XM Valve
Air Control Valves
Direct Acting, 1/8" Port
3-Way & 4-Way: .15 Cv

Catalog 0661/USA
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3-Way, 2-Position, Normally Closed

De-energized position – Solenoid #12 de-energized. Pressure at inlet port 1 blocked, outlet port 2 connected to exhaust port 3.

Energized position – Solenoid #12 energized. Pressure at inlet port 1 is connected to outlet port 2, exhaust port 3 is blocked.

3-Way, 2-Position, Normally Open

De-energized position – Solenoid #12 de-energized. Pressure at inlet port 3 connected to outlet port 2, exhaust port 1 is blocked.

Energized position – Solenoid #12 energized. Pressure at inlet port 3 blocked, outlet port 2 connected to exhaust port 1.

3-Way, 2-Position, Diverter

De-energized position – Solenoid #12 de-energized. Pressure at inlet port 2 connected to outlet port 3. Port 1 is blocked.

Energized position – Solenoid #12 energized. Pressure at inlet port 2 is connected to outlet port 1. Port 3 is blocked.

3-Way, 2-Position, Selector

De-energized position – Solenoid #12 de-energized. Pressure at inlet port 1 blocked. Pressure at inlet port 3 is connected to outlet port 2.

Energized position – Solenoid #12 energized. Pressure at inlet port 1 is connected to outlet port 2. Pressure at port 3 is blocked.

2-Way, 2-Position, Normally Closed

De-energized position – Solenoid #12 de-energized. Pressure at inlet port 1 blocked, port 2 is connected to port 3, which is plugged.

Energized position – Solenoid #12 energized. Pressure at inlet port 1 is connected to outlet port 2. Port 3 is blocked.

2-Way, 2-Position, Normally Open

De-energized position – Solenoid #12 de-energized. Pressure at inlet port 3 is connected to outlet port 2. Port 1 is blocked.

Energized position – Solenoid #12 energized. Pressure at inlet port 3 is blocked. Port 2 is connected to port 1, which is plugged.

* Plug port 1.

4-Way, 2-Position

De-energized position – Solenoid #14 de-energized. Pressure at inlet port 1 connected outlet port 2. Outlet port 4 connected to exhaust port 3.

Energized position – Solenoid #14 energized. Pressure at inlet port 1 is connected to outlet port 4. Outlet port 2 connected to exhaust port 3.

4-Way, 2-Position with Flow Controls

De-energized position – Solenoid #14 de-energized. Pressure at inlet port 1 connected outlet port 2. Outlet port 4 connected to exhaust port 3.

Energized position – Solenoid #14 energized. Pressure at inlet port 1 is connected to outlet port 4. Outlet port 2 connected to exhaust port 3.

Flow Controls meter exhaust from ports 2 and 4 separately into port 3.

* Plug port 3.
**Basic Valve Features**

**XM Series Air Control Valves**

**Flow Characteristics**
- 3-Way: .15 Cv
- 4-Way: .15 Cv

**3-Way Operating Pressure**
- 0 to 125 PSIG
- 0 to -14.7 PSIG

**4-Way Operating Pressure**
- -14.7 to 125 PSIG

**Ports**
- 1/8" NPT

**Mounting**
- Inline
- IEM Bar Manifold
- Subbase Valve Manifold

**Solenoids**
- Continuous Duty Rated
- 24" Grommet
- 15mm 3-Pin (9.4 mm Pin Spacing)
- 1/2" Conduit
- 12VDC to 240VAC

**Balanced Poppet**
- 3-Way N.O. & N.C.
- Diverter
- Selector
- Vacuum Option
XM Series Air Control Valves
3 & 4-Way, 2-Position Solenoid

Common Part Numbers

Inline Valves

#12

N.C. Function Shown

3-Way

<table>
<thead>
<tr>
<th>24” Grommet</th>
<th>3-Pin 15mm DIN 9.4mm</th>
<th>1/2” Conduit / 24” Leads</th>
<th>Voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>XM30NBG49A</td>
<td>XM30NB549A</td>
<td>XM30NBH49A</td>
<td>24VDC</td>
</tr>
<tr>
<td>XM30NBG53A</td>
<td>XM30NB553A</td>
<td>XM30NBH53A</td>
<td>120VAC</td>
</tr>
</tbody>
</table>

Note: All units with non-locking flush override.
Can be used as N.O / N.C. / Diverter / Selector function.

Subbase Mount

#12

N.C. Function Shown

3-Way

<table>
<thead>
<tr>
<th>24” Grommet</th>
<th>3-Pin 15mm DIN 9.4mm</th>
<th>Voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>XM3VNBG49A</td>
<td>XM3VNB549A</td>
<td>24VDC</td>
</tr>
<tr>
<td>XM3VNBG53A</td>
<td>XM3VNB553A</td>
<td>120VAC</td>
</tr>
</tbody>
</table>

Note: All units with non-locking flush override.
Can be used as N.O / N.C. / Diverter / Selector function.

4-Way

<table>
<thead>
<tr>
<th>24” Grommet</th>
<th>3-Pin 15mm DIN 9.4mm</th>
<th>Voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>XM4VNBG49A</td>
<td>XM4VNB549A</td>
<td>24VDC</td>
</tr>
<tr>
<td>XM4VNBG53A</td>
<td>XM4VNB553A</td>
<td>120VAC</td>
</tr>
</tbody>
</table>

Note: All units with non-locking flush override.
XM Series Air Control Valves
3 & 4-Way, 2-Position Solenoid

### Model Number Index

**XM 4 0 N B G49 — A**

- **Operator / Function**
  - 3-Way, Direct Operated, Single Solenoid, Spring Return: 3
  - 4-Way, Direct Operated, Single Solenoid, Spring Return: 4

- **Port Size / Thread Type**
  - 1/8" NPT Inline: 0*
  - Subbase Valve Less Base: V

- **Pilot Source / Exhaust**
  - Direct Operated / Standard Pressure: N*
  - Direct Operated / Vacuum Service: V**

- **Overrides**
  - Flush - Non-Locking: B

- **Enclosures / Lead Length**

<table>
<thead>
<tr>
<th>Voltage</th>
<th>AC</th>
<th>DC</th>
</tr>
</thead>
<tbody>
<tr>
<td>60Hz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>542</td>
<td>24</td>
<td>22</td>
</tr>
<tr>
<td>545*</td>
<td>15mm 3-Pin DIN 9.4mm</td>
<td>24</td>
</tr>
<tr>
<td>549*</td>
<td>15mm 3-Pin DIN 9.4mm</td>
<td>24</td>
</tr>
<tr>
<td>553</td>
<td>15mm 3-Pin DIN 9.4mm</td>
<td>120</td>
</tr>
<tr>
<td>557</td>
<td>15mm 3-Pin DIN 9.4mm</td>
<td>240</td>
</tr>
<tr>
<td>557*</td>
<td>1/2&quot; Conduit / Flying Leads 24&quot;</td>
<td>24</td>
</tr>
<tr>
<td>557**</td>
<td>1/2&quot; Conduit / Flying Leads 24&quot;</td>
<td>24</td>
</tr>
</tbody>
</table>

**Notes:**
- **Inline Valves**
  - Conduit Inline valves cannot be mounted to IEM or Subbase Manifolds.

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* Mobile Voltage Rated.
† Inline Version Only.
IEM Bar Manifold Assembly

IEM Bar Manifold

Allows for mounting of 3-Way and 4-Way Inline valves on the same manifold. 3-Way Valves can be mounted on the same manifold to provide a Normally Closed or Normally Open function by rotating the valves 180°. 4-Way valves can be mounted with or without Flow Controls.

IEM Bar Manifold Assemblies consist of valves and an IEM Manifold. Valves and IEM Manifold can be ordered separately.

Subbase Manifold Assembly

Subbase Manifold

Allows for mounting of 3-Way and 4-Way Subbase Valves can be mounted on the same manifold. 3-Way Valves can be mounted on the same manifold to provide a Normally Closed or Normally Open function through the use of port isolation kits. 4-Way valves can be mounted with or without Flow Controls.

Subbase Manifold Assemblies consist of Valves, End Plate Kit and Manifold Subbase Kits. Valves, End Plate Kit and Manifold Subbase Kits can be ordered separately.
How to Order Manifold Assemblies

IEM Bar Manifold Assembly
First line item describes IEM Assembly. Subsequent line items listed identify each station in the Manifold starting with Station Number 1.

Subbase Manifold Assembly
First line item describes Subbase Assembly. Subsequent line items listed identify each station in the Manifold starting with Station Number 1.

Manifold Assembly Ordering Example

<table>
<thead>
<tr>
<th>Item</th>
<th>Qty</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>001</td>
<td>1</td>
<td>AAPSMXNXN04NP</td>
</tr>
<tr>
<td>002</td>
<td>2</td>
<td>XM30NBG49A - Station 1, 2 - Normally Closed</td>
</tr>
<tr>
<td>003</td>
<td>1</td>
<td>XM40NBG49A - Station 3</td>
</tr>
<tr>
<td>004</td>
<td>1</td>
<td>XM40NBG49F0A - Station 4</td>
</tr>
</tbody>
</table>

Notes: When ordering Add-A-Folds, list valves left to right when looking at the Port 1/3 side of the manifold. All 3-Way valves will be assembled as 3-Way N.C. valves.

Subbase Manifold Ordering Example

<table>
<thead>
<tr>
<th>Item</th>
<th>Qty</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>001</td>
<td>1</td>
<td>AAPSXJN104NP</td>
</tr>
<tr>
<td>002</td>
<td>2</td>
<td>XM3VNBG49A - Station 1, 2 - Normally Closed</td>
</tr>
<tr>
<td>003</td>
<td>1</td>
<td>XM4VNBG49A - Station 3</td>
</tr>
<tr>
<td>004</td>
<td>1</td>
<td>XM4VNBG49F0A - Station 4</td>
</tr>
</tbody>
</table>

Notes: When ordering Add-A-Folds, list valves left to right when looking at the Port 2/4 side of the manifold. All 3-Way valves will be assembled as 3-Way N.C. valves. Isolator Discs are required for N.O. functions.

Component Ordering Example

<table>
<thead>
<tr>
<th>Item</th>
<th>Qty</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>001</td>
<td>1</td>
<td>PSMXNXN04NP (IEM Kit)</td>
</tr>
<tr>
<td>002</td>
<td>2</td>
<td>XM30NBG49A (Valve)</td>
</tr>
<tr>
<td>003</td>
<td>1</td>
<td>XM40NBG49A (Valve)</td>
</tr>
<tr>
<td>004</td>
<td>1</td>
<td>XM40NBG49F0A (Valve)</td>
</tr>
</tbody>
</table>

Component Ordering Example

<table>
<thead>
<tr>
<th>Item</th>
<th>Qty</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>001</td>
<td>1</td>
<td>PSXM31010P (End Plate Kit)</td>
</tr>
<tr>
<td>002</td>
<td>4</td>
<td>PSXM530CP (Subbase Kit)</td>
</tr>
<tr>
<td>003</td>
<td>2</td>
<td>XM3VNBG49A (Valve)</td>
</tr>
<tr>
<td>004</td>
<td>1</td>
<td>XM4VNBG49A (Valve)</td>
</tr>
<tr>
<td>005</td>
<td>1</td>
<td>XM4VNBG49F0A (Valve)</td>
</tr>
</tbody>
</table>
**Inline Valve on IEM Bar Manifold Assembly**

IEM Bar Manifold Assembly’s are assembled by adding Inline Valves to an IEM Bar Manifold. O-rings are installed at each valve station in the counterbore on the top of the manifold. Valves are installed with 2 mounting screws. For 3-Way N.C. valve operation, line up the solenoid end of the Valve with Port 1 on the Manifold. For 3-Way N.O. operation, line up the solenoid end of the valve with Port 3 on the manifold. For 4-Way valve operation, line up the Solenoid end of the valve with Port 1 on the manifold. If manifolds are factory assembled, all 3-Way valves are N.C. To convert from N.C. to N.O. operation, remove valve from the base and place valve 180° from the original position with the solenoid end lined up with the 3-Port on the manifold.

**Subbase Valve and Manifold Assembly**

Subbase Manifold Assembly’s are assembled by adding tie rods and manifold bases to the end plate kit of the subbase end plate kit as shown below. Valves are added to each subbase per manifold design. 4-Way and 3-Way valves are mounted with Solenoids Coils facing away from subbase delivery ports 2 and 4. For 3-Way N.O. Functions, valves must be isolated from the other 3-Way N.C. and 4-Way valves on the manifold. This is achieved by placing port isolator discs in between the subbase of the first 3-Way N.O. Valve and the subbase of the last 3-Way N.C. or 4-Way valve in the Subbase Manifold. Inlet pressure is connected to Port 3 of the manifold for the 3-Way N.O. valves. Inlet pressure is connected to the Port 1 of the manifold for the 3-Way N.C. and 4-Way valves. Separate Inlet Pressure Ports and Exhaust Ports are required for N.O. and N.C. 3-way function valves.

---

**Performance Information**

<table>
<thead>
<tr>
<th>Code</th>
<th>Voltage</th>
<th>Electrical Consumption</th>
<th>Holding Current</th>
<th>Flow Cv Chart</th>
<th>Seals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>AC 60Hz</td>
<td>DC 50Hz</td>
<td>(W / VA)</td>
<td>(Amps)</td>
<td>3-Way</td>
</tr>
<tr>
<td>42</td>
<td>24</td>
<td>22</td>
<td>4.8VA</td>
<td>.200</td>
<td>.15</td>
</tr>
<tr>
<td>45*</td>
<td>—</td>
<td>—</td>
<td>12</td>
<td>.375</td>
<td>.15</td>
</tr>
<tr>
<td>49*</td>
<td>—</td>
<td>—</td>
<td>24</td>
<td>.188</td>
<td>.15</td>
</tr>
<tr>
<td>53</td>
<td>120</td>
<td>110</td>
<td>4.32VA</td>
<td>.036</td>
<td>.15</td>
</tr>
<tr>
<td>57</td>
<td>240</td>
<td>220</td>
<td>4.32VA</td>
<td>.018</td>
<td>.15</td>
</tr>
</tbody>
</table>

*Mobile Voltage, +25%-30%*

Note: Voltage Tolerance: +10% / -15%

*Cv tested per ANSI / (NFPA) T3.21.3*

---

**Response Time**

<table>
<thead>
<tr>
<th>Code</th>
<th>Voltage</th>
<th>0 Cu. In. Test Chamber</th>
<th>12 Cu. In. Test Chamber</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Fill</td>
<td>Exhaust</td>
</tr>
<tr>
<td>49</td>
<td>24VDC</td>
<td>.011</td>
<td>.007</td>
</tr>
<tr>
<td>53</td>
<td>120VAC</td>
<td>.011</td>
<td>.020</td>
</tr>
</tbody>
</table>

Average Fill Time (Seconds): With 100 PSIG supply, time required to fill from 0-90 PSIG and exhaust from 100 PSIG to 10 PSIG is measured from instant of energizing, or de-energizing solenoid. Times shown are average. Tested per ANSI / (NFPA) T3.21.8.

---

**Operating Pressure**

<table>
<thead>
<tr>
<th>Function / Pilot Source</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-Way, N</td>
<td>0 PSIG</td>
<td>125 PSIG</td>
</tr>
<tr>
<td>3-Way, V</td>
<td>Vacuum</td>
<td>25 PSIG</td>
</tr>
<tr>
<td>4-Way, N</td>
<td>Vacuum</td>
<td>125 PSIG</td>
</tr>
</tbody>
</table>

**Temperature Rating**

32°F to 125°F (0°C to 50°C)
Blanking Plate

<table>
<thead>
<tr>
<th>Kit Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSXM2194P</td>
<td>Subbase Blank</td>
</tr>
</tbody>
</table>

IEM Universal Kit includes: (1) Plate, (2) Screws, (2) Gaskets
Subbase Kit includes: (1) Plate, (2) Screws, (4) Gaskets

IEM Valve / Manifold O-ring Kit

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSXM2186P</td>
<td>IEM Valve / Manifold O-ring Kit</td>
</tr>
</tbody>
</table>

Mounting Bracket - Inline Valve

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSXM8288P</td>
<td>Mounting Bracket</td>
</tr>
</tbody>
</table>

Subbase Valve / Manifold Bolt Kit

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSXM8100P</td>
<td>Subbase Valve / Manifold Bolt Kit</td>
</tr>
</tbody>
</table>

Plug-in Electrical Connectors - 9.4mm

<table>
<thead>
<tr>
<th>Indication</th>
<th>Voltage</th>
<th>Unwired Plug</th>
<th>Plug with 6' Lead</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>N/A</td>
<td>PESC10</td>
<td>PESC12</td>
</tr>
<tr>
<td>LED &amp; Suppression</td>
<td>12/24V</td>
<td>PESC2020B</td>
<td>PESC2220B</td>
</tr>
<tr>
<td>LED &amp; Suppression</td>
<td>120VAC</td>
<td>PESC2001F</td>
<td>PESC2201F</td>
</tr>
</tbody>
</table>

Isolator Plugs - Subbase Manifold

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSXM40900P</td>
<td>Isolation Plugs</td>
</tr>
</tbody>
</table>
XM Series Air Control Valves
3-Way & 4-Way Inline Valves

**XM 3-Way Inline**

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Measurement</th>
<th>Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>.38 (.10)</td>
<td>B</td>
</tr>
<tr>
<td>F</td>
<td>.10 (.25)</td>
<td>G</td>
</tr>
<tr>
<td>L</td>
<td>.75 (.19)</td>
<td>M</td>
</tr>
<tr>
<td>Q</td>
<td>.98 (.249)</td>
<td>R</td>
</tr>
<tr>
<td>V</td>
<td>.08 (.20)</td>
<td>W</td>
</tr>
</tbody>
</table>

**Valve Weight**

- Grommet: 4 oz (.11 Kg)
- DIN: 4 oz (.11 Kg)
- Conduit: 5 oz (.14 Kg)

**XM 4-Way Inline**

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Measurement</th>
<th>Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>.48 (.12)</td>
<td>A1</td>
</tr>
<tr>
<td>D</td>
<td>.24 (.65)</td>
<td>E</td>
</tr>
<tr>
<td>J</td>
<td>2.80 (.71)</td>
<td>K</td>
</tr>
<tr>
<td>N</td>
<td>.48 (.12)</td>
<td>P</td>
</tr>
<tr>
<td>T</td>
<td>.32 (.80)</td>
<td>U</td>
</tr>
</tbody>
</table>

**Valve Weight**

- Grommet: 4.3 oz (.12 Kg)
- DIN: 4.3 oz (.12 Kg)
- Conduit: 5.3 oz (.15 Kg)
XM Series Air Control Valves
4-Way Inline Valve with Flow Controls

Dimensions

XM 4-Way Inline with Flow Controls

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>A1</th>
<th>B</th>
<th>C</th>
<th>C1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>.48</td>
<td>.28</td>
<td>1.69</td>
<td>1.23</td>
<td>.64</td>
</tr>
<tr>
<td>(12)</td>
<td>(6.9)</td>
<td>(43)</td>
<td>(31)</td>
<td>(16)</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>.24</td>
<td>.68</td>
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<td>(2.9)</td>
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Inches (mm)

Valve Weight
- Grommet: 4.3 oz (.12 Kg)
- DIN: 4.3 oz (.12 Kg)
- Conduit: 5.3 oz (.15 Kg)

Mounting Bracket Dimensions
## XM IEM Manifold

<table>
<thead>
<tr>
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**Dimensions**

- **Manifold Weight**
  - 2 Station .................. 2.5 oz (.07 Kg)
  - Each Additional ........... 1 oz (.03 Kg)

- **Valve Weight**
  - 3-Way ...................... 4 oz (.11 Kg)
  - 4-Way ................... 4.3 oz (.12 Kg)

**Inches (mm)**

- **Manifold Weight**
  - 2 Station .................. 2.5 oz (.07 Kg)
  - Each Additional ........... 1 oz (.03 Kg)

- **Valve Weight**
  - 3-Way ...................... 4 oz (.11 Kg)
  - 4-Way ................... 4.3 oz (.12 Kg)

Diagrams and dimensions are shown for the XM Series Air Control Valves manifold, with specific measurements and configurations for various components and their positions.
XM Subbase

| Dimensions | XI | Y | Z | A | B | C | D | E | F | G | H | J | K | L | M | N | P | Q | R | S | T | U |
| Inches     |    |   |   | 1.62 | 2.00 | 1.58 | .92 | .85 | 1.19 | .61 | 1.26 | 1.70 | 3.25 | 2.85 | .75 | .44 | .28 | 1.25 | .22 | .44 | .88 | .51 |   |
| (mm)       | 41 | 51 | 40 | 23  | 16  | 32  | 23 | 22  | 30  | 16  | 32  | 43  | 83  | 72  | 32 | 22 | 11 | 32  | 5.6 | 11  | 22  | 13 |  |

Inches (mm)

Subbase Weight
- Single Subbase .... 3.2 oz (.09 Kg)
- End Plates ............ 3.2 oz (.09 Kg)

Valve Weight
- 3-Way ................... 3.7 oz (.10 Kg)
- 4-Way ................... 4.6 oz (.13 Kg)
Safety Guide For Selecting And Using Pneumatic Division Products And Related Accessories

⚠️ WARNING:

FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF PNEUMATIC DIVISION PRODUCTS, ASSEMBLIES OR RELATED ITEMS (“PRODUCTS”) CAN CAUSE DEATH, PERSONAL INJURY, AND PROPERTY DAMAGE. POSSIBLE CONSEQUENCES OF FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THESE PRODUCTS INCLUDE BUT ARE NOT LIMITED TO:

- Unintended or mistimed cycling or motion of machine members or failure to cycle
- Work pieces or component parts being thrown off at high speeds.
- Failure of a device to function properly for example, failure to clamp or unclamp an associated item or device.
- Explosion
- Suddenly moving or falling objects.
- Release of toxic or otherwise injurious liquids or gasses.

Before selecting or using any of these Products, it is important that you read and follow the instructions below.

1. GENERAL INSTRUCTIONS

1.1. Scope: This safety guide is designed to cover general guidelines on the installation, use, and maintenance of Pneumatic Division Valves, FRLs (Filters, Pressure Regulators, and Lubricators), Vacuum products and related accessory components.

1.2. Fail-Safe: Valves, FRLs, Vacuum products and their related components can and do fail without warning for many reasons. Design all systems and equipment in a fail-safe mode, so that failure of associated valves, FRLs or Vacuum products will not endanger persons or property.


1.4. Distribution: Provide a copy of this safety guide to each person that is responsible for selection, installation, or use of Valves, FRLs or Vacuum products. Do not select, or use Parker valves, FRLs or Vacuum products without thoroughly reading and understanding this safety guide as well as the specific Parker publications for the products considered or selected.

1.5. User Responsibility: Due to the wide variety of operating conditions and applications for valves, FRLs, and vacuum products Parker and its distributors do not represent or warrant that any particular valve, FRL or vacuum product is suitable for any specific end use system. This safety guide does not analyze all technical parameters that must be considered in selecting a product. The user, through its own analysis and testing, is solely responsible for:

- Making the final selection of the appropriate valve, FRL, Vacuum component, or accessory.
- Assuring that all user’s performance, endurance, maintenance, safety, and warning requirements are met and that the application presents no health or safety hazards.
- Complying with all existing warning labels and / or providing all appropriate health and safety warnings on the equipment on which the valves, FRLs or Vacuum products are used; and,
- Assuring compliance with all applicable government and industry standards.

1.6. Safety Devices: Safety devices should not be removed, or defeated.

1.7. Warning Labels: Warning labels should not be removed, painted over or otherwise obscured.

1.8. Additional Questions: Call the appropriate Parker technical service department if you have any questions or require any additional information. See the Parker publication for the product being considered or used, or call 1-800-CPARKER, or go to www.parker.com, for telephone numbers of the appropriate technical service department.

2. PRODUCT SELECTION INSTRUCTIONS

2.1. Flow Rate: The flow rate requirements of a system are frequently the primary consideration when designing any pneumatic system. System components need to be able to provide adequate flow and pressure for the desired application.

2.2. Pressure Rating: Never exceed the rated pressure of a product. Consult product labeling, Pneumatic Division catalogs or the instruction sheets supplied for maximum pressure ratings.

2.3. Temperature Rating: Never exceed the temperature rating of a product. Excessive heat can shorten the life expectancy of a product and result in complete product failure.

2.4. Environment: Many environmental conditions can affect the integrity and suitability of a product for a given application. Pneumatic Division products are designed for use in general purpose industrial applications. If these products are to be used in unusual circumstances such as direct sunlight and/or corrosive or caustic environments, such use can shorten the useful life and lead to premature failure of a product.

2.5. Lubrication and Compressor Carryover: Some modern synthetic oils can and will attack nitrile seals. If there is any possibility of synthetic oils or greases migrating into the pneumatic components check for compatibility with the seal materials used. Consult the factory or product literature for materials of construction.

2.6. Polycarbonate Bowls and Sight Glasses: To avoid potential polycarbonate bowl failures:
- Do not locate polycarbonate bowls or sight glasses in areas where they could be subject to direct sunlight, impact blow, or temperatures outside of the rated range.
- Do not expose or clean polycarbonate bowls with detergents, chlorinated hydro-carbons, keytones, esters or certain alcohols.
- Do not use polycarbonate bowls or sight glasses in air systems where compressors are lubricated with fire resistant fluids such as phosphate ester and di-ester lubricants.
2.7. Chemical Compatibility: For more information on plastic component chemical compatibility see Pneumatic Division technical bulletins Tec-3, Tec-4, and Tec-5

2.8. Product Rupture: Product rupture can cause death, serious personal injury, and property damage.

- Do not connect pressure regulators or other Pneumatic Division products to bottled gas cylinders.
- Do not exceed the maximum primary pressure rating of any pressure regulator or any system component.
- Consult product labeling or product literature for pressure rating limitations.

3. PRODUCT ASSEMBLY AND INSTALLATION INSTRUCTIONS

3.1. Component Inspection: Prior to assembly or installation a careful examination of the valves, FRLs or vacuum products must be performed. All components must be checked for correct style, size, and catalog number. DO NOT use any component that displays any signs of nonconformance.

3.2. Installation Instructions: Parker published Installation Instructions must be followed for installation of Parker valves, FRLs and vacuum components. These instructions are provided with every Parker valve or FRL sold, or by calling 1-800-CPARKER, or at www.parker.com.

3.3. Air Supply: The air supply or control medium supplied to Valves, FRLs and Vacuum components must be moisture-free if ambient temperature can drop below freezing

4. VALVE AND FRL MAINTENANCE AND REPLACEMENT INSTRUCTIONS

4.1. Maintenance: Even with proper selection and installation, valve, FRL and vacuum products service life may be significantly reduced without a continuing maintenance program. The severity of the application, risk potential from a component failure, and experience with any known failures in the application or in similar applications should determine the frequency of inspections and the servicing or replacement of Pneumatic Division products so that failures are replaced before any failure occurs. A maintenance program must be established and followed by the user and, at minimum, must include instructions 4.2 through 4.10.

4.2. Installation and Service Instructions: Before attempting to service or replace any worn or damaged parts consult the appropriate Service Bulletin for the valve or FRL in question for the appropriate practices to service the unit in question. These Service and Installation Instructions are provided with every Parker valve and FRL sold, or are available by calling 1-800-CPARKER, or by accessing the Parker web site at www.parker.com.


4.4. Visual Inspection: Any of the following conditions requires immediate system shut down and replacement of worn or damaged components:
- Air leakage: Look and listen to see if there are any signs of visual damage to any of the components in the system. Leakage is an indication of worn or damaged components.
- Damaged or degraded components: Look to see if there are any visible signs of wear or component degradation.
- Kinked, crushed, or damaged hoses. Kinked hoses can result in restricted air flow and lead to unpredictable system behavior.
- Any observed improper system or component function: Immediately shut down the system and correct malfunction.
- Excessive dirt build-up: Dirt and clutter can mask potentially hazardous situations.

Caution: Leak detection solutions should be rinsed off after use.

4.5. Routine Maintenance Issues:
- Remove excessive dirt, grime and clutter from work areas.
- Make sure all required guards and shields are in place.

4.6. Functional Test: Before initiating automatic operation, operate the system manually to make sure all required functions operate properly and safely.

4.7. Service or Replacement Intervals: It is the user’s responsibility to establish appropriate service intervals. Valves, FRLs and vacuum products contain components that age, harden, wear, and otherwise deteriorate over time. Environmental conditions can significantly accelerate this process. Valves, FRLs and vacuum components need to be serviced or replaced on routine intervals. Service intervals need to be established based on:
- Previous performance experiences.
- Government and/or industrial standards.
- When failures could result in unacceptable down time, equipment damage or personal injury risk.

4.8. Servicing or Replacing of any Worn or Damaged Parts: To avoid unpredictable system behavior that can cause death, personal injury and property damage:
- Disconnect electrical supply (when necessary) before installation, servicing, or conversion.
- Disconnect air supply and depressurize all air lines connected to system and Pneumatic Division products before installation, servicing, or conversion.
- Installation, servicing, and/or conversion of these products must be performed by knowledgeable personnel who understand how pneumatic products are to be applied.
- After installation, servicing, or conversions air and electrical supplies (when necessary) should be connected and the product tested for proper function and leakage. If audible leakage is present, or if the product does not operate properly, do not put product or system into use.
- Warnings and specifications on the product should not be covered or painted over. If masking is not possible, contact your local representative for replacement labels.

4.9. Putting Serviced System Back into Operation: Follow the guidelines above and all relevant Installation and Maintenance Instructions supplied with the valve FRL or vacuum component to insure proper function of the system.
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2. Payment: Payment shall be made by Buyer net 30 days from the date of delivery of the items purchased hereunder. Amounts not timely paid shall bear interest at the maximum rate permitted by law for each month or portion thereof that the Buyer is late in making payment. Any claims by Buyer for omissions or shortages in a shipment shall be waived unless Seller receives notice thereof within 30 days after Buyer’s receipt of the shipment.

3. Delivery: Unless otherwise provided on the face hereof, delivery shall be made F.O.B. Seller’s plant. Regardless of the method of delivery, however, risk of loss shall pass to Buyer upon Seller’s delivery to a carrier. Any delivery dates shown are approximate only and Seller shall have no liability for any delays in delivery.

4. Warranty: Seller warrants that the items sold hereunder shall be free from defects in material or workmanship for a period of 18 months from date of shipment from Parker Hannifin Corporation. THIS WARRANTY COMPRIS ES THE SOLE AND ENTIRE WARRANTY PERTAINING TO ITEMS PROVIDED HEREUNDER. SELLER MAKES NO OTHER WARRANTY, GUARANTEE, OR REPRESENTATION OF ANY KIND WHATSOEVER. ALL OTHER WARRANTIES, INCLUDING BUT NOT LIMITED TO, MERCHANTABILITY AND FITNESS FOR PURPOSE, WHETHER EXPRESS, IMPLIED, OR ARISING BY OPERATION OF LAW, TRADE USAGE, OR COURSE OF DEALING ARE HEREBY DISCLAIMED.

NOTWITHSTANDING THE FOREGOING, THERE ARE NO WARRANTIES WHATSOEVER ON ITEMS BUILT OR ACQUIRED WHOLLY OR PARTIALLY, TO BUYER’S DESIGN OR SPECIFICATIONS.

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9. Taxes: Unless otherwise indicated on the face hereof, all prices and charges are exclusive of excise, sales, use, property, occupational or like taxes which may be imposed by any taxing authority upon the manufacture, sale or delivery of the items sold hereunder. If any such taxes must be paid by Seller or if Seller is liable for the collection of such tax, the amount thereof shall be in addition to the amounts for the items sold. Buyer agrees to pay all such taxes or to reimburse Seller therefore upon receipt of its invoice. If Buyer claims exemption from any sales, use or other tax imposed by any taxing authority, Buyer shall save Seller harmless from and against any such tax, together with any interest or penalties thereon which may be assessed if the items are held to be taxable.

10. Indemnity For Infringement of Intellectual Property Rights: Seller shall have no liability for infringement of any patents, trademarks, copyrights, trade dress, trade secrets or similar rights as to make it noninfringing, or to offer to accept return of said item and pay all such taxes or to reimburse Seller therefore upon receipt of its invoice. If Buyer claims exemption from any sales, use or other tax imposed by any taxing authority, Buyer shall save Seller harmless from and against any such tax, together with any interest or penalties thereon which may be assessed if the items are held to be taxable.

11. Force Majeure: Seller does not assume the risk of and shall not be liable for delay or failure to perform any of Seller’s obligations by reason of circumstances beyond the reasonable control of Seller (hereinafter “Events of Force Majeure”). Events of Force Majeure shall include without limitation, accidents, acts of God, strikes or labor disputes, acts, laws, rules or regulations of any government or government agency, fires, floods, delays or failures in delivery of carriers or suppliers, shortages of materials and any other cause beyond Seller's control.

12. Entire Agreement/Governing Law: The terms and conditions set forth herein, together with any amendments, modifications and any different terms or conditions expressly accepted by Seller in writing, shall constitute the entire Agreement concerning the items sold, and no representation or agreement not contained herein or in any amendment or modification or in any document which pertains thereto. This Agreement shall be governed in all respects by the law of the State of Ohio. No actions arising out of sale of the items sold hereunder or this Agreement may be brought by either party more than two (2) years after the cause of action accrues.
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