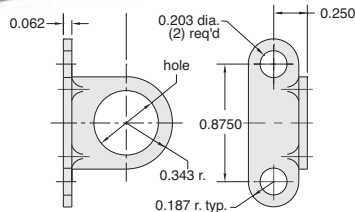
**Construction:** Stamped from 1/8" thick steel, zinc plated

| Part No.                | Description           |
|-------------------------|-----------------------|
| <a href="#">15018-2</a> | Foot Mounting Bracket |

## Metal Foot Bracket



90° angle, metal foot bracket for Clippard miniature valves



**Mounting:** 31/64" dia. mounting hole for valve; two 13/64" dia. mounting holes for attaching bracket

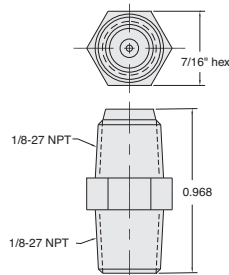
**Construction:** Stamped from 1/16" thick steel, zinc plated

| Part No.                | Description          |
|-------------------------|----------------------|
| <a href="#">11918-1</a> | Bracket, 0.484" Hole |
| <a href="#">11918-2</a> | Bracket, 0.328" Hole |

## 1/8" NPT Filter



1/8" NPT hex nipple with 40 micron filter / strainer, can be used as a muffler

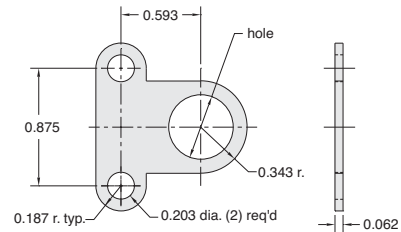


| Part No.                | Description     |
|-------------------------|-----------------|
| <a href="#">9002-01</a> | 1/8" NPT Filter |

## Flat Metal Bracket



Flat metal bracket, for mounting Clippard miniature valves



**Mounting:** 31/64" dia. mounting hole for valve; two 13/64" dia. mounting holes for attaching bracket

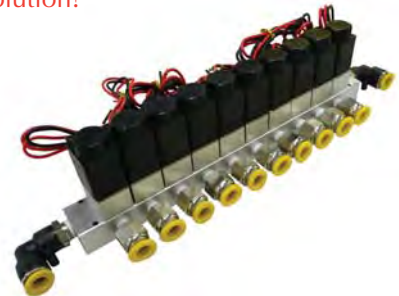
**Construction:** Stamped from 1/16" thick steel, zinc plated

| Part No.                | Description               |
|-------------------------|---------------------------|
| <a href="#">11917-1</a> | Metal Bracket, 0.484 Hole |
| <a href="#">11917-2</a> | Metal Bracket, 0.328 Hole |

See Page 314 for a complete offering of In-Line Manifolds

## CUSTOMer solutions

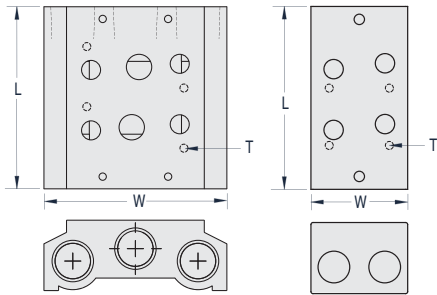
If you need a product that fits your application perfectly, Clippard has the capability to design or modify one of its products to suit your exact needs. We understand that a standard catalog product may be close but not be exactly what you need. **Let us know YOUR Need, and we will help to find YOUR Solution!**



For more information, visit [www.clippard.com/customsolutions](http://www.clippard.com/customsolutions)



## Parallel Bar Manifolds



4-Way Manifold

3-Way Manifold



| Valve Series | 2-Station   | 4-Station    | 6-Station    | 8-Station     | 16-Station    | "T" Mtg. Thread |
|--------------|-------------|--------------|--------------|---------------|---------------|-----------------|
| MMA-31/41    | 2.24 (56.9) | 3.73 (94.7)  | 5.25 (133.4) | 6.75 (171.5)  | 12.69 (322.3) | M4              |
| MMA-32/42    | 2.71 (68.8) | 4.50 (114.3) | 6.33 (160.8) | 8.13 (206.5)  | 15.38 (390.7) | M4              |
| MMA-33/43    | 3.22 (81.8) | 5.42 (137.7) | 7.62 (193.5) | 9.82 (249.4)  | 18.63 (473.2) | M5              |
| MMA-34/44    | 3.85 (97.8) | 6.56 (166.6) | 9.38 (238.3) | 12.10 (307.3) | 23.11 (587.0) | M5              |

Parallel circuit manifold bars are available for all sizes of MMA 3- and 4-way valves. **Manifolds are made in increments of two stations from two to 16**, and are supplied with mounting screws and gaskets. Spare kits are also available which include two screws and a gasket. Blank plate supplied with one gasket, two screws and metal plate.

| Valve Series                 | Manifold Inlet/ Exhaust | Blank Plate              | 2-Station                 | 4-Station                 | 6-Station                 | 8-Station                 | 16-Station                |
|------------------------------|-------------------------|--------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|
| <b>3-Way Valve Manifolds</b> |                         |                          |                           |                           |                           |                           |                           |
| MMA-31                       | 1/8"                    | <a href="#">MMM-31-B</a> | <a href="#">MMM-31-02</a> | <a href="#">MMM-31-04</a> | <a href="#">MMM-31-06</a> | <a href="#">MMM-31-08</a> | <a href="#">MMM-31-16</a> |
| MMA-32                       | 1/4"                    | <a href="#">MMM-32-B</a> | <a href="#">MMM-32-02</a> | <a href="#">MMM-32-04</a> | <a href="#">MMM-32-06</a> | <a href="#">MMM-32-08</a> | <a href="#">MMM-32-16</a> |
| MMA-33                       | 3/8"                    | <a href="#">MMM-33-B</a> | <a href="#">MMM-33-02</a> | <a href="#">MMM-33-04</a> | <a href="#">MMM-33-06</a> | <a href="#">MMM-33-08</a> | <a href="#">MMM-33-16</a> |
| MMA-34                       | 1/2"                    | <a href="#">MMM-34-B</a> | <a href="#">MMM-34-02</a> | <a href="#">MMM-34-04</a> | <a href="#">MMM-34-06</a> | <a href="#">MMM-34-08</a> | <a href="#">MMM-34-16</a> |

### 3-Way Spare Mounting Kit Hardware

[27041-31](#) . . . . . Hardware Kit for MMA-31 Series Valves

[27041-33](#) . . . . . Hardware Kit for MMA-33 Series Valves

[27041-32](#) . . . . . Hardware Kit for MMA-32 Series Valves

[27041-34](#) . . . . . Hardware Kit for MMA-34 Series Valves

| Valve Series                 | Manifold Inlet/ Exhaust | Blank Plate              | 2-Station                 | 4-Station                 | 6-Station                 | 8-Station                 | 16-Station                |
|------------------------------|-------------------------|--------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|
| <b>4-Way Valve Manifolds</b> |                         |                          |                           |                           |                           |                           |                           |
| MMA-41                       | 1/4"                    | <a href="#">MMM-41-B</a> | <a href="#">MMM-41-02</a> | <a href="#">MMM-41-04</a> | <a href="#">MMM-41-06</a> | <a href="#">MMM-41-08</a> | <a href="#">MMM-41-16</a> |
| MMA-42                       | 1/4"                    | <a href="#">MMM-42-B</a> | <a href="#">MMM-42-02</a> | <a href="#">MMM-42-04</a> | <a href="#">MMM-42-06</a> | <a href="#">MMM-42-08</a> | <a href="#">MMM-42-16</a> |
| MMA-43                       | 3/8"                    | <a href="#">MMM-43-B</a> | <a href="#">MMM-43-02</a> | <a href="#">MMM-43-04</a> | <a href="#">MMM-43-06</a> | <a href="#">MMM-43-08</a> | <a href="#">MMM-43-16</a> |
| MMA-44                       | 1/2"                    | <a href="#">MMM-44-B</a> | <a href="#">MMM-44-02</a> | <a href="#">MMM-44-04</a> | <a href="#">MMM-44-06</a> | <a href="#">MMM-44-08</a> | <a href="#">MMM-44-16</a> |

### 4-Way Spare Mounting Kit Hardware

[27041-41](#) . . . . . Hardware Kit for MMA-41 Series Valves

[27041-43](#) . . . . . Hardware Kit for MMA-43 Series Valves

[27041-42](#) . . . . . Hardware Kit for MMA-42 Series Valves

[27041-44](#) . . . . . Hardware Kit for MMA-44 Series Valves

## Rebuild Kits

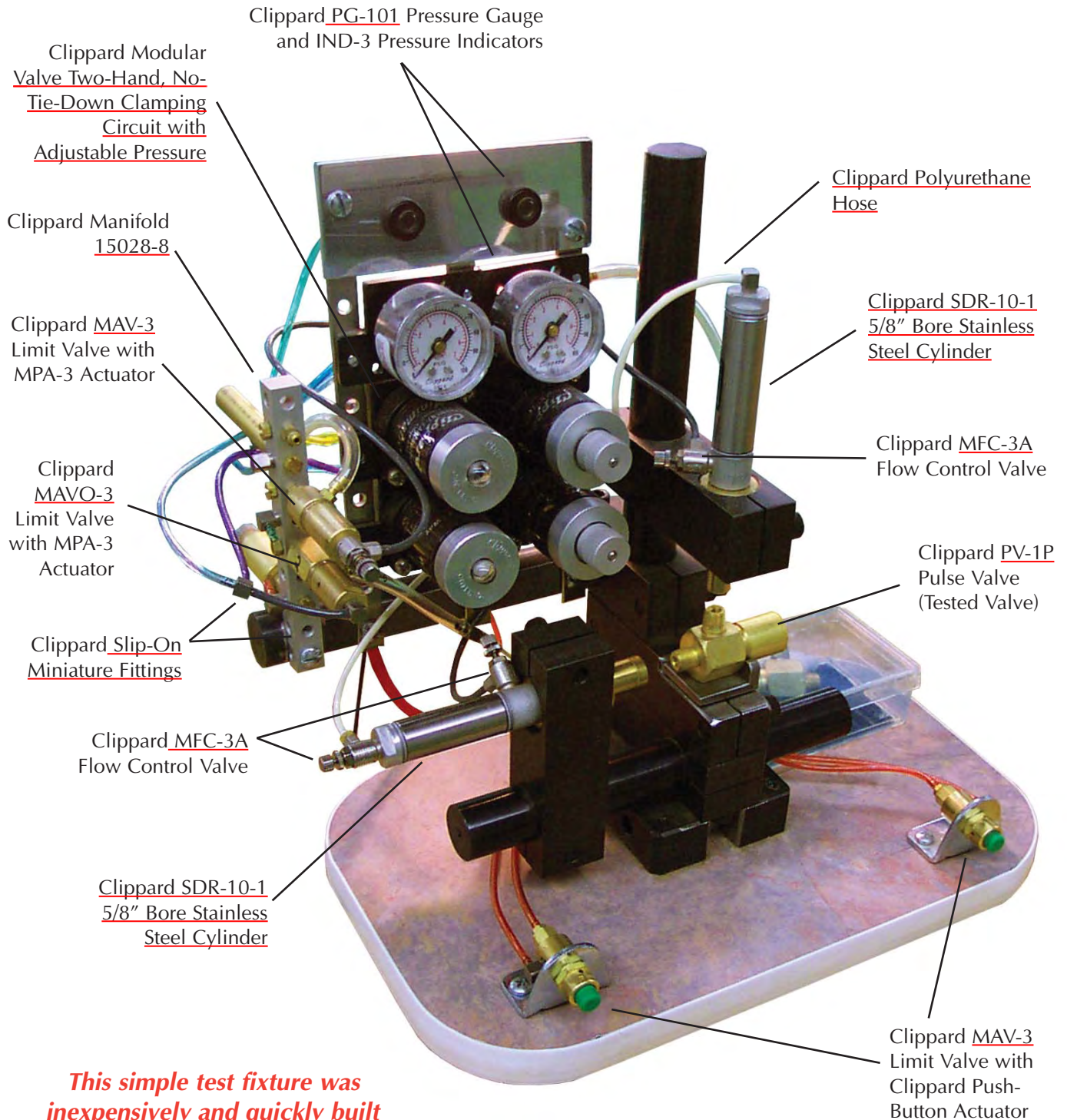
Convenient rebuild kits are available which contain common maintenance items that may be needed during the life of the valve. Each contains a spool, diamond seal, two pilot seals, two pistons with seals, and spring. Consult factory for 3-position kits.

| Part No.                 | Description              |
|--------------------------|--------------------------|
| <a href="#">27040-31</a> | 3-Way Kit, MMA-31        |
| <a href="#">27040-32</a> | 3-Way Kit, MMA-32        |
| <a href="#">27040-33</a> | 3-Way Kit, MMA-33        |
| <a href="#">27040-34</a> | 3-Way Kit, MMA-34        |
| <a href="#">27040-41</a> | 4-Way 2 Pos. Kit, MMA-41 |
| <a href="#">27040-42</a> | 4-Way 2 Pos. Kit, MMA-42 |
| <a href="#">27040-43</a> | 4-Way 2 Pos. Kit, MMA-43 |
| <a href="#">27040-44</a> | 4-Way 2 Pos. Kit, MMA-44 |



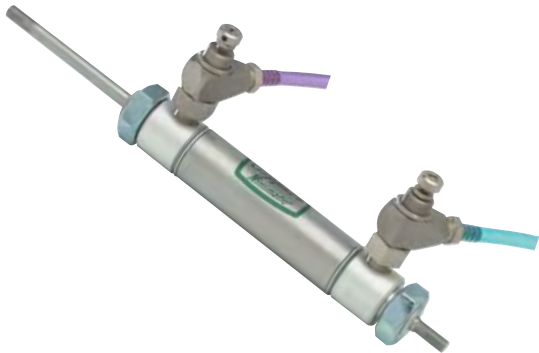


## Pneumatic Pulse Valve Leak Tester



*This simple test fixture was inexpensively and quickly built using standard Clippard products.*

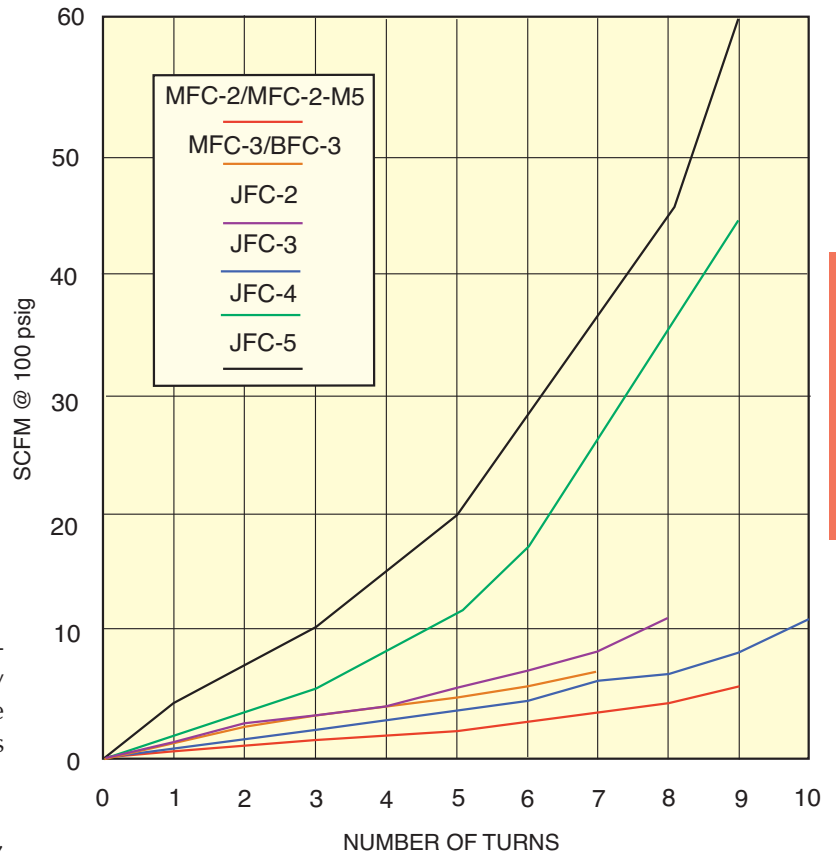
## Flow Controls Flow vs. Needle Turns



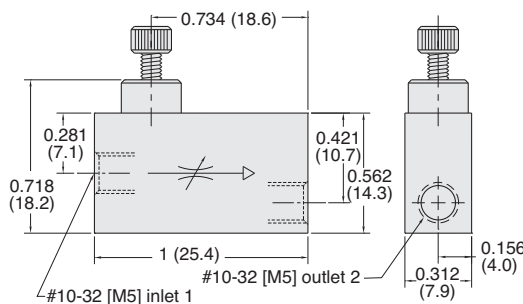
Clippard offers five models of adjustable flow controls with #10-32 through 3/8" NPT ports. They feature a combination needle and check valve that controls flow in one direction and allows free flow in the opposite direction.

They are an ideal valve for use with a cylinder, providing a slow extend stroke while allowing a fast retract stroke. The chart on this page illustrates the flow versus the number of needle adjustments turns for the MFC-2, MFC-2-M5, MFC-3, BFC-3, JFC-2, JFC-3, JFC-4 and JFC-5.

**Medium:** Air, Water or Oil



### Adjustable Flow Control Valve



**Materials:** Brass body and stainless steel needle; Buna-N seals

**Input Pressure:** 300 psig max.

**Air Flow:** 4 scfm max. @ 50 psig; 7 scfm max. @ 100 psig

**Pressure To Open:** Cracks at approx. 2 psig

**Mounting:** In-line

**Flow Direction:** Arrow in valve body shows direction of controlled flow

**Adjustment:** Knurled knob on needle shaft



| Part No. | Description                           |
|----------|---------------------------------------|
| MFC-2    | Adjustable Flow Control Valve, #10-32 |
| MFC-2-M5 | Adjustable Flow Control Valve, M5     |



# FLOW CONTROL VALVES

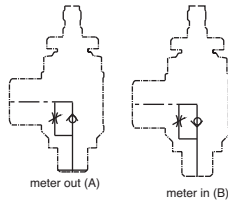
**Input Pressure:** 150 psig max.

**Mounting:** Directly into #10-32 port

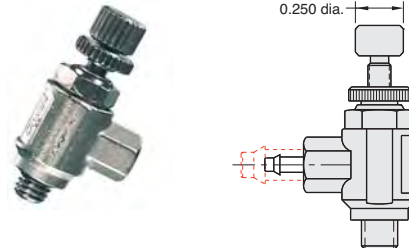
**Ports:** Rotating input port allows 360° positioning #10-32 port

**Flow Direction:** Arrow on valve body shows direction of controlled flow

**Adjustment:** Screwdriver slot; slotted knurled knob with lock nut on #10-80 threaded needle shaft for fine adjustment; or recessed slotted needle

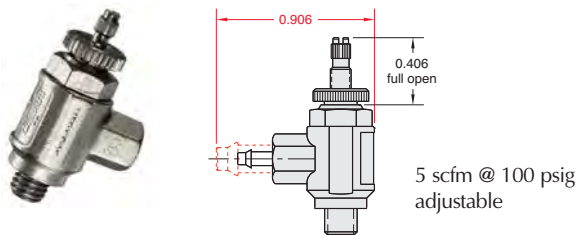


## #10-32 Valves, Knurled Knob



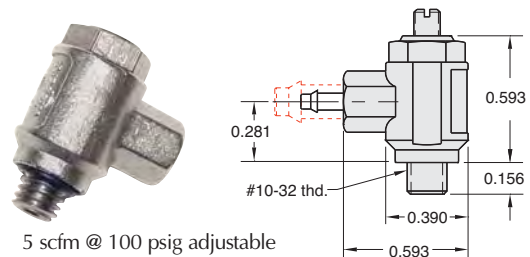
| Part No.                 | Description                                      |
|--------------------------|--|
| <a href="#">MFC-3AK</a>  | Meter Out Control Valve, #10-32 Female Side Port |
| <a href="#">MFC-3AK1</a> | Meter Out Control Valve, 1/16" Barb Side Port    |
| <a href="#">MFC-3AK2</a> | Meter Out Control Valve, 1/8" Barb Side Port     |
| <a href="#">MFC-3BK</a>  | Meter In Control Valve, #10-32 Female Side Port  |
| <a href="#">MFC-3BK1</a> | Meter In Control Valve, 1/16" Barb Side Port     |
| <a href="#">MFC-3BK2</a> | Meter In Control Valve, 1/8" Barb Side Port      |

## #10-32 Valves, Screwdriver Slot



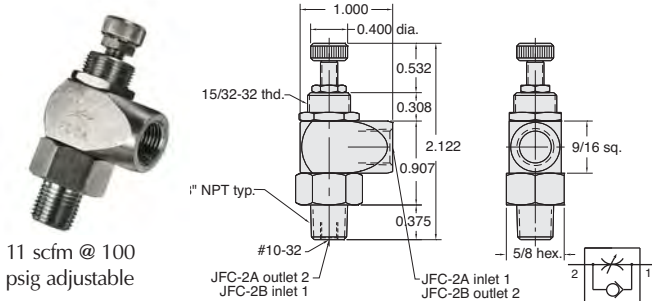
| Part No.                | Description                                      |
|-------------------------|--|
| <a href="#">MFC-3A</a>  | Meter Out Control Valve, #10-32 Female Side Port |
| <a href="#">MFC-3A1</a> | Meter Out Control Valve, 1/16" Barb Side Port    |
| <a href="#">MFC-3A2</a> | Meter Out Control Valve, 1/8" Barb Side Port     |
| <a href="#">MFC-3B</a>  | Meter In Control Valve, #10-32 Female Side Port  |
| <a href="#">MFC-3B1</a> | Meter In Control Valve, 1/16" Barb Side Port     |
| <a href="#">MFC-3B2</a> | Meter In Control Valve, 1/8" Barb Side Port      |

## #10-32 Valves, Recessed Needle



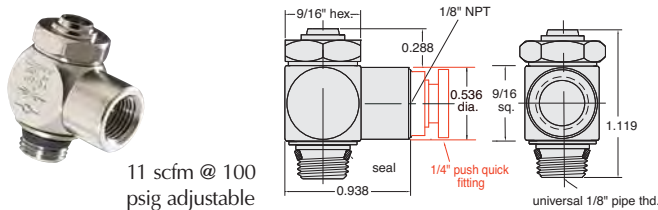
| Part No.                 | Description                                      |
|--------------------------|--|
| <a href="#">MFC-3AR</a>  | Meter Out Control Valve, #10-32 Female Side Port |
| <a href="#">MFC-3AR1</a> | Meter Out Control Valve, 1/16" Barb Side Port    |
| <a href="#">MFC-3AR2</a> | Meter Out Control Valve, 1/8" Barb Side Port     |
| <a href="#">MFC-3BR</a>  | Meter In Control Valve, #10-32 Female Side Port  |
| <a href="#">MFC-3BR1</a> | Meter In Control Valve, 1/16" Barb Side Port     |
| <a href="#">MFC-3BR2</a> | Meter In Control Valve, 1/8" Barb Side Port      |

## 1/8" NPT Control Valves, Knurled Knob



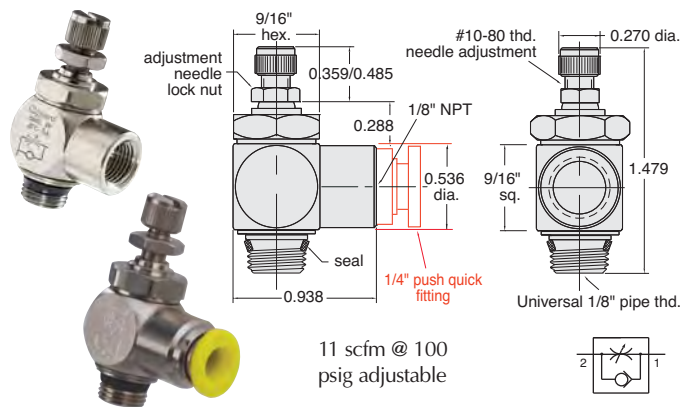
| Part No.               | Description                       |
|------------------------|-----------------------------------|
| <a href="#">JFC-2A</a> | Meter Out Control Valve, 1/8" NPT |
| <a href="#">JFC-2B</a> | Meter In Control Valve, 1/8" NPT  |

## 1/8" NPT Valves, Recessed Needle



| Part No.                   | Description                                      |
|----------------------------|--|
| <a href="#">JFC-3AR</a>    | Meter Out Control Valve, 1/8" NPT                |
| <a href="#">JFC-3BR</a>    | Meter In Control Valve, 1/8" NPT                 |
| <a href="#">JFC-3ARP08</a> | Meter Out Control Valve, 1/4" Push-Quick Fitting |
| <a href="#">JFC-3BRP08</a> | Meter In Control Valve, 1/4" Push-Quick Fitting  |

## 1/8" NPT Valves, Knurled Knob



| Part No.                  | Description                                      |
|---------------------------|--|
| <a href="#">JFC-3A</a>    | Meter Out Control Valve, 1/8" NPT                |
| <a href="#">JFC-3B</a>    | Meter In Control Valve, 1/8" NPT                 |
| <a href="#">JFC-3AP08</a> | Meter Out Control Valve, 1/4" Push-Quick Fitting |
| <a href="#">JFC-3BP08</a> | Meter In Control Valve, 1/4" Push-Quick Fitting  |





These combination needle and check valve flow controls are typically used to control air flow from air cylinders, thereby controlling the speed at which

the piston strokes, either while extending or retracting, depending on their location in the circuit.

J-Series Flow Control Valves allow free flow in one direction. In the opposite direction the flow is metered by the needle valve.

Models listed in the chart have either a 1/4" NPT (JFC-4) or 3/8" NPT (JFC-5) male threaded outlets, recessed screwdriver slot (R) or knurled knob (K) flow adjustment needles and female NPT or push-to-connect tubing (Push-Quick) inlets. The P08 models features a 1/4" Push-Quick fitting, and the P12 versions have a 3/8" Push-Quick fitting.

**Medium:** Air, Water or Oil

**Material:** Electroless nickel plated brass needle and stem, anodized aluminum body, Buna-N seals

**Input Pressure:** 150 psig max.

**Air Flow:** JFC-4: 45 scfm @ 100 psig adjustable  
JFC-5: 60 scfm @ 100 psig adjustable

**Mounting:** Directly into cylinder. Panel or in-line.

**Ports:** Rotating input port allows 360° positioning 1/8" NPT

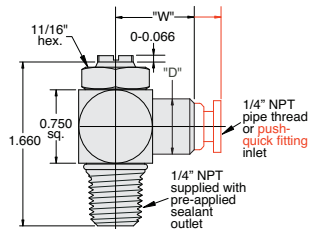
**Adjustment:** Recessed slotted needle or knurled knob

| Part #                  | "D"    | "W"    |
|-------------------------|--------|--------|
| JFC-4K & JFC-4R         | 0.710" | 0.875" |
| JFC-4K-P08 & JFC-4R-P08 | 0.562" | 1.062" |
| JFC-4K-P12 & JFC-4R-P12 | 0.710" | 1.250" |
| JFC-5K & JFC-5R         | 0.827" | 1.125" |
| JFC-5K-P12 & JFC-5R-P12 | 0.750" | 1.375" |

## 1/4" NPT Valves, Recessed Needle



(JFC-4R shown)

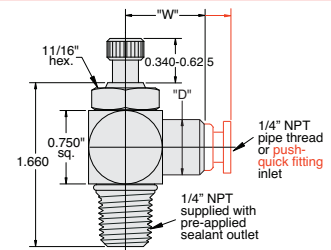


| Part No.   | Description                                      |
|------------|--|
| JFC-4R     | Meter Out Control Valve, 1/4" NPT                |
| JFC-4R-P08 | Meter Out Control Valve, 1/4" Push-Quick Fitting |
| JFC-4R-P12 | Meter Out Control Valve, 3/8" Push-Quick Fitting |

## 1/4" NPT Valves, Adjusting Knob



(JFC-4K shown)

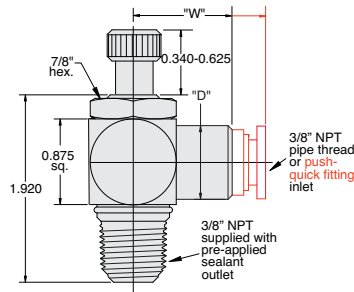


| Part No.   | Description                                      |
|------------|--|
| JFC-4K     | Meter Out Control Valve, 1/4" NPT                |
| JFC-4K-P08 | Meter Out Control Valve, 1/4" Push-Quick Fitting |
| JFC-4K-P12 | Meter Out Control Valve, 3/8" Push-Quick Fitting |

## 3/8" NPT Valves, Adjusting Knob



(JFC-5K-P12 shown)

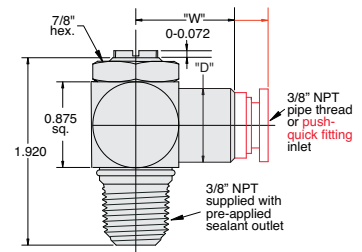


| Part No.   | Description                                      |
|------------|--|
| JFC-5K     | Meter Out Control Valve, 3/8" NPT                |
| JFC-5K-P12 | Meter Out Control Valve, 3/8" Push-Quick Fitting |

## 3/8" NPT Valves, Recessed Needle



(JFC-5R-P12 shown)



| Part No.   | Description                                      |
|------------|--|
| JFC-5R     | Meter Out Control Valve, 3/8" NPT                |
| JFC-5R-P12 | Meter Out Control Valve, 3/8" Push-Quick Fitting |

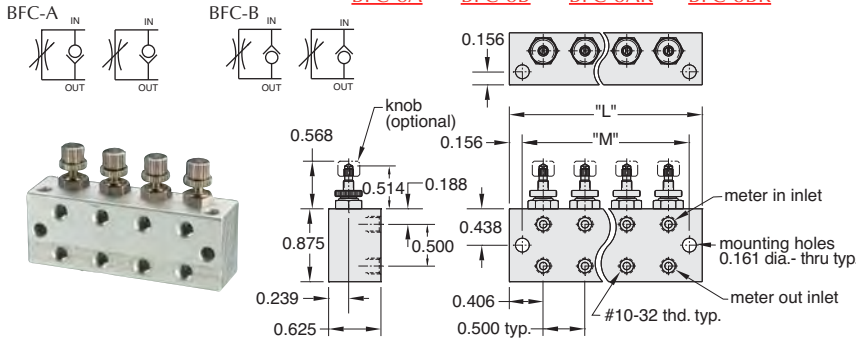




# MANIFOLD FLOW CONTROLS

## Block Flow Controls

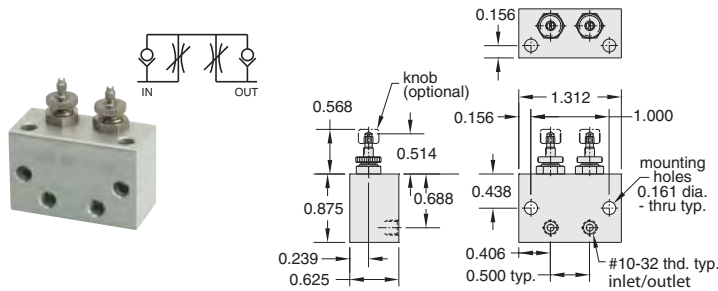
- [BFC-2A](#)
- [BFC-2B](#)
- [BFC-2AK](#)
- [BFC-2BK](#)
- [BFC-4A](#)
- [BFC-4B](#)
- [BFC-4AK](#)
- [BFC-4BK](#)
- [BFC-6A](#)
- [BFC-6B](#)
- [BFC-6AK](#)
- [BFC-6BK](#)
- [BFC-8A](#)
- [BFC-8B](#)
- [BFC-8AK](#)
- [BFC-8BK](#)



## Block Flow Controls

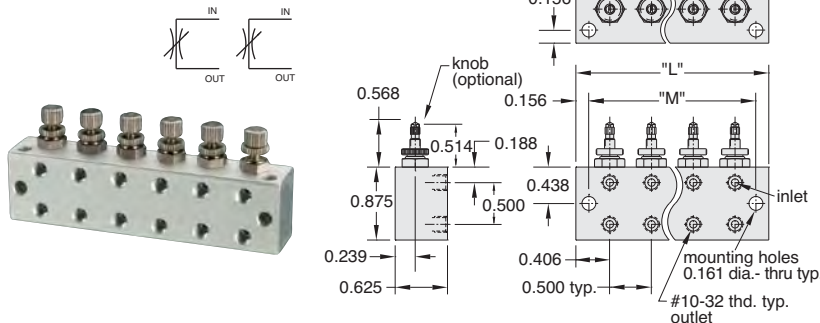
- [BFC-2C](#)
- [BFC-2CK](#)

Two valves common meter in and meter out.



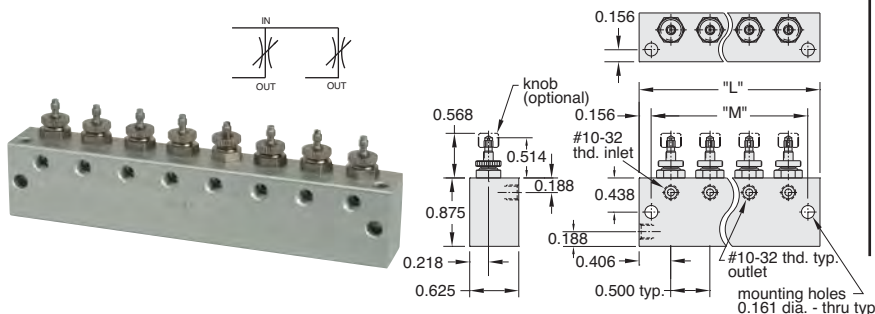
## Block Needle Valves

- [BNV-2N](#)
- [BNV-4N](#)
- [BNV-6N](#)
- [BNV-8N](#)
- [BNV-2NK](#)
- [BNV-4NK](#)
- [BNV-6NK](#)
- [BNV-8NK](#)



## Block Needle Manifolds

- [BNM-2N](#)
- [BNM-4N](#)
- [BNM-6N](#)
- [BNM-8N](#)
- [BNM-2NK](#)
- [BNM-4NK](#)
- [BNM-6NK](#)
- [BNM-8NK](#)



**Precision flow controls and needle valves available in blocks for rigid mounting.**

*Specification same as MFC-3*

Clippard's block flow control and needle valves have a variety of features that offer extra versatility for unique applications. These precision made valves offer high performance, low cost, reliability and ease of installation. Each valve is independent of the other (except the BFC-2C), sharing only a common body. This allows separate pressures and/or gases to be used while simplifying mounting. Each needle adjustment is smooth, exact, and includes a locking ring to prevent tampering. The valve body is machined and anodized aluminum; the compound angle needle stems are machined from 303 stainless steel; the valve sleeve is electroless nickel plated brass; and the seals are Buna-N rubber. Block flow controls and needle valves are ideal for controlling double acting cylinders.

FC - Flow Control  
NV - Needle Valve  
NM - Needle Manifold



Block

Number of stations

- 2 - 2 Stations
- 4 - 4 Stations
- 6 - 6 Stations
- 8 - 8 Stations

A - Meter Out Flow

B - Meter In Flow

C - 2 Valves Common

Meter In and Meter Out

N - Needle Valve

Adjustment type

Blank - Screwdriver Slot

K - Adjustment Knob

| Number of Stations | "X" | "L"    | "M"    |
|--------------------|-----|--------|--------|
| 2                  |     | 1.312" | 1.000" |
| 4                  |     | 2.312" | 2.000" |
| 6                  |     | 3.312" | 3.000" |
| 8                  |     | 4.312" | 4.000" |

# PRESSURE ACTUATED SWITCHES



**Medium:** Air  
**Inlet Pressure:** 5 to 150 psig; 0.3 to 10.3 bar  
**Pilot Port:** #10-32, 1/8" NPT, M5  
**Mounting:** External thread and nut for panel, bracket, or bulkhead mounting,  
 5/8 - 32 pressure actuated  
 #15/32-32 manually operated  
**Accuracy:** Actuation pressures listed are nominal values only. For applications where a tight tolerance for actuation or deactuation is needed, please contact Clippard.



**SAS** Sub-Miniature Air Switch  
**MAS** Miniature Air Switch

**Design Series**

**Switch Current Rating:**

- SAS**  
**A** 5A @ 125/250 VAC  
 3A @ 30 VDC/.1A 60 VDC  
**X** no switch  
**MAS**  
**B** 3A @ 125/250 VAC  
 3A @ 30 VDC  
**C** 10A @ 125/250 VAC  
 5A @ 50 VDC  
**X** no switch

**Nominal Actuation Pressure\***

- 06** 6 psig/0.4 bar  
**20** 20 psig/1.4 bar  
**40** 41 psig/ 2.8 bar  
**65** 65 psig/4.5 bar  
**MN** Manual

**Inlet Port:**

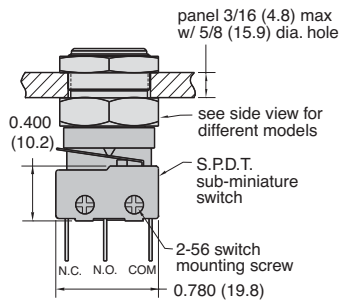
- Blank** #10-32 thd  
**F** 1/8" NPT female  
**P** 1/8" NPT male  
**M5** M5 x 0.8 thd

**Switch Terminals:**

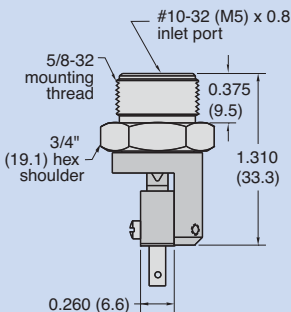
- SAS: 0** no switch  
**1** 110 series Q.C.  
**MAS: 0** no switch  
**2** 187 series Q.C.  
**3** screw terminals

\*Actuation pressure is nominal only. For applications where accuracy is critical, please contact Clippard.

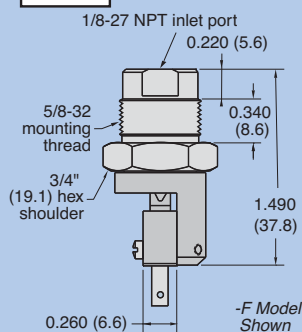
## SAS Model



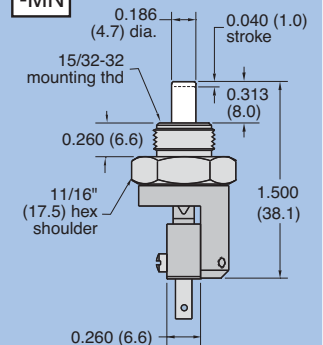
## STD. & -M5



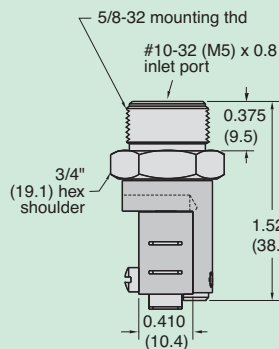
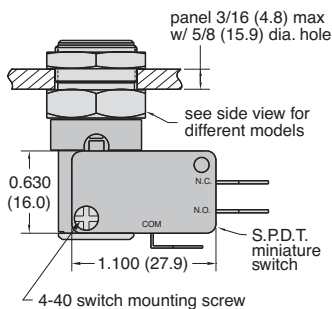
## -F & -P



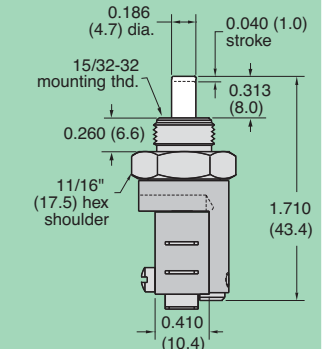
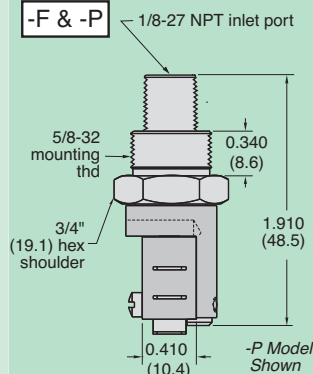
## -MN



## MAS Model



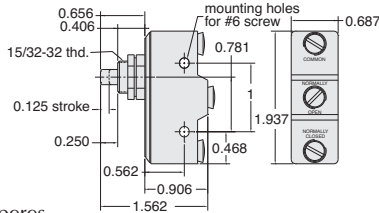
## -F & -P





# ELECTRIC & PNEUMATIC SWITCHES

## Single Pole Electrical Switch



Stem Travel: 1/8" (3.2)

Rating A.C.: 120 volts - 15 amperes  
240 volts - 15 amperes  
480 volts - 15 amperes

Rating D.C.: 125 volts - 0.5 amperes  
250 volts - 0.25 amperes

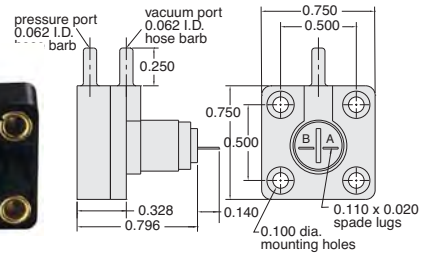


Mounting: #15/32-32 thread; nut and lockwashers furnished, also two 0.140" dia. mounting holes in body

Approvals: UL and CE

| Part No. | Description  |
|----------|--|
| ES-1     | Single Pole, Double Throw Snap-Action Electrical Switch                          |
| ES-1-GP  | Single Pole, Double Throw Snap-Action Electrical Switch with Gold-Plated Contact |
| 15601    | Terminal Cover   |

## Pneumatic Electric Switches



Electrical Rating: 60 ma. AC resistive 40 ma. DC resistive @ 120 volts

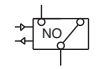
Switching Speed: 125 Hz, Normally-Open

Actuating Pressure: 3" H<sub>2</sub>O 10% pressure vacuum, or DP

Maximum Pressure: 8 psig (continuous)

Construction: ABS plastic case gold plated contacts natural rubber diaphragm

Use: For interfacing fluidic or other low pressure air signals with electronic circuitry dual inputs operates on pressure, vacuum, or differential pressure signals



| Part No.  | Description   |
|-----------|---|
| 5100-3-NO | Pneumatic Electric Switch, Normally-Open Contacts   |
| 5100-3-NC | Pneumatic Electric Switch, Normally-Closed Contacts |

## CUSTOMer solutions

If you need a product that fits your application perfectly, Clippard has the capability to design or modify one of its products to suit your exact needs. We understand that a standard catalog product may be close but not be exactly what you need. Let us know YOUR Need, and we will help to find YOUR Solution!



Needle valves are common in controlling the flow of fluids and gases. This special needle valve uses a "D" stem for adapting to standard panel knobs. It also incorporates a special left-handed thread to provide a more intuitive clockwise movement to increase flow of the back for ease-of-assembly in a tight space. It also incorporates a special toggle to match the customers' aesthetic requirements.

A combination assembly using a toggle or push button operator and Clippard's pressure-actuated electrical switches provides a simultaneous air and electrical output.



This air-piloted valve is designed for a water application where limited space is available.



Alternate materials, seals and/or lubrication for specific applications are common (and welcomed) requests at Clippard. Stainless steel, aluminum, plastic or brass. All available, just ask!

For more information, visit [www.clippard.com/customsolutions](http://www.clippard.com/customsolutions)



Three varieties of check valves are offered by Clippard. Each permits flow in one direction only. All have bright-dipped brass bodies that provide in-line mounting, Buna-N seals and stainless steel springs as standard. The MCV-2 has #10-32 (M5) ports and a "duckbill" seal. The MCV-1 series has #10-32 (M5) ports and a brass poppet. The MJCV-1 series has 1/8" NPT (G1/8) ports and a Zytel 80G33 poppet.

**Materials:** Brass body, Buna-N seals, stainless steel spring

**Medium:** Air or Hydraulic

**Input Pressure:** 300 psig/21 bar max. (MJCV Series: 1,000 psig hydraulic max.)

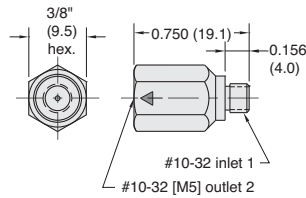
**Pressure To Open:** Cracks at approx. 1/2 psig

**Mounting:** Direct or in-line

**Flow Direction:** Arrow on valve body indicates direction of flow

**Temperature Range:** 32° to 230°F

**Note:** Not intended for pressure relief

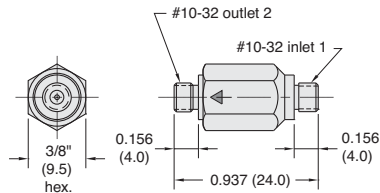


**Part No.**

MCV-1  
MCV-1-M5



**Air Flow:** 6.5 scfm @ 50 psig; 11.5 scfm @ 100 psig; 280 l/min @ 6 bar

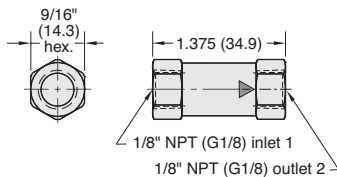


**Part No.**

MCV-1AA



**Air Flow:** 6.5 scfm @ 50 psig; 11.5 scfm @ 100 psig; 280 l/min @ 6 bar

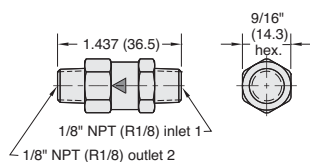


**Part No.**

MICV-1  
MICV-1-MG

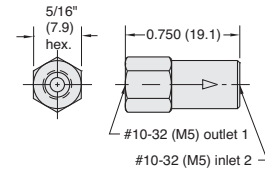


**Air Flow:** 20 scfm @ 50 psig; 36 scfm @ 100 psig; 580 l/min @ 6 bar



**Part No.**

MICV-1AA  
MICV-1AA-MR



**Medium:** Air

**Input Pressure:** 100 psig/21 bar max.

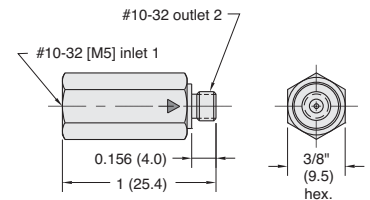
**Air Flow:** 1 scfm @ 50 psig;  
28 l/min @ 3.5 bar

**Pressure To Crack:** 1 psig

**Pressure To Fully Open:** 2.5

**Part No.**

MCV-2  
MCV-2-M5

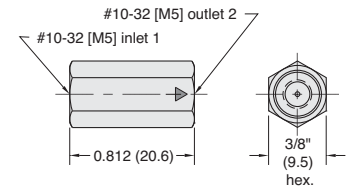


**Part No.**

MCV-1AB  
MCV-1AB-M5



**Air Flow:** 6.5 scfm @ 50 psig; 11.5 scfm @ 100 psig; 280 l/min @ 6 bar

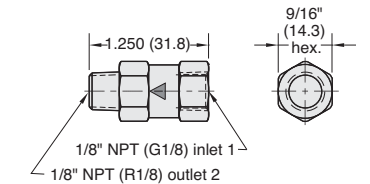


**Part No.**

MCV-1BB  
MCV-1BB-M5



**Air Flow:** 6.5 scfm @ 50 psig; 11.5 scfm @ 100 psig; 280 l/min @ 6 bar

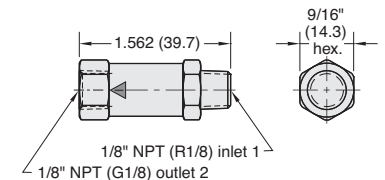


**Part No.**

MICV-1AB  
MICV-1AB-MR



**Air Flow:** 20 scfm @ 50 psig; 36 scfm @ 100 psig; 580 l/min @ 6 bar



**Part No.**

MICV-1BA  
MICV-1BA-MG



**Air Flow:** 20 scfm @ 50 psig; 36 scfm @ 100 psig; 580 l/min @ 6 bar





# #10-32 SHUTTLE VALVES

## Shuttle Valves

There are three models of shuttle valves offered by Clippard. These valves feature a shuttle that allows flow from one inlet to the outlet while blocking the other inlet. They may be mounted directly to valves and cylinders or in-line using the hose barbs on the MSV models.

Poppet type shuttle (double check) valve. Brass body, and poppet, Buna-N seal



**Medium:** Air, Water or Oil

**Input Pressure:** 250 psig/17.5 bar max.

**Air Flow:** 5.0 scfm @ 50 psig; 9.5 scfm @ 100 psig; 230 l/min @ 6 bar

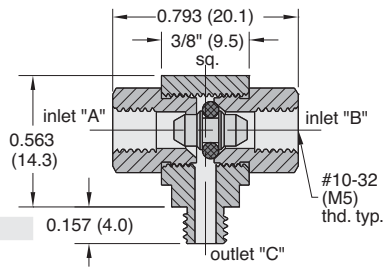
**Mounting:** Direct or in-line

**Operation:** Flow from "A" to "C" or "B" to "C"

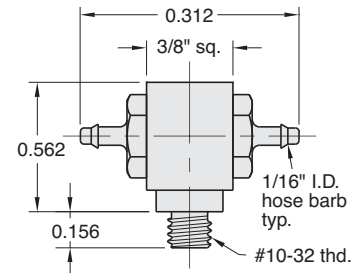
**Pressure to Shift:** 1/2 psig approx.

**Exhaust:** Through port where pressure was last applied

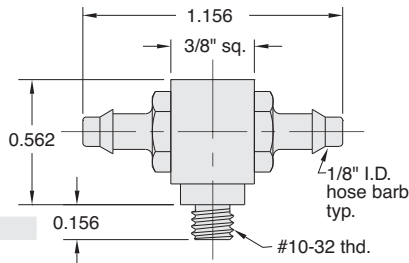
**Note:** Shuttle valves should not be used as a pressure selector



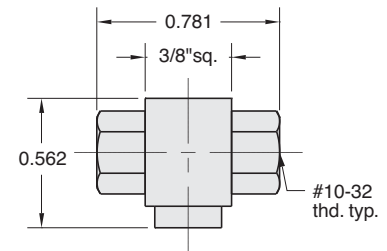
**Part No.**  
MSV-1  
MSV-1-M5



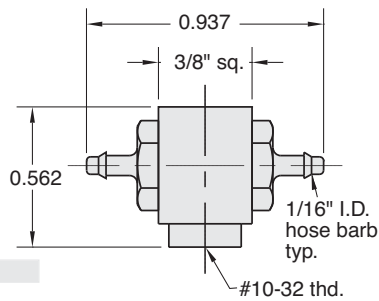
**Part No.**  
MSV-1M22



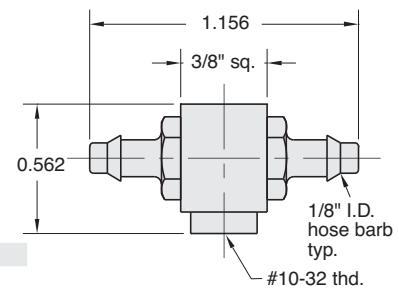
**Part No.**  
MSV-1M44



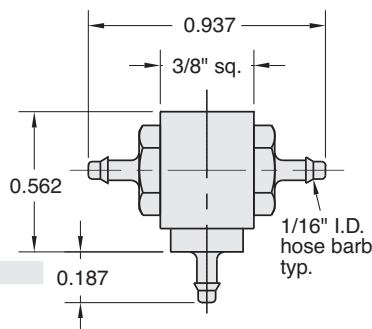
**Part No.**  
MSV-1FFF



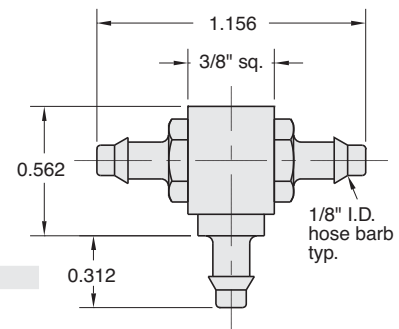
**Part No.**  
MSV-1F22



**Part No.**  
MSV-1F44



**Part No.**  
MSV-1222

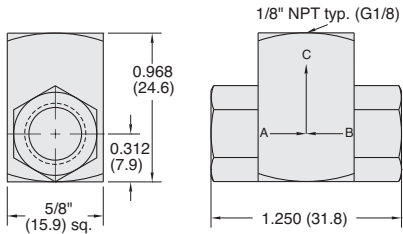


**Part No.**  
MSV-1444

## Poppet Type Shuttle Valves



Brass body, Delrin Poppet,  
Buna-N seal



**Medium:** Air, Water or Oil

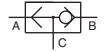
**Input Pressure:** 300 psig/21 bar - air; 1,000 psig/70 bar - hydraulic

**Air Flow:** 14 scfm @ 50 psig; 26 scfm @ 100 psig; 630 l/min @ 6 bar

**Mounting:** Direct or in-line

**Operation:** Flow from "A" to "C" or "B" to "C"

**Pressure to Shift:** 1/2 psig approx.



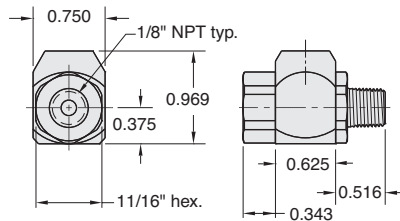
**Note:** Shuttle valves should not be used as a pressure selector

| Part No.         | Description                    |
|------------------|--------------------------------|
| <u>MJSV-1</u>    | Poppet Shuttle Valve, 1/8" NPT |
| <u>MJSV-1-MG</u> | Poppet Shuttle Valve, G1/8     |

## J-Series Shuttle Valves



**Part No.**  
ISV-2FPE



Poppet type shuttle  
(double check) valve.  
Brass body, stainless  
steel shuttle, Buna-N  
seal

**Medium:** Air, Water or Oil

**Input Pressure:** 300 psig max.

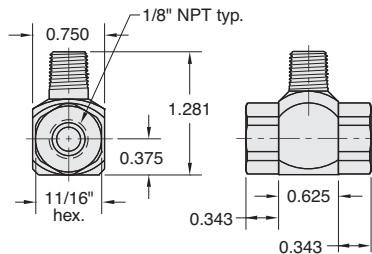
**Air Flow:** 30 scfm @ 50 psig  
50 scfm @ 100 psig

**Mounting:** Direct or in-line

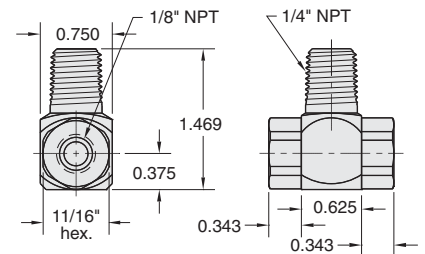
**Pressure to Shift:** 1 psig approx.



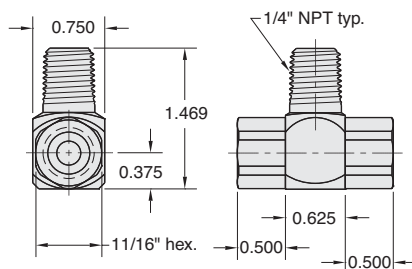
**Part No.**  
ISV-2PFE



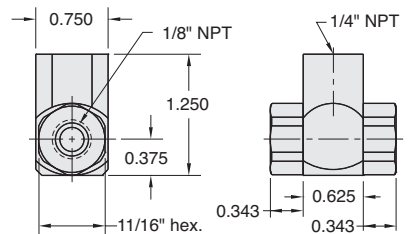
**Part No.**  
ISV-2WFF



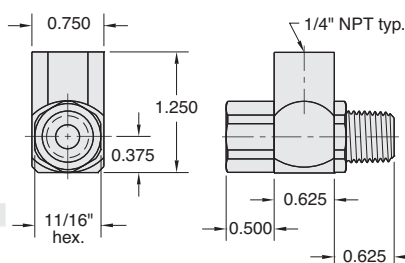
**Part No.**  
ISV-2WYY



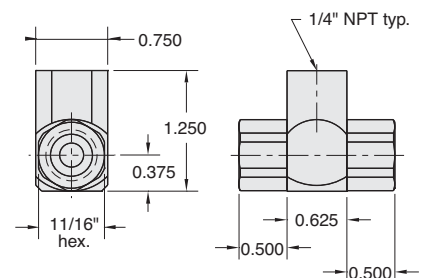
**Part No.**  
ISV-2YFF



**Part No.**  
ISV-2YYW



**Part No.**  
ISV-2YYY





# NEW! PILOT-OPERATED CHECK VALVES

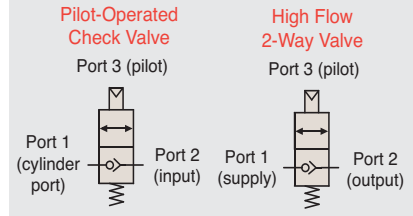


Pilot-Operated Check Valves work as standard check valves, but can be opened with an air pilot signal to permit free flow in the normally “checked” direction. The Clippard Pilot-Operated Check Valve provides the user with a reliable method to check flow in one direction, with the ability to remotely signal a free flow through the valve. Ideal for any circuit that requires this useful function—all in one valve that is easy to connect!

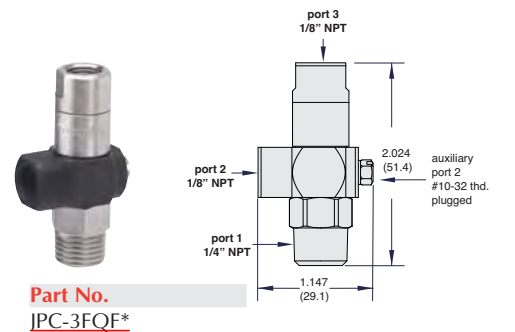
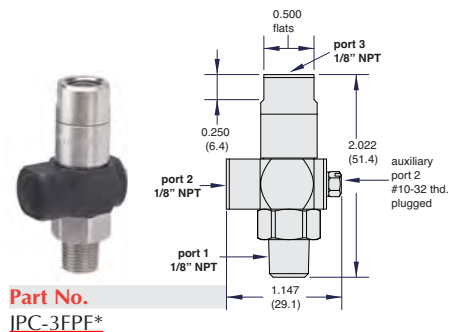
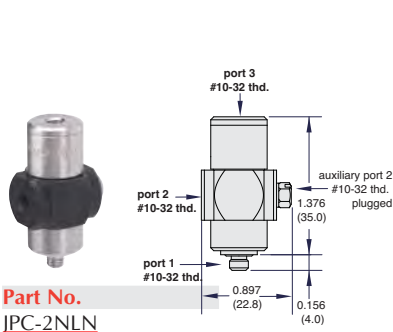
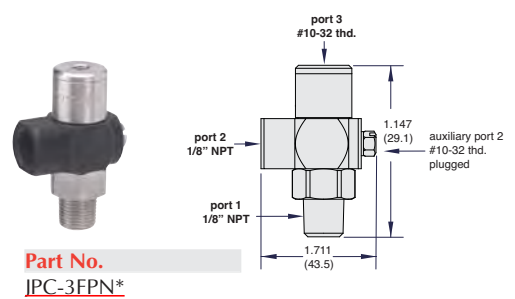
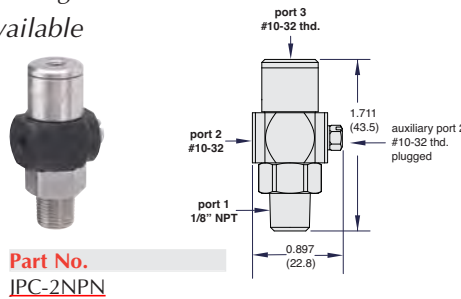
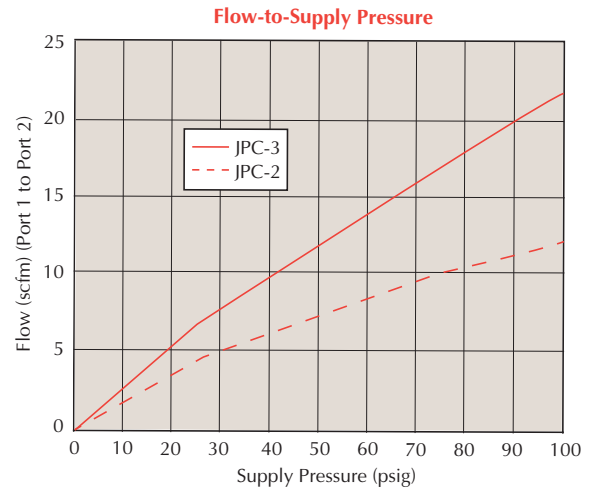
**Medium:** Air, Water or Oil  
**Pressure Range:** 0 to 300 psig; 0 to 21 bar (see chart below)  
**Temperature Range:** 32 to 230°F (0 to 110°C)  
**Materials:** ENP brass, anodized aluminum, stainless steel, Buna-N seals

For specialty options such as various seal materials, manual override, or specific pilot to supply ratios, please consult factory.

## Function/Porting Options



- High flow valve means low pressure drop
- Uses Clippard's superior poppet design
- Variety of port configurations available
- “Auxiliary” port allows ease of plumbing
- Side port (port 2) rotates for ease of positioning



\* Also available in corrosion-resistant materials. Add “CR-” to the beginning of the Part No.

## Miniature Pulse Valves

A Normally-Open 3-way valve that closes shortly after being pressurized and remains closed until supply pressure is exhausted and repressurized. Widely used in control circuits.



**Medium:** Air

**Input Pressure:** 40 to 150 psig/20 bar max.

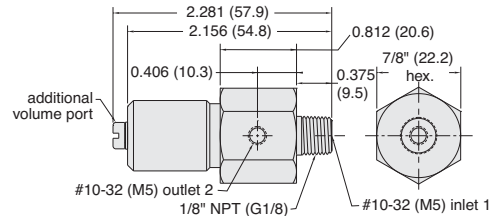
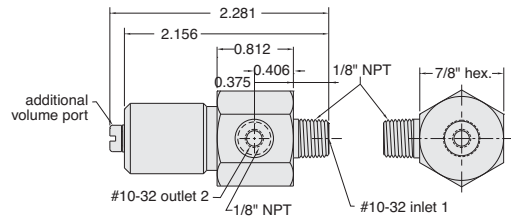
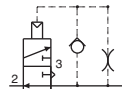
**Mounting:** 1/8" NPT (G1/8) thread; nut furnished

**Volume Chamber:** #10-32 (M5)

**Operation:** Converts a continuous supply of inlet air into a pulse of approximately 100 milliseconds

**Response:** 300 cycles per minute; time delay may be increased by adding standard Clippard volume chambers not to exceed 3 cu. in.

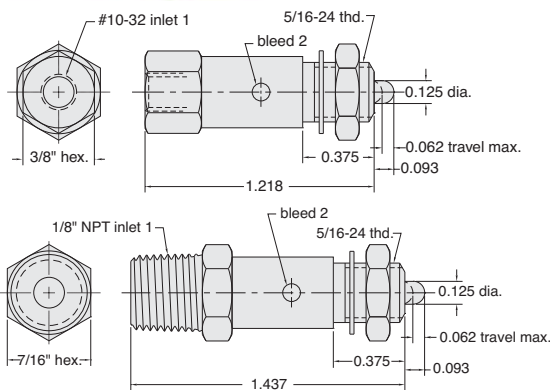
**Construction:** Body - ENP brass, Seals - Buna-N rubber, Spring - stainless steel, Poppet - Delrin®



| Part No.       | Description            |
|----------------|------------------------|
| <u>PV-1</u>    | Pulse Valve, #10-32    |
| <u>PV-1-M5</u> | Pulse Valve, M5 Metric |
| <u>PV-1P</u>   | Pulse Valve, 1/8" NPT  |

## Normally-Closed 2-Way Pilot Sensor

For use with pressure piloted control circuits, can repeatedly detect a position within 0.005" properly mounted. In jigs or fixtures it will signal correct position and start-ok to control circuit.



**Medium:** Air

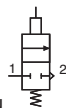
**Stem Travel:** 1/16" max. (will open and close in as little as 0.005")

**Input Pressure:** 300 psig max.

**Air Flow:** 3 scfm @ 50 psig; 6 scfm @ 100 psig

**Force For Full Stem Travel:** 7 oz. nominal

**Mounting:** #15/16-24 thread. Nut and lockwashers furnished

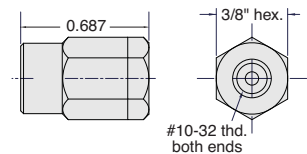


| Part No.      | Description                              |
|---------------|--|
| <u>MPS-2</u>  | Poppet Valve with Pilot Sensor, #10-32   |
| <u>MPS-2P</u> | Poppet Valve with Pilot Sensor, 1/8" NPT |

## In-Line Fixed Orifice Air Chokes



Each choke is calibrated for precise flow



**Medium:** Air

**Material:** Brass

**Working Range:** 0 to 300 psig max.

| Part No.     | Description                          |
|--------------|--------------------------------------|
| <u>MAC-A</u> | Air Choke, 0.0135" Hole, Yellow Disk |
| <u>MAC-B</u> | Air Choke, 0.010" Hole, Green Disk   |
| <u>MAC-C</u> | Air Choke, 0.0075" Hole, Blue Disk   |
| <u>MAC-D</u> | Air Choke, 0.006" Hole, Red Disk     |

## Additional Valve Specifications

**Materials:** Brass body, Buna-N seals, stainless steel stem and spring

**Temperature Range:** 32 to 230°F (0 to 110°C)

**Options:** Consult the factory concerning the price and availability of the following standard options:

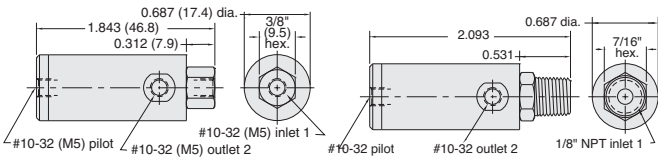
- ENP** - Electroless Nickel Plating
- M5** - M5 x 0.8 threaded ports
- MG** - G1/8 ports
- E** - EPDM Seals
- V** - Viton Seals



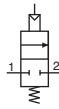


## Piloted Actuated Water Drawback Valves

When this Normally-Closed valve closes a spring biased internal piston draws back a small volume on outlet side (approx. 6-7" in 1/8" I.D. tube) thus preventing overflow or dribbles. Ideal for use in quenching or water spray applications.



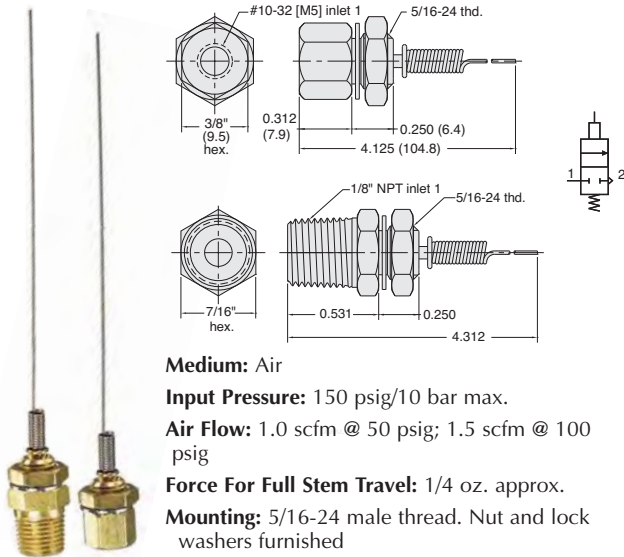
- Medium:** Water or Other Light Liquids
- Input Pressure:** 100 psig/10 bar max.
- Pilot Pressure:** 25 psig min.
- Flow:** 74 cu. in. H<sub>2</sub>O per min. @ 80 psig
- Drawback:** 0.07 cu. in. (1.2 ml)
- Mounting:** Mounts in-line



| Part No. | Description                           |
|----------|---------------------------------------|
| WDV-2    | Poppet Valve with Air Pilot, #10-32   |
| WDV-2-M5 | Poppet Valve with Air Pilot, M5       |
| WDV-2P   | Poppet Valve with Air Pilot, 1/8" NPT |

## 2-Way Normally-Closed Whisker Valve

For use with bleed pressure piloted control circuits. Coil spring stainless steel whisker is easily replaceable and can be formed to different shapes.

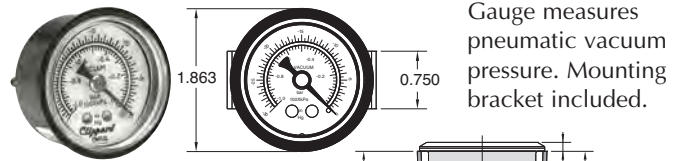


- Medium:** Air
- Input Pressure:** 150 psig/10 bar max.
- Air Flow:** 1.0 scfm @ 50 psig; 1.5 scfm @ 100 psig
- Force For Full Stem Travel:** 1/4 oz. approx.
- Mounting:** 5/16-24 male thread. Nut and lock washers furnished
- Bleed:** To atmosphere around whisker stem

**Whisker:** Stainless steel, approx. 3" (76.2) length. Replacement Part No. 12375

| Part No. | Description                             |
|----------|---|
| MWV-1    | Normally-Closed Whisker Valve, #10-32   |
| MWV-1-M5 | Normally-Closed Whisker Valve, M5       |
| MWV-1P   | Normally-Closed Whisker Valve, 1/8" NPT |

## Vacuum Gauge



**Range:** Scale reading from 0 to 30" Hg. and 0 to -1 bar

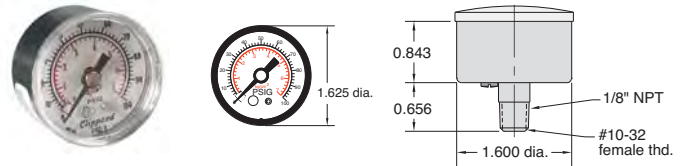
**Construction:** Nickel-plated steel case. Plastic face. Dial shows two ranges; Hg in black. Bars in red. Built-in pressure snubber.

**Ports:** Connection located at rear is double threaded O.D. - male thread 1/8" NPT, I.D. - tapped for #10-32 fitting

**Mounting:** Stud mount using 1/8" NPT center stud or panel mount using the zinc plated steel bracket supplied.

| Part No. | Description  |
|----------|--------------|
| VG-30    | Vacuum Gauge |

## Pressure Gauges



Gauge measures pneumatic system pressure. Stud mounted.

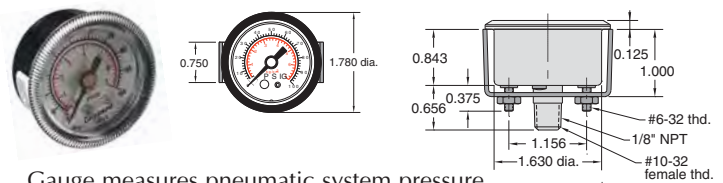
**Range:** Scale reading from 0 to 100 psig and 0 to 6.9 bar

**Construction:** Steel case. Plastic face. Dial shows two ranges; psig in black. Bars in red. Built-in pressure snubber.

**Ports:** Connection located at rear is double threaded O.D. - male thread 1/8" NPT; I.D. - tapped for #10-32 fitting

**Mounting:** Direct with 1/8" NPT

| Part No.  | Description                   |
|-----------|-------------------------------|
| PG-101-BK | Pressure Gauge, Black Case    |
| PG-101-NP | Pressure Gauge, Nickel-Plated |



Gauge measures pneumatic system pressure. Mounting bracket included.

**Input Pressure:** Scale reading from 0 to 100 psig and 0 to 6.9 bar

**Construction:** Nickel-plated steel case. Plastic face. Dial shows two ranges; psig in black. Bars in red. Built-in pressure snubber.

**Ports:** Connection located at rear is double threaded O.D. - male thread 1/8" NPT I.D. - tapped for #10-32 fitting

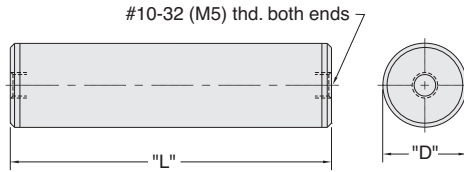
**Mounting:** With zinc plated steel bracket supplied

| Part No. | Description    |
|----------|----------------|
| PG-100   | Pressure Gauge |

## In-Line Volume Chamber



Used for providing a time delay in pneumatic circuits



The time delay of the PV-1, PV-1P and R-711 may be increased by adding standard Clippard volume chambers. The charts show total TIME versus VOLUME for these combinations.

| Volume CU. IN. | Volume Chamber |
|----------------|----------------|
| 0.1            | MAT-.1         |
| 0.25           | MAT-.25        |
| 0.50           | MAT-.50        |
| 1.0            | MAT-1.0        |
| 1.2            | R-821          |
| 2.0            | MAT-2.0        |
| 2.4            | R-821 (2)      |
| 3.6            | R-821 (3)      |
| 4.0            | MAT-4.0        |

| Suffix | Bore   | "L"    | "D"    | Cu.In |
|--------|--------|--------|--------|-------|
| 0.1    | 3/8"   | 1.265" | 0.437" | 0.1   |
| 0.25   | 3/8"   | 2.640" | 0.437" | 0.25  |
| 0.5    | 9/16"  | 2.390" | 0.625" | 0.5   |
| 1.0    | 9/16"  | 4.390" | 0.625" | 1.0   |
| 2.0    | 15/16" | 3.328" | 1"     | 2.0   |
| 4.0    | 15/16" | 6.234" | 1"     | 4.0   |

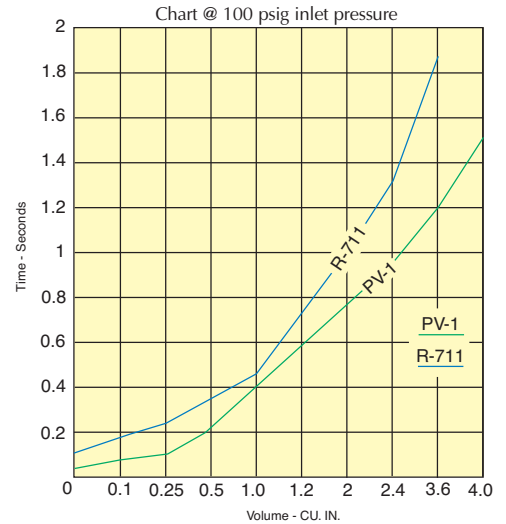
| Volume | Time in Seconds |       |
|--------|-----------------|-------|
|        | PV-1            | R-711 |
| 0      | 0.042           | 0.117 |
| 0.1    | 0.074           | 0.180 |
| 0.25   | 0.124           | 0.245 |
| 0.5    | 0.210           | 0.350 |
| 1.0    | 0.390           | 0.450 |
| 1.2    | 0.580           | 0.700 |
| 2.0    | 0.760           | 1.000 |
| 2.4    | 0.950           | 1.300 |
| 3.6    | 1.200           | 1.900 |
| 4.0    | 1.500           | N.R.  |

Medium: Air only

Material: Brass

Input Pressure: 150 psig/10 bar max.

Mounting: Direct or in-line; Mounting clamp with MAT-20 and MAT-4.0



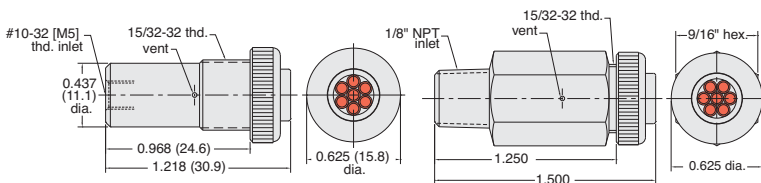
| Part No.      | Description                    |
|---------------|--------------------------------|
| MAT-(size)    | In-Line Volume Chamber, #10-32 |
| MAT-(size)-M5 | In-Line Volume Chamber, M5     |

Specify Size per Chart

R-821 volume charts are shown in the Modular Section of this catalog.

## Multi-Pin Air Indicator

Plunger type (when extended 7-pin color display signals "on")



Medium: Air Only

Input Pressure: 150 psig/1 to 10 bar max.

Minimum Actuation Pressure: 15 psig approx.

Response: Approx. 10 milliseconds @ 50 psig

Filtration: 40 micron recommended

Mounting: IND-3: Panel mount in hole. #15/32-32 nut and lockwasher provided; IND-3P: Direct mount into 1/8" NPT hole

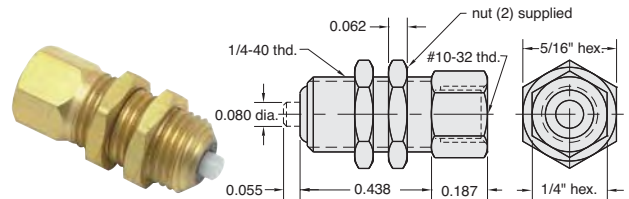
Maximum Panel Thickness: 3/16" (4.8)

| Part No.         | Description                       |
|------------------|-----------------------------------|
| IND-3-(color)    | Multi-Pin Air Indicator, #10-32   |
| IND-3-M5-(color) | Multi-Pin Air Indicator, M5       |
| IND-3P-(color)   | Multi-Pin Air Indicator, 1/8" NPT |

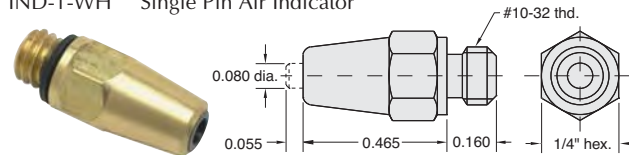
GN-Green, WH-White, RD-Red, YL-Yellow

## Single Pin Air Indicator

Plunger type (when extended white pin display signals "on")



| Part No. | Description              |
|----------|--------------------------|
| IND-1-WH | Single Pin Air Indicator |



| Part No.  | Description              |
|-----------|--------------------------|
| IND-1M-WH | Single Pin Air Indicator |

Medium: Air Only

Input Pressure: 150 psig max.

Minimum Actuation Pressure: 12 psig approx.

Response: Approx. 10 milliseconds @ 50 psig

Filtration: 40 micron recommended

Mounting: IND-1-WH: Panel mount 1/4 dia. hole. 1/4-40 thd. nuts provided. IND-1M-WH: Direct mount into #10-32 port

Maximum Panel Thickness: 3/16"



# HEAVY-DUTY LIMIT VALVES

## Heavy-Duty Limit Valves



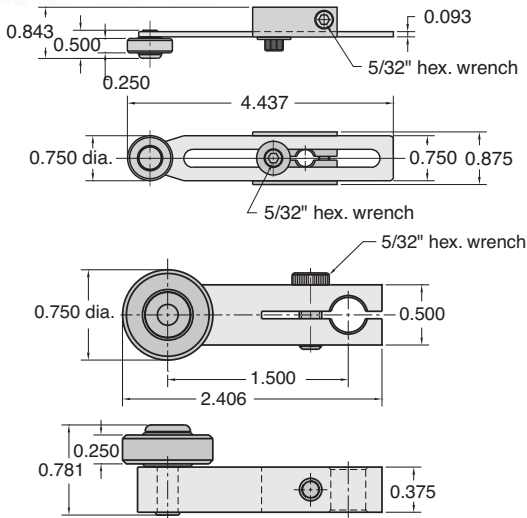
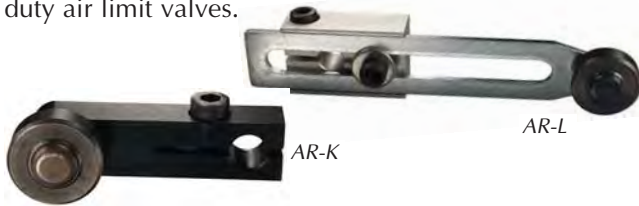
These valves feature rugged construction to withstand heavy use. A zinc alloy die cast actuator head with a hardened steel shaft in a bronze bearing is mated to a solid aluminum valve body. Inside is

a Clippard series cartridge valve (MJV-2C or 3C, MJVO-2C or 3C) made of brass and stainless steel with Buna-N seals. Valve cartridge is easily replaced in minutes. Three different style actuator arms are available as shown below.

| Part No.               | Description                              |
|------------------------|--|
| <a href="#">LVA-2</a>  | 2-Way Poppet Normally-Closed Limit Valve |
| <a href="#">LVA-3</a>  | 3-Way Poppet Normally-Closed Limit Valve |
| <a href="#">LVAO-2</a> | 2-Way Normally-Open Limit Valve          |
| <a href="#">LVAO-3</a> | 3-Way Normally-Open Limit Valve          |

## Roller Actuator Arms

Roller Actuator Arms are ideal for Clippard heavy-duty air limit valves.



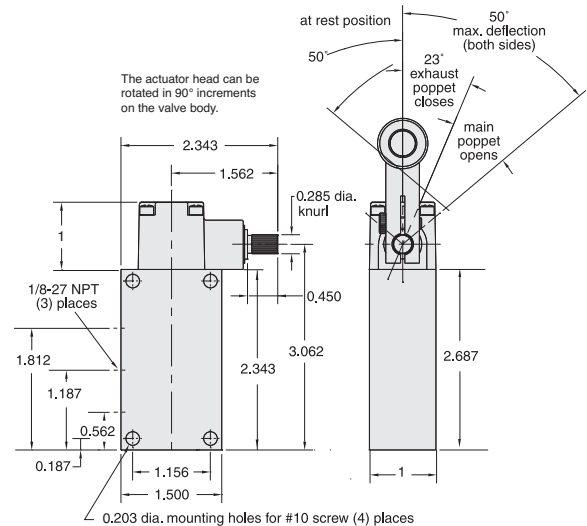
**Arm:** Aluminum base with steel extendable arm (AR-L only)

**Roller:** Hardened steel

**Adjustment:** AR-L only - 1.0" to 3.5"

**Mounting:** Slotted mounting clamp tightens onto limit valve with 5/32" hex. wrench; may be positioned on limit valve shaft in any direction within a 360° circle.

| Part No.             | Description                     |
|----------------------|---------------------------------|
| <a href="#">AR-K</a> | Roller Actuator Arm             |
| <a href="#">AR-L</a> | Roller Actuator Arm, Adjustable |



**Medium:** Air

**Stem Travel:** Actuator arm may move 50° in either direction

**Input Pressure:** 300 psig max.

**Air Flow:** 10 scfm @ 50 psig; 19 scfm @ 100 psig

**Torque to Actuate:** 3 in./lbs.

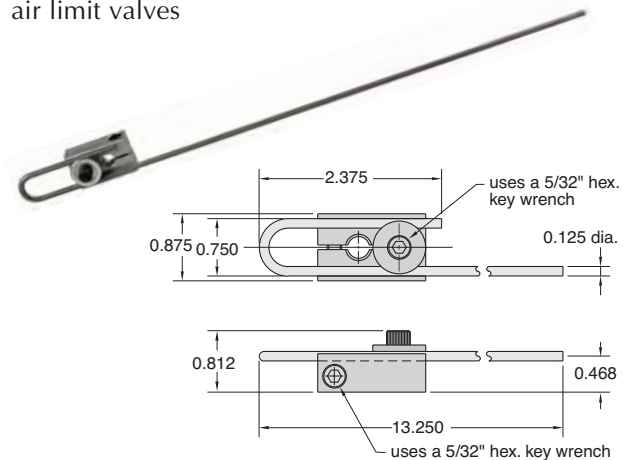
**Actuation Range:** 0 to 23° Off, 23 to 50° On, Maximum travel 50°

**Mounting:** Four 13/64" dia. mounting holes provided in valve body for use with #10 screw, or for tapping 1/4-20 by customer

**Ports:** Inlet - 1/8-27" NPT, Outlet - 1/8-27" NPT, Exhaust - 1/8-27" NPT for convenience in porting away exhaust air or attaching muffler; it should not be restricted; exhaust port is not used on 2-ways

## Adjustable Rod Actuator Arm

Adjustable Rod Actuator Arm for Clippard heavy-duty air limit valves



**Arm:** Steel 1/8" rod 13" long retained by screw clamp; the rod may be shortened and/or bent to desired shape

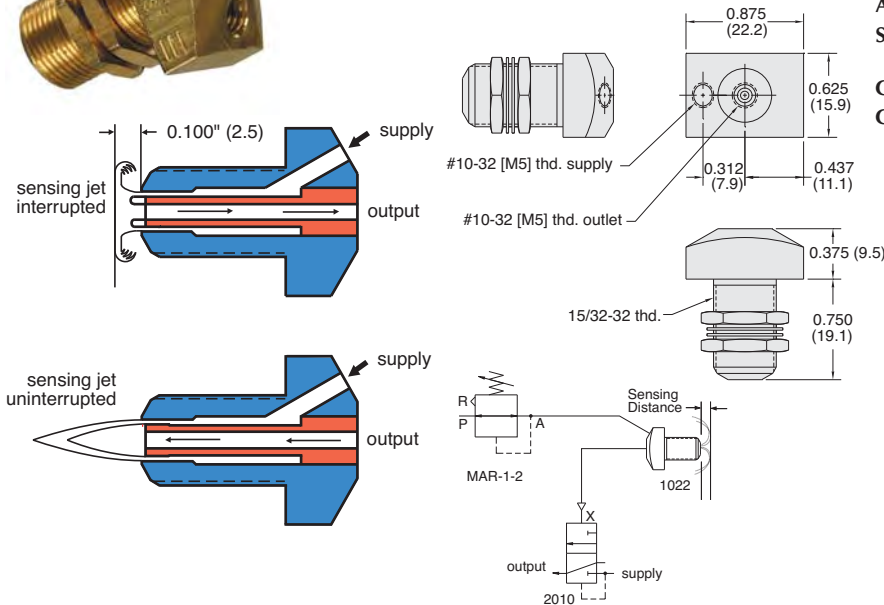
**Mounting:** Slotted aluminum mounting clamp may be positioned on limit valve shaft in any direction within a 360° circle

| Part No.             | Description      |
|----------------------|------------------|
| <a href="#">AR-M</a> | Rod Actuator Arm |

## Non-Contact Air Proximity Switch



Non-Contact Air Proximity Switch with no moving parts; will sense any flat or curved object which presents a sensing surface of 1/4" or more to the sensing nozzle



**Medium:** Air

**Input Pressure:** 4 to 10 psig/0.3 to 0.7 bar

**Nominal Proximity Distance:** 0.100"

**Output Signal at 4 psig supply:** Normal: -2" H<sub>2</sub>O  
actuated: 7 1/2" H<sub>2</sub>O

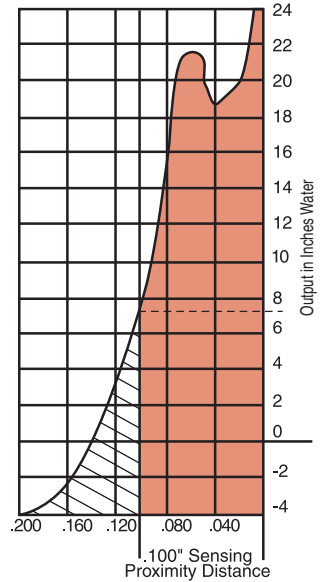
**Frequency Response:** 500 CPM

**Air Consumption:** 0.3 scfm

**Sensing Capability:** Flat or curved surfaces with 1/8" minimum radius

**Connections:** #10-32 (M5) female

**Construction:** Solid brass bright dipped

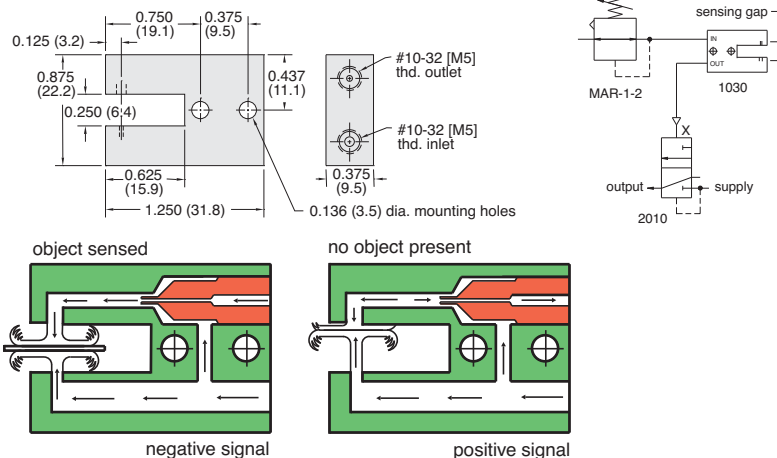


| Part No. | Description                          |
|----------|--------------------------------------|
| 1022     | Non-Contact Air Limit Switch, #10-32 |
| 1022-M5  | Non-Contact Air Limit Switch, M5     |

## Non-Contact Gap Sensor



Non-Contact Gap Sensor will sense any flat or round object with a 1/32" minimum radius. Produces a positive signal when no object is present and a negative signal when an object interrupts its sensing system



**Medium:** Air

**Input Pressure:** 0.5 to 5 psig

**Output:** -3" to 26" H<sub>2</sub>O @ 4 psig

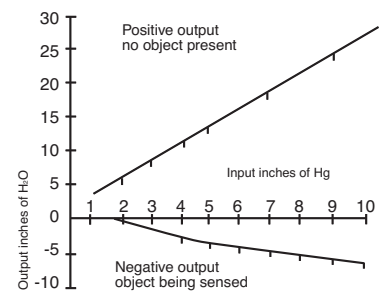
**Frequency Response:** 1,000 cpm

**Air Consumption:** 1/4 scfm @ 4 psig

**Sensing Capability:** Flat or curved surfaces with 1/32" minimum radius. May be used for up to 4" gap with an additional auxiliary jet

**Connections:** #10-32 (M5) female

**Construction:** Solid brass bright dipped



| Part No. | Description                                  |
|----------|--|
| 1030     | Non-Contact Positive Pressure Sensor, #10-32 |
| 1030-M5  | Non-Contact Positive Pressure Sensor, M5     |



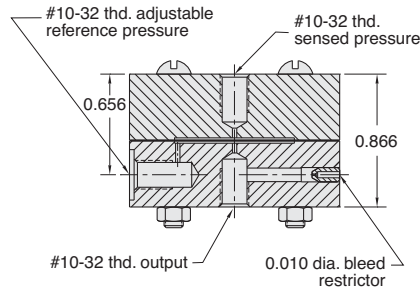
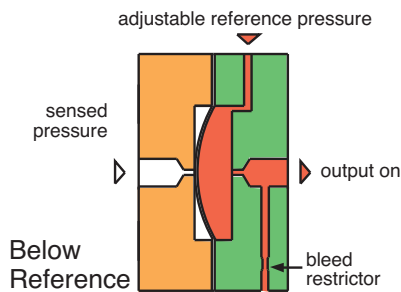
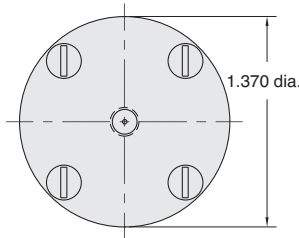


# PRESSURE SENSORS

## Normally-On Single Stage Pressure Repeater



Normally-On Single Stage Pressure Repeater for off-on control of an adjustable reference pressure when a sensed pressure moves above or below the reference pressure level



**Medium:** Reference pressure - air sensed pressure - Air, gas, or liquid

**Input Pressure:** 1 to 150 psig max.

**Air Flow:** 0.029" orifice

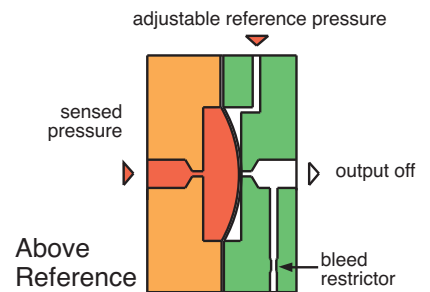
**Response Time:** 5 milliseconds

**Differential Sensitivity:** 2%

**Frequency Response:** 60 Hz

**Materials:** Anodized aluminum body, Buna-N diaphragms

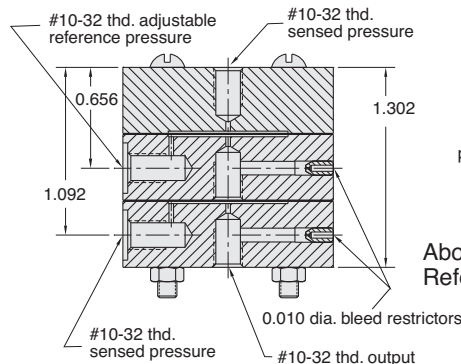
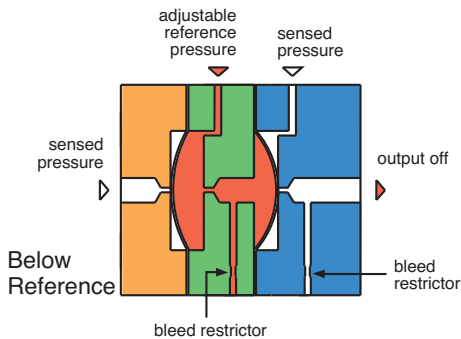
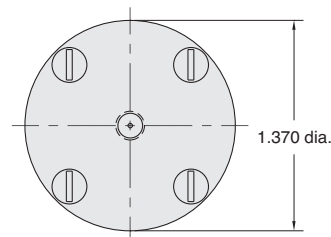
| Part No. | Description                    |
|----------|--------------------------------|
| 1043     | Single Stage Pressure Repeater |



## Normally-Off Two Stage Pressure Repeater



Normally Off Two Stage Pressure Repeater for off-on control of an adjustable reference pressure when a sensed pressure moves above or below the reference pressure level



**Medium:** Reference pressure - air sensed pressure - Air, gas, or liquid

**Input Pressure:** 1 to 150 psig max.

**Air Flow:** 0.029" orifice

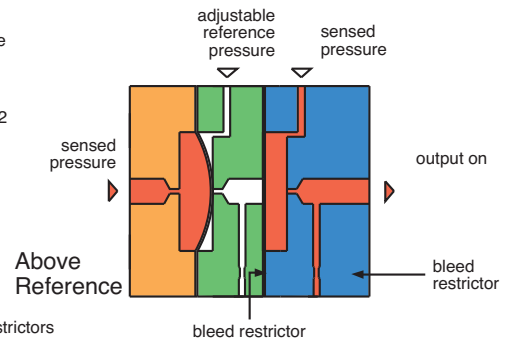
**Response Time:** 5 milliseconds

**Differential Sensitivity:** 2%

**Frequency Response:** 60 Hz

**Materials:** Anodized aluminum body, Buna-N diaphragms

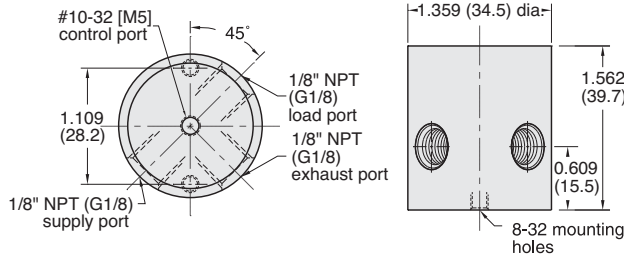
| Part No. | Description                 |
|----------|-----------------------------|
| 1044     | Two Stage Pressure Repeater |



## 3-Way Normally-Closed Amplifier Valves

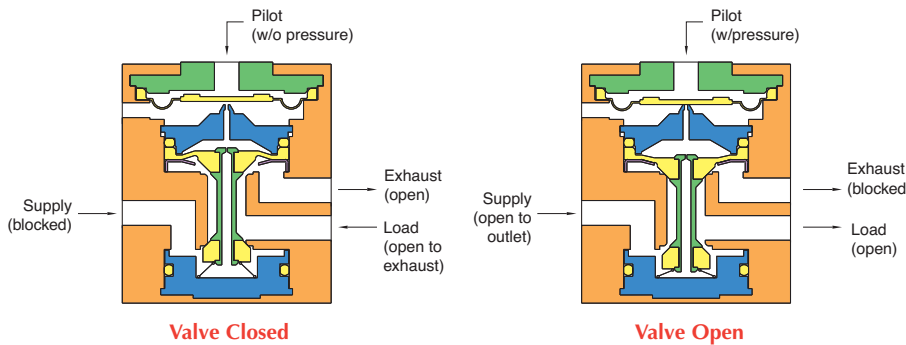


3-Way Valve Normally-Closed Interface amplifies very low pressure air-jet sensing signals to working power levels



Top View

Side View



Valve Closed

Valve Open

**Medium:** Air

**Material:** Anodized aluminum body, Buna-N diaphragms

**Input Pressure:** 30 to 100 psig / 2 to 7 bar max.

**Air Flow:** 22 scfm @ 100 psig; 530 l/min @ 6 bar

**Pilot Pressure:** 4" H<sub>2</sub>O @ 100 psig

**Maximum Allowable Pilot Pressure:** 5 psig

**Response Time:** 10 milliseconds dead headed

**Operating Speed:** 50 Hz

**Bleed:** 0.1 scfm @ 100 psig

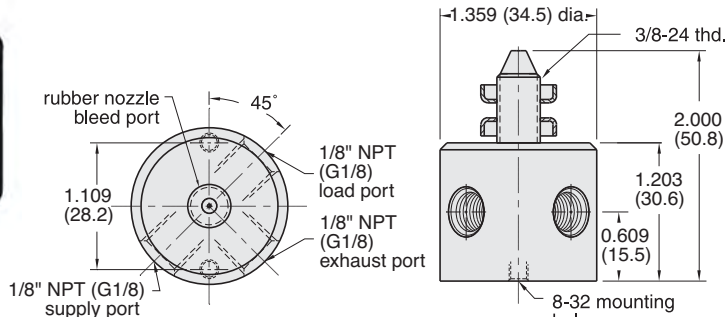
**Ports:** Load - 1/8" NPT (G1/8) female  
Supply - 1/8" NPT (G1/8) female  
Exhaust - 1/8" NPT (G1/8) female  
Control - #10-32 (M5) female

| Part No.                | Description                         |
|-------------------------|-------------------------------------|
| <a href="#">2010</a>    | Normally-Closed Interface, 1/8" NPT |
| <a href="#">2010-MG</a> | Normally-Closed Interface, G1/8     |

## 3-Way Bleed Pressure Piloted Limit Valves

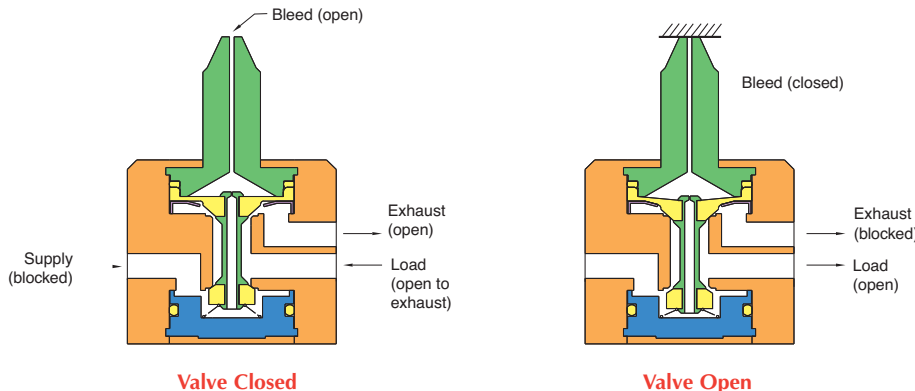


3-Way Bleed Pressure Piloted Limit Valve; blocking of the sensing port causes rapid valve opening



Top View

Side View



Valve Closed

Valve Open

**Medium:** Air

**Material:** Anodized aluminum body, Buna-N diaphragms

**Input Pressure:** 30 to 100 psig / 2 to 7 bar max.

**Air Flow:** 22 scfm @ 100 psig; 530 l/min @ 6 bar

**Bleed:** 0.1 scfm @ 100 psig

**Response Time:** 15 milliseconds

**Ports:** 1/8" NPT (G1/8)

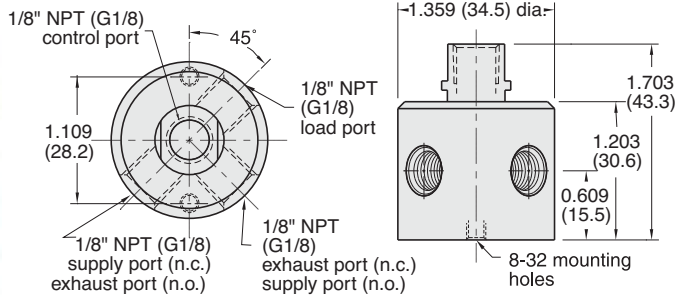
**Note:** Supplied with threaded bulkhead mount and integral rubber nozzle for direct actuation by mechanical closure. By removing rubber nozzle and inserting a #10-32 fitting and length of hose, 2011-1 can be converted to a remote sensing valve.

| Part No.                  | Description                   |
|---------------------------|-------------------------------|
| <a href="#">2011-1</a>    | Piloted Limit Valve, 1/8" NPT |
| <a href="#">2011-1-MG</a> | Piloted Limit Valve, G1/8     |



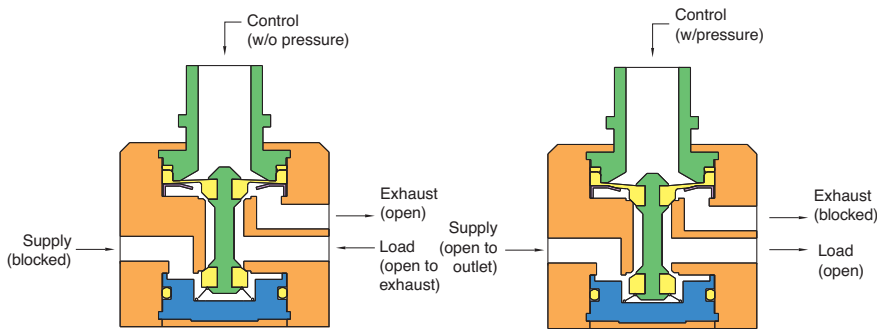
# SPECIAL PILOTED 3-WAY VALVES

## 3-Way N.O. or N.C. Air-Piloted Valves



Top View

Side View



Valve Closed

Valve Open

**Medium:** Air

**Material:** Anodized aluminum body, Buna-N diaphragms

**Input Pressure:** 1 to 100 psig/7 bar max.

**Air Flow:** 22 scfm @ 100 psig;  
530 l/min @ 6 bar

**Minimum Pilot Pressure:**

N.O. - 90% of supply pressure  
N.C. - 60% of supply pressure

**Response Time:** 15 milliseconds after pilot pressure reaches switch point

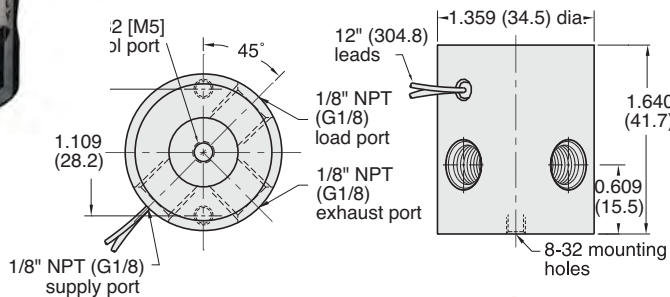
**Operating Speed:** 1,100 CPM

| Part No.         | Description  |
|------------------|--|
| <u>2012</u>      | Piloted Valve, 1/8" NPT  |
| <u>2012-MG</u>   | Piloted Valve, G1/8  |
| <u>2012-VAC</u>  | Valve for Vacuum Operation (requires positive pressure pilot signal) |
| <u>2012-G</u>    | Valve for Liquid Adhesives (silicone diaphragm and seals), 1/8" NPT  |
| <u>2012-G-MG</u> | Valve for Liquid Adhesives (silicone diaphragm and seals), G1/8      |

## 3-Way N.O. or N.C. Electronically Piloted Valves

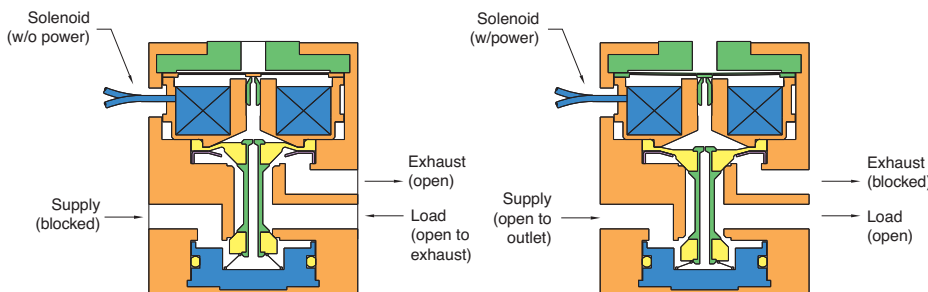


**3-Way Normally-Closed Electronic Valve** with low-power DC solenoid can be directly converted to high pressure pneumatic power without electronic amplification.



Top View

Side View



Valve Closed

Valve Open

**Medium:** Air

**Material:** Anodized aluminum body, Buna-N diaphragms

**Input Pressure:** 30 to 100 psig/2 to 7 bar max.

**Air Flow:** 22 scfm @ 100 psig;  
530 l/min @ 6 bar

**Bleed:** 0.1 scfm @ 100 psig

**Filtration:** 10 micron

**Frequency Response:** 50 Hz @ 100 psig  
70 Hz @ 30 psig

**Switching Speed:** 10 milliseconds

**Leads:** 28 gauge stranded PVC insulated

**Continuous Overload:** 350% @ 25°C ambient;  
250% @ 50°C ambient

**Power Consumption:** less than 0.50 watts at rated voltage  
80 ma. @ 6V  
40 ma. @ 12V  
20 ma. @ 24V

| Part No.          | Description                  |
|-------------------|------------------------------|
| <u>2013-6</u>     | Valve, 6 Volts DC, 1/8" NPT  |
| <u>2013-12</u>    | Valve, 12 Volts DC, 1/8" NPT |
| <u>2013-24</u>    | Valve, 24 Volts DC, 1/8" NPT |
| <u>2013-6-MG</u>  | Valve, 6 Volts DC, G1/8      |
| <u>2013-12-MG</u> | Valve, 12 Volts DC, G1/8     |
| <u>2013-24-MG</u> | Valve, 24 Volts DC, G1/8     |

## 3-Way Normally-Closed Pressure Piloted Valve



Designed to be piloted by a Clippard EV or ET manifold mount electronic valve. Output from the EV/ET actuates the valve to produce outputs up to 22 scfm at 100 psig. Combines low wattage, long life and cool running of the EV/ET valves with quick response and high flow of Clippard booster type valves.

The 2020 and 2021 are identical in all respects except one. The 2020 has an external #10-32 (M5) port for the pressure supply to the EV/ET electronic pilot valve. The 2021 has an internal pressure supply to the EV/ET.

**Medium:** Air

**Input Pressure:** 30 to 100 psig; 2.7 to 7 bar max.

**Air Flow:** 22 scfm @ 100 psig; 620 l/min @ 6 bar

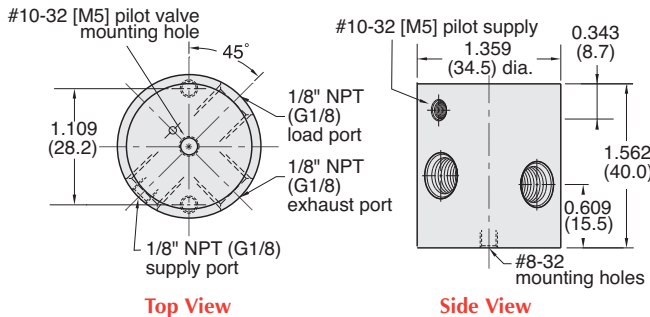
**Pilot Pressure:** 60% of supply pressure, minimum

**Response Time:** Approx. 20 milliseconds

**Mounting:** Mounting holes provided

**Materials:** Anodized aluminum, stainless steel

| Part No.       | Description             |
|----------------|-------------------------|
| <u>2020</u>    | Piloted Valve, 1/8" NPT |
| <u>2020-MG</u> | Piloted Valve, G1/8     |
| <u>2021</u>    | Piloted Valve, 1/8" NPT |
| <u>2021-MG</u> | Piloted Valve, G1/8     |

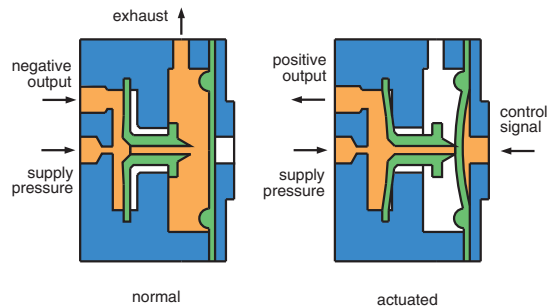
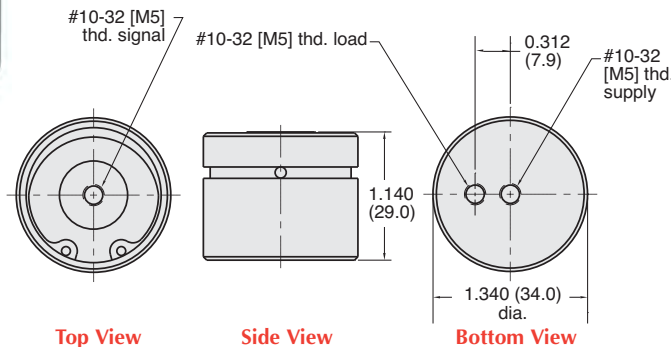


2020 shown with ET Pilot Valve and external pilot supply

## Pressure Piloted Snap Action Amplifying Valve



Provides a sharp, clean output signal, even with slow-changing pressure input signals; output is stabilized without chatter or oscillation.



**Medium:** Air

**Input Pressure:** 3 to 100 psig; 0.2 to 7 bar max.

**Minimum Pilot Pressure:** 1.5" H<sub>2</sub>O psig

**Maximum Pilot Pressure:** 1 psig (28" H<sub>2</sub>O")

**Air Flow:** 0.18 scfm @ 100 psig; 5 l/min @ 6 bar

**Bleed Orifice Diameter:** 0.010"

| Part No.         | Description              |
|------------------|--------------------------|
| <u>3200-A</u>    | Amplifying Valve, #10-32 |
| <u>3200-A-M5</u> | Amplifying Valve, M5     |





# PNEUMATIC COUNTER

## 6-Digit Pneumatic Totalizing Counter



The PT-1SM is a 6-digit pneumatic totalizing counter. A pneumatic signal or impulse adds the value of 1 to the display. When the indicator reaches its maximum value, the counter starts again at zero. The counter may be reset manually by depressing the reset push button, or by an air impulse. The counter is useful for event recording, piece or part counting, for indicating program steps, cycle counting, machine time logging, and many other purposes. The PT-1SM is designed for surface mounting.

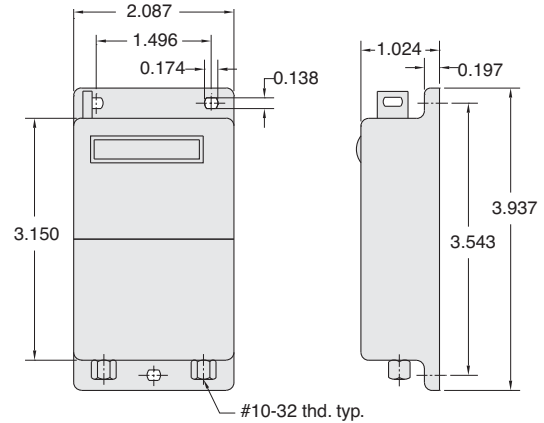
**Display:** 6 figures, numerals 0.080" to 0.160"

**Medium:** Filtered compressed air containing no oil

**Reset:** Manual push button and pneumatic spring return

**Input Pressure:** 30 to 120 psig

**Mounting:** Surface mount

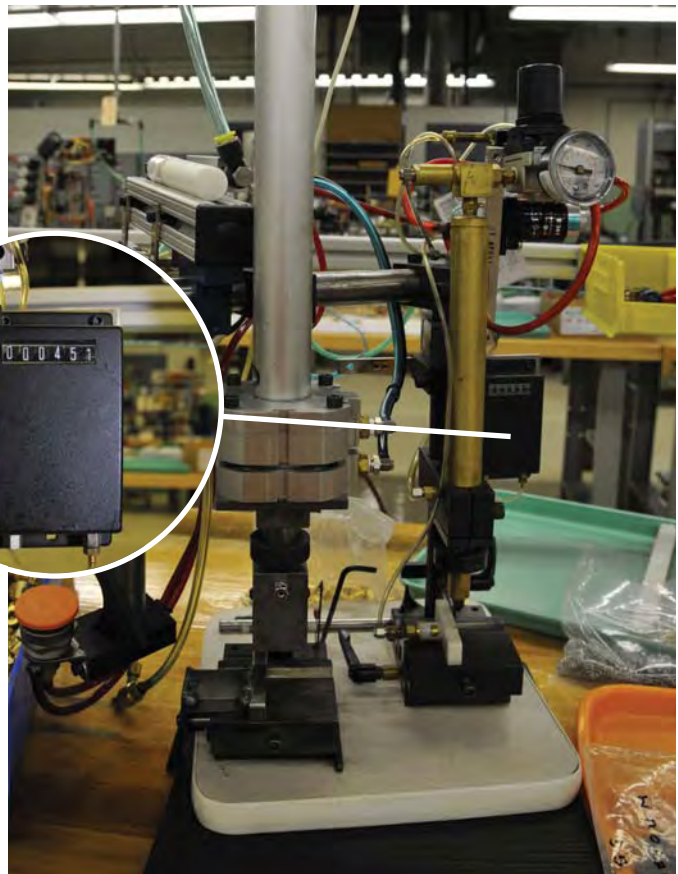


| Part No. | Description                          |
|----------|--------------------------------------|
| PT-1SM   | 6-Digit Pneumatic Totalizing Counter |

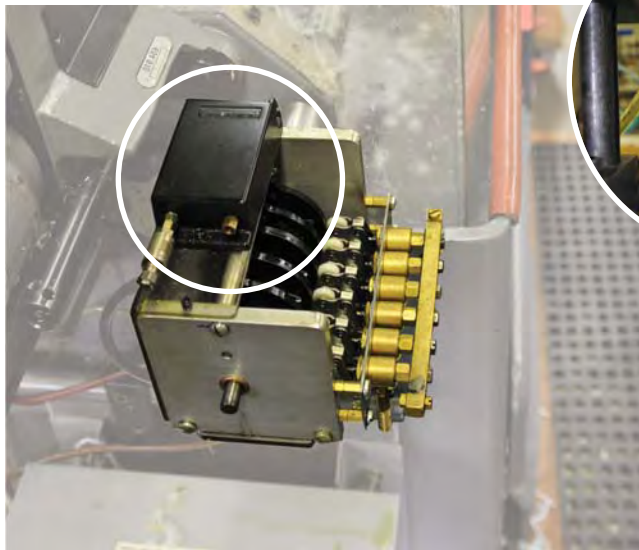
### Pneumatic Counter Solutions

Pneumatic counters are used in a variety of pneumatic applications including filling machines, cut counting, stamping, multi-spindle operations and more. They count pulses generated by cylinders, push buttons, pedals, and other actuation devices.

Clippard's 6-digit totalizing counter can be found in many places throughout their manufacturing operations.



*Date Stamping Operation*



*4-Spindle Turret Operation*

## Quick Exhaust Valve Application

In a typical application the exhaust valve is installed in the inlet of a spring return or double acting pneumatic cylinder.

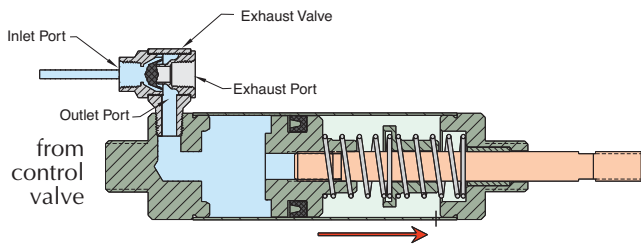
Supply air from a control valve is directed into the inlet port of the exhaust valve. The Buna-N poppet seals the exhaust port and allows air to flow from the outlet port of the valve into the cylinder.

The pressurized air pushes against the piston and extends the rod, compressing the spring, until full rod extension is achieved.

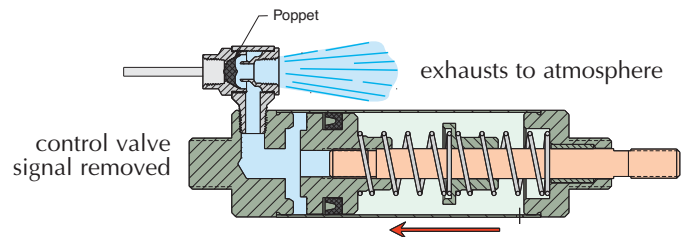
When the control valve exhausts air from the exhaust valve inlet port, the Buna-N poppet shifts to seal the inlet port and open the exhaust port to the cylinder. The pressurized air is allowed to exhaust directly through the exhaust valve to atmosphere.

Normally the air must travel back through the long air line to the control valve to exhaust. By mounting the exhaust valve directly on the cylinder, the piston retracts quickly since the distance to atmosphere is very short and unrestricted.

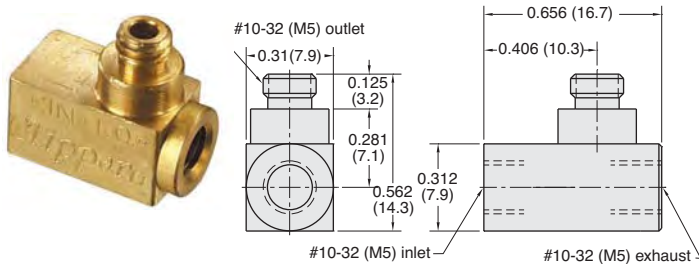
### Cylinder Extends



### Cylinder Retracts - Fast!



## Poppet Quick Exhaust Valve



| Part No. | Description                             |
|----------|---|
| MEV-2    | Poppet Type Quick Exhaust Valve, #10-32 |
| MEV-2-M5 | Poppet Type Quick Exhaust Valve, M5     |

**Medium:** Air

**Material:** Brass body, Buna-N poppet

**Working Range:** 15 to 150 psig/35-10 bar max.

**Air Flow:** 5 scfm @ 50 psig; 9 scfm @ 100 psig (exhaust rate); 220 l/min @ 6 bar

**Mounting:** Direct to cylinder

**Pressure to Shift:** @ 50 psig - opens after approx. 5 psig drop; @ 3.5 bar - opens after approx. 0.350 bar drop

**Note:** Not for use with cylinders larger than 7/8" dia.; moderate strokes up to 10"

## Packaging Solutions

A leader in miniature pneumatics, Clippard provides the packaging industry a variety of products and solutions. We understand the needs of this industry, and are prepared to serve you with our expanding product lines and expertise in applications.

- Conveying applications
- Case erectors
- Process solutions
- Bottle/container filling
- Palletizing
- Controls for a variety of applications

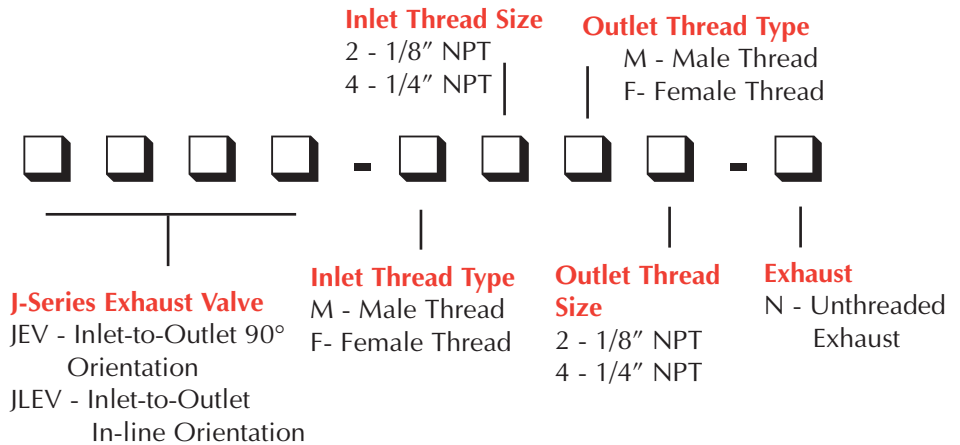




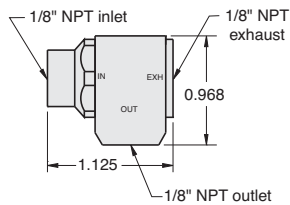
# EXHAUST VALVES

## J-Series Exhaust Valves

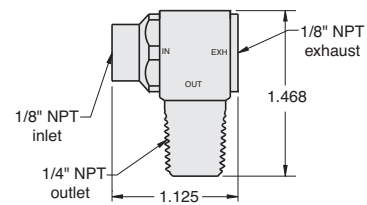
Clippard's J-Series Exhaust Valve offers a variety of design features and provides fast response times and high flow with 1/8" and 1/4" NPT ports. This compact poppet type valve is constructed of brass and is 100% tested to assure the highest quality. The JEV's primary function is to increase cylinder speed. However, it also enables the use of smaller directional valves, longer control lines and can be used as a shuttle valve. 32 versions available.



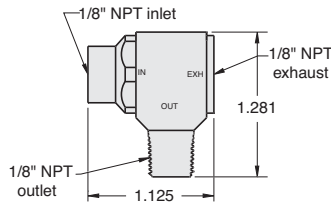
**Part No.**  
JEV-F2F2



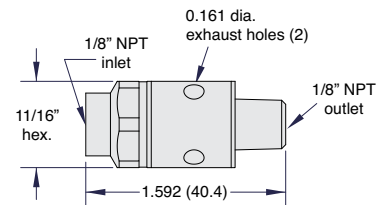
**Part No.**  
JEV-F2M4



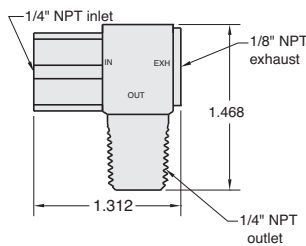
**Part No.**  
JEV-F2M2



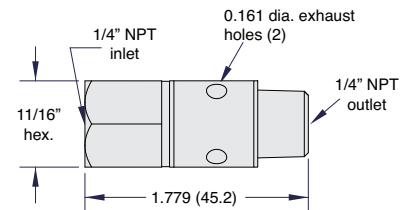
**Part No.**  
JLEV-F2M2-N



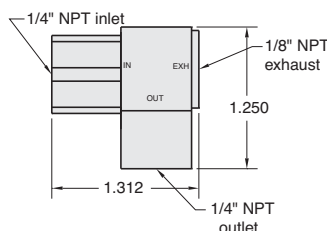
**Part No.**  
JEV-F4M4



**Part No.**  
JLEV-F4M4-N

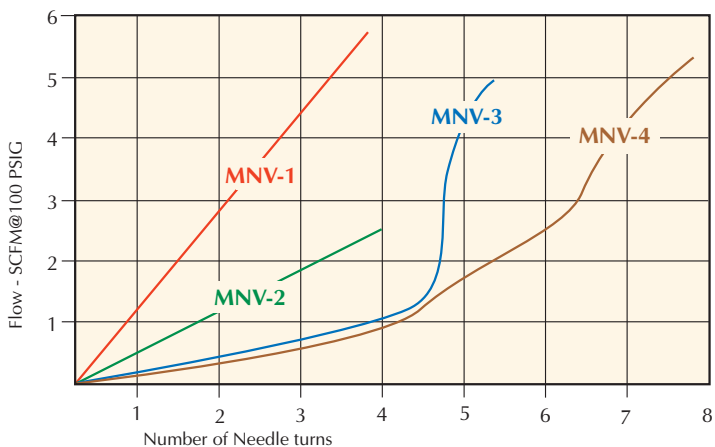
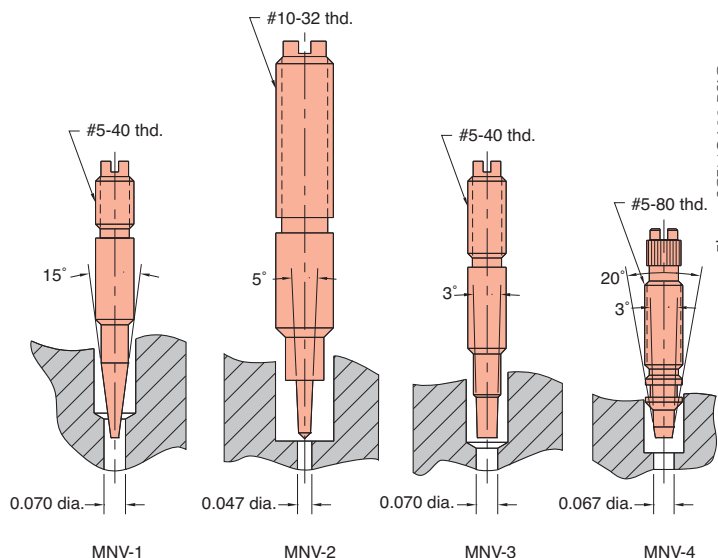


**Part No.**  
JEV-F4F4



### Features

- Enables use of smaller control valves
- 15 to 150 psig maximum
- Male outlet offers direct connection to cylinder
- 36 scfm @ 50 psig and 58 scfm @ 100 psig
- Low shift ratio
- 7 standard configurations
- Custom configurations also available
- Brass construction with molded Buna-N seal



Adjustable control needle valves restrict flow in both directions. There are four models offered by Clippard, all with #10-32 ports, but with various needle configurations to provide coarse or fine flow adjustment. The diagram of needle shapes and the chart on this page show the difference between these models.

**Medium:** Air, Water or Oil



**Materials:** Brass body; stainless steel needle; Buna-N seal

**Mounting:** Direct, in-line or #15/32-32 thread nut and lockwashers furnished as illustrated

**Adjustment:** Knurled knob (clockwise adjustment provides less flow), or Screwdriver slot (clockwise adjustment provides less flow).

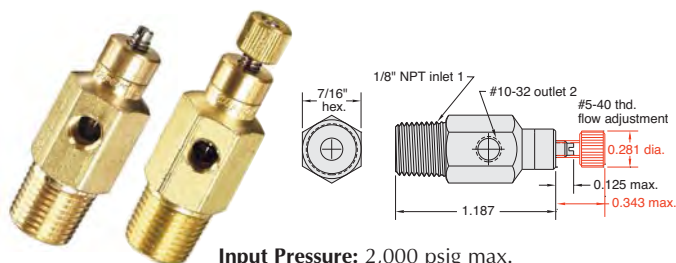
## 15° Needle Valves, #10-32



**Input Pressure:** 2,000 psig max.  
**Air Flow:** 3 scfm @ 50 psig; 6 scfm @ 100 psig

| Part No.      | Description                            |
|---------------|--|
| <u>MNV-1</u>  | Needle Valve, #10-32, Screwdriver Slot |
| <u>MNV-1K</u> | Needle Valve, #10-32, Knurled Knob     |

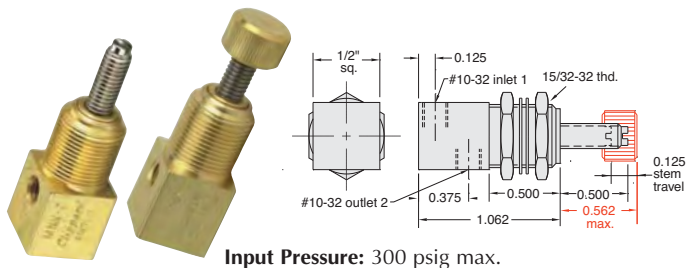
## 15° Needle Valves, 1/8" NPT



**Input Pressure:** 2,000 psig max.  
**Air Flow:** 3 scfm @ 50 psig; 6 scfm @ 100 psig

| Part No.       | Description                              |
|----------------|--|
| <u>MNV-1P</u>  | Needle Valve, 1/8" NPT, Screwdriver Slot |
| <u>MNV-1KP</u> | Needle Valve, 1/8" NPT, Knurled Knob     |

## 5° Needle Valves, #10-32



**Input Pressure:** 300 psig max.  
**Air Flow:** 1 scfm @ 50 psig; 2.5 scfm @ 100 psig

| Part No.      | Description                            |
|---------------|--|
| <u>MNV-2</u>  | Needle Valve, #10-32, Screwdriver Slot |
| <u>MNV-2K</u> | Needle Valve, #10-32, Knurled Knob     |

## 3° Needle Valves, #10-32



**Input Pressure:** 2,000 psig/40 bar max.  
**Air Flow:** 2.5 scfm @ 50 psig; 5 scfm @ 100 psig; 120 l/min @ 6 bar

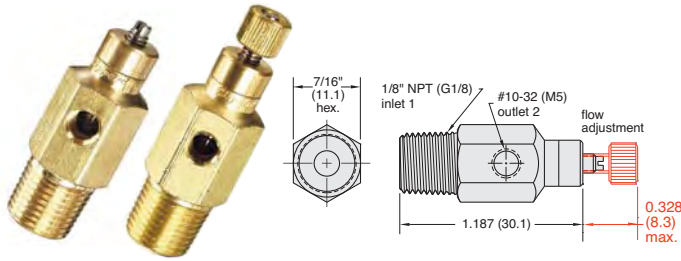
| Part No.         | Description                            |
|------------------|--|
| <u>MNV-3</u>     | Needle Valve, #10-32, Screwdriver Slot |
| <u>MNV-3-M5</u>  | Needle Valve, M5, Screwdriver Slot     |
| <u>MNV-3K</u>    | Needle Valve, #10-32, Knurled Knob     |
| <u>MNV-3K-M5</u> | Needle Valve, M5, Knurled Knob         |





# NEEDLE VALVES & MUFFLERS

## 3° Needle Valves, 1/8" NPT

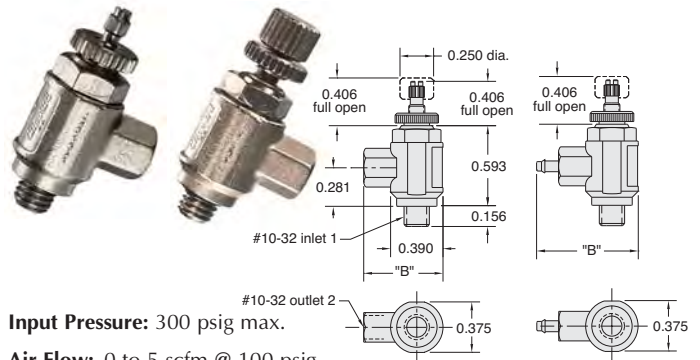


**Input Pressure:** 2,000 psig/40 bar max.

**Air Flow:** 2.5 scfm @ 50 psig; 5 scfm @ 100 psig; 120 l/min @ 6 bar

| Part No.          | Description                            |
|-------------------|--|
| <u>MNV-3P</u>     | Needle Valve, #10-32, Screwdriver Slot |
| <u>MNV-3P-M5</u>  | Needle Valve, M5, Screwdriver Slot     |
| <u>MNV-3KP</u>    | Needle Valve, #10-32, Knurled Knob     |
| <u>MNV-3KP-M5</u> | Needle Valve, M5, Knurled Knob         |

## 3° Needle Valves, #10-32

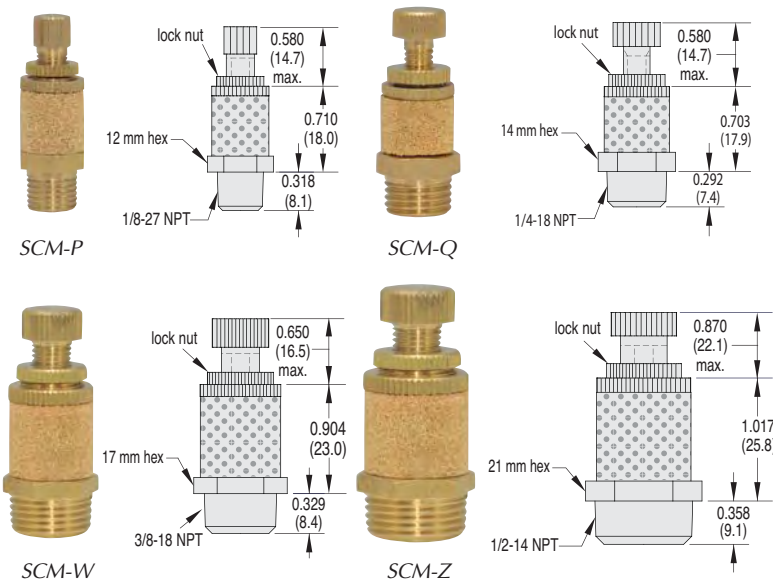


**Input Pressure:** 300 psig max.

**Air Flow:** 0 to 5 scfm @ 100 psig

| Part No.       | Female Part     | "B"   | Adjustment   |
|----------------|-----------------|-------|--|
| <u>MNV-4</u>   | #10-32 . . . .  | 0.593 | <b>Knurled locking nut standard; screwdriver slot; knurled locking nut standard; clockwise adjustment of either provides less flow</b> |
| <u>MNV-41</u>  | 1/16 Barb . . . | 0.750 |  |
| <u>MNV-42</u>  | 1/8 Barb . . .  | 0.906 |  |
| <u>MNV-4K</u>  | #10-32 . . . .  | 0.593 | <b>Knurled knob; clockwise adjustment of either provides less flow</b>   |
| <u>MNV-4K1</u> | 1/16 Barb . . . | 0.750 |  |
| <u>MNV-4K2</u> | 1/8 Barb . . .  | 0.906 |  |

## NEW! Speed Control Mufflers



Knurled knob length based on minimum thread engagement.

**Material:** Solid brass body; sintered bronze muffler (40 micron)

| Part No.     | Description         |
|--------------|---------------------|
| <u>SCM-P</u> | Muffler, 1/8-27 NPT |
| <u>SCM-Q</u> | Muffler, 1/4-18 NPT |
| <u>SCM-W</u> | Muffler, 3/8-18 NPT |
| <u>SCM-Z</u> | Muffler, 1/2-14 NPT |



Quality remains a primary feature of every product Clippard produces. This is achieved through the excellence in manufacturing practices and craftsmanship that has continued throughout the years. The company motto—Quality People, Quality Products—emphasizes the important role every employee plays in maintaining the company's reputation.

## Miniature Pressure Regulators

Regulators are offered in either relieving or non-relieving versions. The relieving design maintains a constant pressure output even when downstream conditions change.

The non-relieving regulator does not automatically compensate for changes in downstream flow or pressure. There is no vent to atmosphere, as in a relieving type regulator, and the output pressure can increase due to a downstream event.

**Medium:** Air

**Materials:** Brass body, Buna-N seals, stainless steel stem and spring

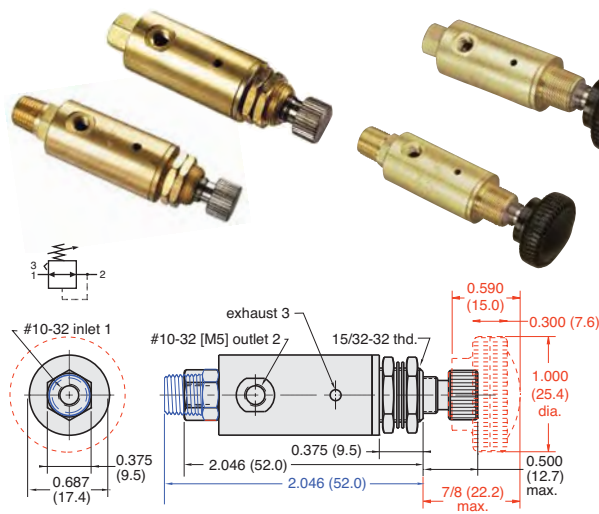
**Air Flow:** 3 scfm @ 50 psig; 5 scfm @ 100 psig; 120 l/min. @ 6 bar

**Input Pressure:** 300 psig/21 bar max.

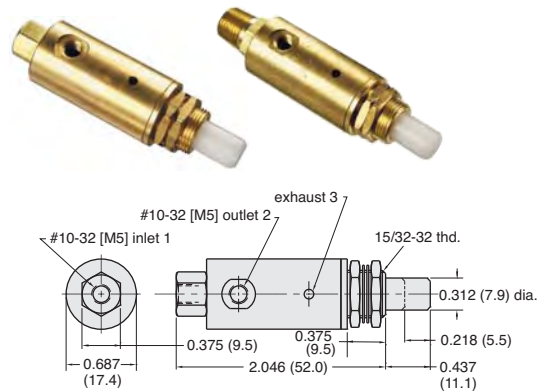
**Mounting:** #15/32-32 thread. Nuts and lockwashers furnished

**Adjustment:** By means of a knob with micro-adjustment (40 pitch thd.)

## Adjustable Pressure Regulators



## Plunger-Type Pressure Regulators



**Plunger Travel:** 7/32"

**Force For Full Stem Travel:** 25 lb. nominal

**Operation:** As plunger is depressed pressure increases proportionally to the travel; when plunger is released the input is closed and the output pressure is exhausted to atmosphere

| Range (psig/bar) | #10-32  | Knob     | 1/8" NPT | Non-Relieving | M5         |
|------------------|---------|----------|----------|---------------|------------|
| 0-20/1.4         | MAR-1-2 | MAR-1K-2 | MAR-1P-2 | MAR-1NR-2     | MAR-1-2-M5 |
| 0-30/2.1         | MAR-1-3 | MAR-1K-3 | MAR-1P-3 | MAR-1NR-3     | MAR-1-3-M5 |
| 0-40/2.8         | MAR-1-4 | MAR-1K-4 | MAR-1P-4 | MAR-1NR-4     | MAR-1-4-M5 |
| 0-50/3.4         | MAR-1-5 | MAR-1K-5 | MAR-1P-5 | MAR-1NR-5     | MAR-1-5-M5 |
| 0-60/4.1         | MAR-1-6 | MAR-1K-6 | MAR-1P-6 | MAR-1NR-6     | MAR-1-6-M5 |
| 0-70/4.8         | MAR-1-7 | MAR-1K-7 | MAR-1P-7 | MAR-1NR-7     | MAR-1-7-M5 |
| 0-100/6.9        | MAR-1   | MAR-1K   | MAR-1P   | MAR-1NR       | MAR-1-M5   |

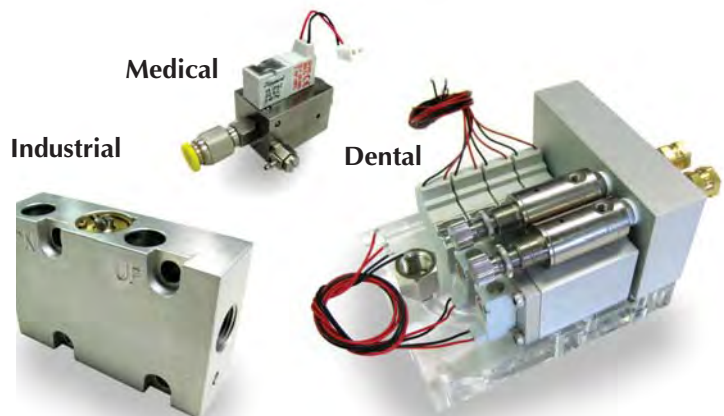
| Range (psig/bar)* | #10-32   | 1/8" NPT  | M5          |
|-------------------|----------|-----------|-------------|
| 0-20/1.4          | MAR-1C-2 | MAR-1CP-2 | MAR-1C-2-M5 |
| 0-30/2.1          | MAR-1C-3 | MAR-1CP-3 | MAR-1C-3-M5 |
| 0-40/2.8          | MAR-1C-4 | MAR-1CP-4 | MAR-1C-4-M5 |
| 0-50/3.4          | MAR-1C-5 | MAR-1CP-5 | MAR-1C-5-M5 |
| 0-60/4.1          | MAR-1C-6 | MAR-1CP-6 | MAR-1C-6-M5 |
| 0-70/4.8          | MAR-1C-7 | MAR-1CP-7 | MAR-1C-7-M5 |
| 0-100/6.9         | MAR-1C   | MAR-1CP   | MAR-1C-M5   |

\* Outlet pressure is based on 7/32" stem travel. If stem is depressed further, the outlet pressure will increase.

## MAR Series Regulators

Special Configurations & Assemblies

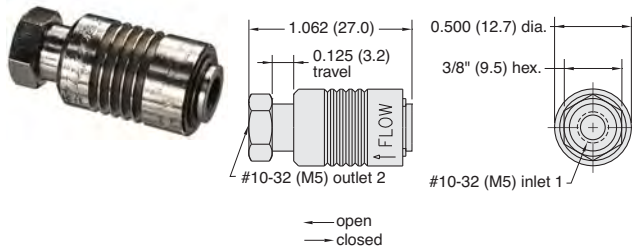
- Robust
- Compact
- Reliable
- Multiple Medias
- Manifold Mount
- Cartridge Style
- Preset to Pressure
- Pre-Assembled & Tested





# SLEEVE VALVES

## 2 Position 2-Way or 3-Way Sleeve Valves



**Medium:** Air

**Mounting:** In-line or direct to fitting

**Stem Travel:** 1/8" (3.2)

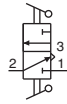
**Material:** Electroless nickel plated

**Input Pressure:** 150 psig/10 bar max. brass

**Air Flow:** 6.5 scfm @ 50 psig; 11.8 scfm @ 100 psig; 280 l/min @ 6 bar

**Force to Actuate:** Approx. 2.5 lbs

| Part No. | Description                           |
|----------|---------------------------------------|
| SLV-2    | 2 Position 2-Way Sleeve Valve, #10-32 |
| SLV-2-M5 | 2 Position 2-Way Sleeve Valve, M5     |
| SLV-3    | 2 Position 3-Way Sleeve Valve, #10-32 |
| SLV-3-M5 | 2 Position 3-Way Sleeve Valve, M5     |



## J-Series Sleeve Valves

### Features

- Variety of inlet and outlet porting eliminates fittings
- No cross-over between inlet and exhaust ports
- Corrosion resistant electroless nickel plated brass body
- Anodized aluminum sleeve for corrosion resistance
- Smooth operation, low sliding friction
- Buna-N seals; (Fluorocarbon available)

Clippard J-Series sleeve valves with 1/8" NPT and 1/4" NPT ports offer large flow capability with a relatively short stroke in 2-way and 3-way valves, and no cross-over between inlet and exhaust on the 3-way models.

The JSLV-2 2-way valve and the JSLV-3 3-way valve combine high flow with small size. Unlike ball valves, sleeve valves require no space for a handle. They also provide flexibility in pipe connections and are available with either male or female threads or combinations of both.

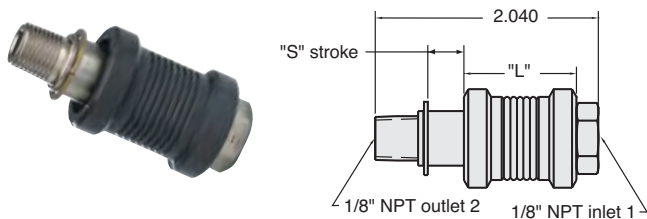
The JSLV-2 and JSLV-3 valves feature a smooth opening stroke during which inlet air is directed to the outlet. During the closing stroke, in the opposite direction of travel, the outlet is closed from the inlet and in the JSLV-3 version, the outlet is then exhausted to atmosphere without the inlet ever being connected to exhaust.

**Medium:** Air, Water or Oil

**Force to Actuate:** Approx. 8 lbs

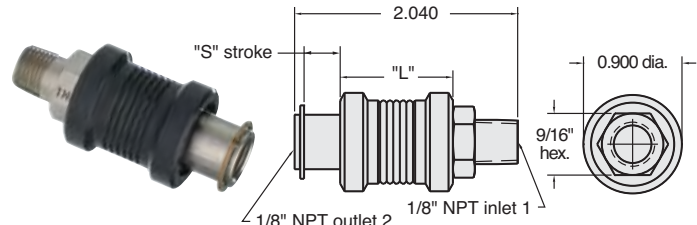
**Input Pressure:** 150 psig max.

**Mounting:** In-line or direct to fitting



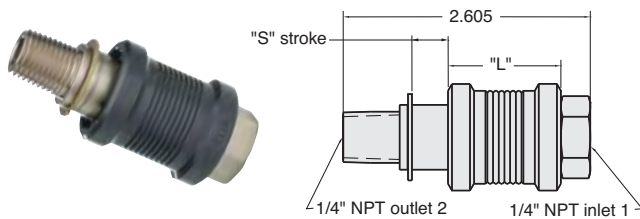
**Air Flow:** 1/8" NPT: 43 scfm @ 100 psig

| Order No.   | Type  | Inlet           | "L"    | "S"    |
|-------------|-------|-----------------|--------|--------|
| JSLV-2-F2M2 | 2-Way | 1/8 Female Pipe | 1.155" | 0.260" |
| JSLV-3-F2M2 | 3-Way | 1/8 Female Pipe | 1.030" | 0.385" |



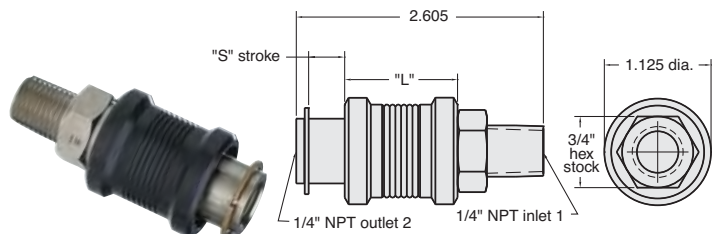
**Air Flow:** 1/8" NPT: 43 scfm @ 100 psig

| Order No.   | Type  | Inlet         | "L"    | "S"    |
|-------------|-------|---------------|--------|--------|
| JSLV-2-M2F2 | 2-Way | 1/8 Male Pipe | 1.155" | 0.260" |
| JSLV-3-M2F2 | 3-Way | 1/8 Male Pipe | 1.030" | 0.385" |



**Air Flow:** 1/4" NPT: 70 scfm @ 100 psig

| Order No.   | Type  | Inlet           | "L"    | "S"    |
|-------------|-------|-----------------|--------|--------|
| JSLV-2-F4M4 | 2-Way | 1/4 Female Pipe | 1.325" | 0.305" |
| JSLV-3-F4M4 | 3-Way | 1/4 Female Pipe | 1.190" | 0.460" |



**Air Flow:** 1/4" NPT: 70 scfm @ 100 psig

| Order No.   | Type  | Inlet         | "L"    | "S"    |
|-------------|-------|---------------|--------|--------|
| JSLV-2-M4F4 | 2-Way | 1/4 Male Pipe | 1.325" | 0.305" |
| JSLV-3-M4F4 | 3-Way | 1/4 Male Pipe | 1.190" | 0.460" |