Parker Global Air Preparation System
DECLARATION OF COMPLIANCE (ROHS)

European Directive 2002/95/EC - RoHS (Restriction of use of certain Hazardous Substances in electrical and electronic equipment), restricts the use of the 6 substances below in the manufacture of specified electrical equipment.

<table>
<thead>
<tr>
<th>Substance</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>LEAD:</td>
<td>Product containing lead and its compounds (except for application of lead as an alloying element by weight in steel up to 0.35%, in aluminum up to 0.4% and in copper alloys up to 4% and in Circuit Board solder) must not exceed 0.1% by weight.</td>
</tr>
<tr>
<td>MERCURY:</td>
<td>The concentration level must not exceed 0.1% by weight.</td>
</tr>
<tr>
<td>CADMIUM:</td>
<td>The concentration level must not exceed 0.01% by weight.</td>
</tr>
<tr>
<td>HEXAVALENT CHROMIUM:</td>
<td>This is a corrosive protective finish used on our product line. Were this finish is utilized the Chromate solution is Hexavalent (Chrome 6) free.</td>
</tr>
<tr>
<td>POLYBROMINATED BIPHENYLS (PBB):</td>
<td>The concentration level must not exceed 0.1% by weight. This substance is not known to be in any of our products.</td>
</tr>
<tr>
<td>POLYBROMINATED DIPHENYL ETHERS (PBDE):</td>
<td>The concentration level must not exceed 0.1% by weight. This substance is not known to be in any of our products.</td>
</tr>
</tbody>
</table>

This information applies to product sold on or after 1st July, 2006

WARNING

FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS AND/OR SYSTEMS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.

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The products described herein, including without limitation, product features, specifications, designs, availability and pricing, are subject to change by Parker Hannifin Corporation and its subsidiaries at any time without notice.

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Parker Global Air Preparation System


Performance you need, wherever you need it.

The comprehensive Global Air Preparation System is available in three body sizes with either BSPP, BSPT, or NPT to accommodate thread type requirements.

Full featured filters, regulators, filter/regulators, and lubricators are available with a wide range of standard options to meet air preparation needs.

Individual units can easily be assembled into various combinations, utilizing patented modular lightweight body connectors.

www.parker.com/globalfrl
Comprehensive Offering

Filters
- 5µ particulate, 1.0µ and 0.01µ coalescing, and adsorber available as standard
- Transparent or metal bowl with manual or auto float drains standard

Regulators
- Available as stand alone, common port and electronic proportional
- Both relieving and non-relieving versions available

Filter / Regulators
- Compact design for space savings
- Available with all the same standard options as the filters and regulators

Lubricators
- Proportional oil delivery over a wide range of air flows
- Fill under pressure

Combinations
- Compact design for space savings
- Easily assembled
- Many configurations available

Accessories
- Solenoid operated soft start, quick dump, and soft start/quick dump valves
- Manifold blocks
- Shut-off valves (both slide and ball type)
- Repair kits, gauges, etc.
Together we can power your application with clean, dry air

Fast cycle times, high product quality, and low downtime all require a clean, dry pneumatic system to function properly. Parker has what it takes to make sure pneumatic systems perform at their best.

Clean, dry pneumatic systems with Parker Global Air Preparation

Stage 1
As air is compressed to 7 bar (100 psig) and higher, the relative humidity quickly reaches 100% RH and air temperatures can reach between 110°C and 200°C (230°F and 392°F).

Stage 2
For every 11°C (20°F) that the air cools after leaving the heat of the compressor, 50% of the moisture condenses into liquid into the system.

Stage 3
The excess moisture condenses and collects in the receiver tank and distribution lines. This condensate must be removed.

Stage 4
Bulk liquid separators remove condensed liquids after the aftercooler, receiver, or anywhere within the distribution system.

Stage 5
Particulate filters are used for the removal of solid particle contaminants down to 5 micron, as well as the removal of condensed liquids

Coalescing filters are designed to remove water and oil aerosols (not vapor) and particulate from air streams down to 0.01 micron in size.

Note: Water and oil, in vapor form, pass through general purpose particulate filters.

This type of filter should be used as a prefilter for the coalescing (oil removal) filter.

Installed in pairs, Particulate and Coalescing filters ensure a continuous supply of high quality air.

Key
- Particulate
- Oil
- Water
- Oil Vapor
- Water Vapor
Refrigeration and desiccant dryers lower the air’s dew point by removing water vapor, providing appropriately dry air for the downstream application.

Hydrocarbon and oil vapors are removed using filters utilizing activated carbon. Airborne hydrocarbons are often left over from the compressor oils.

---

<table>
<thead>
<tr>
<th>Stages</th>
<th>Function</th>
<th>Air Compressor</th>
<th>Bulk Liquid Removal</th>
<th>Particulate Filtration</th>
<th>Coalescing Filtration</th>
<th>Air Dryers</th>
<th>Hydrocarbon Removal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Application</td>
<td>All pneumatic systems</td>
<td>Basic pneumatic systems</td>
<td>Basic pneumatic systems</td>
<td>Systems requiring highest quality air.</td>
<td>Systems requiring air with reduced moisture content</td>
<td>Systems requiring highest quality air for critical applications</td>
</tr>
<tr>
<td>2</td>
<td>Description</td>
<td>Air leaving the compressor room at 93ºC (200ºF) releases 95% of its moisture into the piping system when it cools to 38ºC (100ºF)</td>
<td>Removes bulk liquid contamination and protects filters where excess cooling takes place in the distribution piping</td>
<td>Removes solid particulates down to 5 micron, and the separation of bulk contaminants.</td>
<td>Removes liquid aerosols and submicron particulates (not vapor) down to 0.01 micron.</td>
<td>Removes water vapor from air stream. Dew point reduced down to 4ºC (40ºF) (refrigeration) or -40ºC (-40ºF) (desiccant).</td>
<td>Removal of odors and trace vapors for critical applications.</td>
</tr>
<tr>
<td>4</td>
<td>Description</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Description</td>
<td></td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>6</td>
<td>Description</td>
<td></td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>7</td>
<td>Description</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
A completely modular air preparation system

- Filter
- Quick release bayonet-type integral bowl and bowl guard assembly
- Bowl guard with multiple viewing slots
- Manual drain with pipe-away, auto drain available
- Easy to adjust non-rising knob with snap-lock, preventing accidental change of set pressure.

Electronic Proportional Regulator

- Electro-Pneumatic regulator
- Integrated systems control
- Accurate output pressure
- Micro parameter settings
- Selectable I/O parameters
- Quick, full flow exhaust
- LED display indicates output pressure
- No air consumption in steady state
- Multiple mounting options
- Protection to IP65

P31P Mini Series
P32P Compact Series
Common Port Manifold Regulators

- Multiple output pressures (P2, P3, P4, etc.) with common inlet (P1)
- Available in two sizes P31 and P32
- Balanced valve design for accurate pressure regulation
- Outlet pressure ports in front and rear of unit.
- Four spring ranges available
Air Preparation

P31 Mini Series

40mm body width
1/4” Ported

Flows up to:  \( \text{dm}^3/\text{s} \) (SCFM)
Filter \( 12 \) (25)
Coalescer \( 2 \) (4.2)
Regulator \( 30 \) (64)
Filter/Regulator \( 14 \) (30)
Lubricator \( 13 \) (28)

Features:
- Space saving integral gauge
- Manifold style regulators available
- OSHA compliant shut-off valves
- Soft-Start & Quick Dump valves
- Electronic Proportional Regulator

P32 Compact Series

60mm body width
1/4”, 3/8”, & 1/2” Ported

Flows up to:  \( \text{dm}^3/\text{s} \) (SCFM)
Filter \( 38 \) (80)
Coalescer \( 11 \) (23)
Regulator \( 67 \) (142)
Filter/Regulator \( 64 \) (136)
Lubricator \( 47 \) (100)

Features:
- Manifold style regulators available
- OSHA Compliant shut-off valves
- Soft-Start & Quick Dump valves
- Electronic Proportional Regulator

P33 Standard Series

73mm body width
1/2” & 3/4” Ported

Flows up to:  \( \text{dm}^3/\text{s} \) (SCFM)
Filter \( 48 \) (102)
Coalescer \( 20 \) (42)
Regulator \( 100 \) (212)
Filter/Regulator \( 98 \) (208)
Lubricator \( 68 \) (144)

Features:
- OSHA Compliant shut-off valves
- Soft-Start & Quick Dump valves
  (Utilizes P32 size only)
- Electronic proportional regulator
  (Utilizes P32 size only)
Valves and Actuators

Mini Series Complimentary Products

The P31 Mini Series FRL's and accessories are well matched for use with these Parker valves and actuators.

Compact Series Complimentary Products

The P32 Series FRL's & accessories are well matched for use with these Parker valves and actuators.

Standard Series Complimentary Products

The P33 Series FRL's & accessories are well matched for use with these Parker valves and actuators.
Complete Pneumatic System

Pressure Regulation

Accurate pressure regulation is important to control forces, speeds, torque, dispensing, processes, etc. Parker has a global solution to all of your pressure regulation needs, with support around the world.

<table>
<thead>
<tr>
<th>Function</th>
<th>Single</th>
<th>Common Port Manifold</th>
<th>Electronic Proportional</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>For pneumatic systems requiring single pressure regulation.</td>
<td>For pneumatic systems requiring multiple pressures for different parts of the system, yet still having a common inlet supply.</td>
<td>For pneumatic systems requiring an electronic to pneumatic proportional control signal. Also allows pressure regulation to be integrated into your control systems.</td>
</tr>
</tbody>
</table>

Accessories

Today’s sophisticated pneumatic systems need more than just FRL’s. Often times peripheral accessory products are needed to complete your pneumatic system. Parker has what is needed to ensure safe and reliable start-ups, shut-downs, and lockouts, etc.

<table>
<thead>
<tr>
<th>Function</th>
<th>Ball Valve</th>
<th>Slide Valve</th>
<th>Soft Start / Quick Dump</th>
<th>Soft Start</th>
<th>Quick Dump</th>
<th>Manifold Block</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soft Start Function</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Quick Dump Function</td>
<td>Slow Exhaust</td>
<td>Slow Exhaust</td>
<td>Solenoid or Air Pilot</td>
<td>Solenoid, Air Pilot, or Internal Air Pilot</td>
<td>Solenoid or Air Pilot</td>
<td>N/A</td>
</tr>
<tr>
<td>Operation</td>
<td>Manual Twist</td>
<td>Manual Slide</td>
<td>Solenoid or Air Pilot</td>
<td>Solenoid, Air Pilot, or Internal Air Pilot</td>
<td>Solenoid or Air Pilot</td>
<td>N/A</td>
</tr>
<tr>
<td>Placement</td>
<td>Before or after FRL or stand alone</td>
<td>Before or after FRL or stand alone</td>
<td>After FRL</td>
<td>After FRL</td>
<td>After FRL</td>
<td>Anywhere within FRL or stand alone</td>
</tr>
</tbody>
</table>
Application Guide

FRL to Valve: The chart below contains recommendations for the correct selection of Global Air Preparation units to suit the number and size of valves in a typical application.

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<thead>
<tr>
<th></th>
<th>P31 Mini Series</th>
<th>P32 Compact Series</th>
<th>P33 Standard Series</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of valves that would actuate at once</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
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<tr>
<td>16</td>
<td></td>
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</tr>
</tbody>
</table>

See Larger Parker FRL Offering

Actuator to FRL: The chart below contains recommendations for the correct selection of Global Air Preparation units suitable for each cylinder size. If you have a tube length over 2 m, choose one tube size larger than the chart. The table is based on a Maximum cylinder speed of 0.5 m/s.

Note: Data listed above is simply a guideline for a typical application only. Proper sizing and correct flow requirements must be taken into account.
Popular Combinations

Filter + Regulator + Lubricator Combinations + Poly bowl
5 micron element, 8 bar (116 psig) Regulator + Gauge and Wall Mounting Brackets
Inlet pressure 10 bar (145 psig), Secondary pressure 6.3 bar (91.3 psig),
1 bar (14.5 psig) pressure drop.

<table>
<thead>
<tr>
<th>Port size</th>
<th>Flow (dm³/s (scfm))</th>
<th>Manual Drain</th>
<th>Weight</th>
<th>Pulse Drain</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4&quot;</td>
<td>13</td>
<td>P31CB22GEMN6LNW</td>
<td>0.46 kg (1.01 lbs)</td>
<td>P31CB22GEBN6LNW</td>
<td>0.46 kg (1.01 lbs)</td>
</tr>
</tbody>
</table>

Filter/Regulator + Lubricator Combinations + Poly bowl
5 micron element, 8 bar (116 psig) Regulator + Gauge and Wall Mounting Brackets
Inlet pressure 10 bar (145 psig), Secondary pressure 6.3 bar (91.3 psig),
1 bar (14.5 psig) pressure drop.

<table>
<thead>
<tr>
<th>Port size</th>
<th>Flow (dm³/s (scfm))</th>
<th>Manual Drain</th>
<th>Weight</th>
<th>Pulse Drain</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4&quot;</td>
<td>14</td>
<td>P31CA22GEMN6LNW</td>
<td>0.35 kg (0.77 lbs)</td>
<td>P31CA22GEBN6LNW</td>
<td>0.35 kg (0.77 lbs)</td>
</tr>
</tbody>
</table>

Filter / Regulator coding
(used with codes: A M T)
Filter coding
(use with combo codes: B C D F G)
For multiple filters, repeat as needed
Regulator coding
(use with combo codes: B D E)
Lubricator coding
(use with combo codes: A B C E)
Assembly configuration

P 3 1

Combination
| B/V + Combination | Q |
| Combination + B/V | X |
| Combination | C |
| Shut off + Combination | Y |
| Combination + Shut off | Z |

Thread type
| BSPP 1 |
| BSPT 2 |
| NPT 9 |

Element
| 5µ Element | E |
| 0.01µ Element | C |
| 1µ Element | A |

Drain type
| Manual drain | M |
| Pulse drain | B |

Relief / Adjustment
| Non-rising knob | N |

With square gauge
| 2 bar (0.2 MPa) | 2 |
| 4 bar (0.4 MPa) | 4 |
| 8 bar (0.8 MPa) | 6 |

With round gauge
| 2 bar (0.2 MPa) | 2 |
| 4 bar (0.4 MPa) | 4 |

Without gauge
| 2 bar (0.2 MPa) | Y |
| 4 bar (0.4 MPa) | L |
| 8 bar (0.8 MPa) | N |

Lub type
| Oil mist standard sight dome | L |

Mounting
| No bracket | A |
| Port blocks | C* |

Bowl type
| Poly bowl with bowl guard | G |
| Metal bowl without sight gauge | M |

Note: All bowl types are the same for each component
Example: If a "G" is specified for a F+L, both units would get a poly bowl with bowl guard.
### Popular Combinations

**Filter + Regulator + Lubricator Combinations + Poly bowl**
5 micron element, 8 bar (116 psig) Regulator + Gauge and Wall Mounting Brackets
Inlet pressure 10 bar (145 psig), Secondary pressure 6.3 bar (91.3 psig), 1 bar (14.5 psig) pressure drop.

<table>
<thead>
<tr>
<th>Port size</th>
<th>Flow (dm³/s)</th>
<th>Manual Drain</th>
<th>Weight (kg)</th>
<th>Auto Drain</th>
<th>Weight (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4&quot;</td>
<td>20</td>
<td>42</td>
<td>1.29 kg</td>
<td>2.84 lbs</td>
<td>P32CB22GEANGLNW</td>
</tr>
<tr>
<td>3/8&quot;</td>
<td>32</td>
<td>68</td>
<td>1.29 kg</td>
<td>2.84 lbs</td>
<td>P32CB23GEANGLNW</td>
</tr>
<tr>
<td>1/2&quot;</td>
<td>40</td>
<td>85</td>
<td>1.29 kg</td>
<td>2.84 lbs</td>
<td>P32CB24GEANGLNW</td>
</tr>
</tbody>
</table>

**Filter/Regulator + Lubricator Combinations + Poly bowl**
5 micron element, 8 bar (116 psig) Regulator + Gauge and Wall Mounting Brackets
Inlet pressure 10 bar (145 psig), Secondary pressure 6.3 bar (91.3 psig), 1 bar (14.5 psig) pressure drop.

<table>
<thead>
<tr>
<th>Port size</th>
<th>Flow (dm³/s)</th>
<th>Manual Drain</th>
<th>Weight (kg)</th>
<th>Auto Drain</th>
<th>Weight (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4&quot;</td>
<td>22</td>
<td>45</td>
<td>1.03 kg</td>
<td>2.27 lbs</td>
<td>P32CA22GEANGLNW</td>
</tr>
<tr>
<td>3/8&quot;</td>
<td>33</td>
<td>70</td>
<td>1.03 kg</td>
<td>2.27 lbs</td>
<td>P32CA23GEANGLNW</td>
</tr>
<tr>
<td>1/2&quot;</td>
<td>43</td>
<td>90</td>
<td>1.03 kg</td>
<td>2.27 lbs</td>
<td>P32CA24GEANGLNW</td>
</tr>
</tbody>
</table>

---

**Combination type**

- F/R + L
- F/R + Fc
- F + Fc
- F + Fc + Fa

**Thread type**

- BSPP
- BSPT
- NPT

**Bowl type**

- Poly bowl with bowl guard
- Metal bowl without sight gauge
- Metal bowl with sight gauge

**Note:** All bowl types are the same for each component.

**Example:** If a "G" is specified for a F + L, both units would get a poly bowl with bowl guard.
Popular Combinations

Filter + Regulator + Lubricator Combinations + Poly bowl
5 micron element, 8 bar (116 psig) Regulator + Gauge and Wall Mounting Brackets
Inlet pressure 10 bar (145 psig), Secondary pressure 6.3 bar (91.3 psig),
1 bar (14.5 psig) pressure drop.

<table>
<thead>
<tr>
<th>Port size</th>
<th>Flow (dm³/s)</th>
<th>Manual Drain</th>
<th>Weight</th>
<th>Auto Drain</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/2&quot;</td>
<td>43</td>
<td>90</td>
<td>P33CB24GEMGLNW 1.84 kg (4.06 lbs)</td>
<td>P33CB24GEANGLNW 1.84 kg (4.06 lbs)</td>
<td></td>
</tr>
<tr>
<td>3/4&quot;</td>
<td>52</td>
<td>110</td>
<td>P33CB26GEMGLNW 1.84 kg (4.06 lbs)</td>
<td>P33CB26GEANGLNW 1.84 kg (4.06 lbs)</td>
<td></td>
</tr>
</tbody>
</table>

Filter/Regulator + Lubricator Combinations + Poly bowl
5 micron element, 8 bar (116 psig) Regulator + Gauge and Wall Mounting Brackets
Inlet pressure 10 bar (145 psig), Secondary pressure 6.3 bar (91.3 psig),
1 bar (14.5 psig) pressure drop.

<table>
<thead>
<tr>
<th>Port size</th>
<th>Flow (dm³/s)</th>
<th>Manual Drain</th>
<th>Weight</th>
<th>Auto Drain</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/2&quot;</td>
<td>52</td>
<td>110</td>
<td>P33CA24GEMGLNW 1.51 kg (3.33 lbs)</td>
<td>P33CA24GEANGLNW 1.51 kg (3.33 lbs)</td>
<td></td>
</tr>
<tr>
<td>3/4&quot;</td>
<td>71</td>
<td>150</td>
<td>P33CA26GEMGLNW 1.51 kg (3.33 lbs)</td>
<td>P33CA26GEANGLNW 1.51 kg (3.33 lbs)</td>
<td></td>
</tr>
</tbody>
</table>

Filter / Regulator coding
(use with codes: A M T)

Filter coding
(use with combo codes: B C D F G), For multiple filters, repeat as needed

Regulator coding
(use with combo codes: B D E W)

Lubricator coding
(use with combo codes: A B C E)

Assembly configuration

P 3 3

Thread type
BSPP 1
BSPT 2
NPT 9

Element
5µ Element E
0.01µ Element C
0.01µ Element with dpi D
1µ Element Q
1µ Element with dpi A
Adsorber T

Relief / Adjustment
Non-rising knob L
With round gauge
2 bar; 30 psig: 0.2 MPa Z
4 bar; 60 psig: 0.4 MPa M
8 bar; 125 psig: 0.8 MPa G
17 bar; 250 psig: 1.7 MPa J
Without gauge
2 bar; 30 psig: 0.2 MPa Y
4 bar; 60 psig: 0.4 MPa L
8 bar; 125 psig: 0.8 MPa N
17 bar; 250 psig: 1.7 MPa H

Drain type
No drain; closed end N

Lub type
Oil mist standard right dome L

Mounting
No bracket A
Port blocks C
Port blocks & wall brkt D
Wall bracket W

Combination type
B/V + Combination Q
Combination + B/V X
Combination C
Combination + Shut off Z

Port size
1/2" 4
3/4" 6

Bowl type
Poly bowl with bowl guard G
Metal bowl without sight gauge M
Metal bowl with sight gauge S

Note: All bowl types are the same for each component
Example: If a “G” is specified for a F+L, both units would get a poly bowl with bowl guard.
Popular Combination Dimensions

**P31C**

- **4mm (5/32”) I.D. Tube**
- **Bowl removal clearance**

<table>
<thead>
<tr>
<th></th>
<th>mm</th>
<th>inches</th>
</tr>
</thead>
<tbody>
<tr>
<td>35</td>
<td>1.38</td>
<td></td>
</tr>
<tr>
<td>35</td>
<td>1.38</td>
<td></td>
</tr>
<tr>
<td>40</td>
<td>1.57</td>
<td></td>
</tr>
<tr>
<td>40</td>
<td>1.57</td>
<td></td>
</tr>
<tr>
<td>41 (1.61)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>41 (1.61)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>77 (3.03)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>77 (3.03)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>164.1 (6.46)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**P32C**

- **4.8 mm (.19) I.D. Tube**
- **Bowl removal clearance**

<table>
<thead>
<tr>
<th></th>
<th>mm</th>
<th>inches</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>2.00</td>
<td></td>
</tr>
<tr>
<td>100</td>
<td>3.94</td>
<td></td>
</tr>
<tr>
<td>100</td>
<td>3.94</td>
<td></td>
</tr>
<tr>
<td>104 (4.09)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>115 (4.53)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>115 (4.53)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>120 (4.72)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>120 (4.72)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>129 (5.08)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>64.5 (2.54)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>64.5 (2.54)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>69 (2.72)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>69 (2.72)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>198 (7.80)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>47.1 (1.85)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>47.1 (1.85)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**P33C**

- **4.8 mm (.19) I.D. Tube**
- **Bowl removal clearance**

<table>
<thead>
<tr>
<th></th>
<th>mm</th>
<th>inches</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>2.00</td>
<td></td>
</tr>
<tr>
<td>100</td>
<td>3.94</td>
<td></td>
</tr>
<tr>
<td>100</td>
<td>3.94</td>
<td></td>
</tr>
<tr>
<td>104 (4.09)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>120 (4.72)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>120 (4.72)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>155 (6.10)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>155 (6.10)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>120 (4.72)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>120 (4.72)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>129 (5.08)</td>
<td></td>
<td></td>
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<tr>
<td>64.5 (2.54)</td>
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<td></td>
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<td>64.5 (2.54)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>69 (2.72)</td>
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<td></td>
</tr>
<tr>
<td>69 (2.72)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>237 (9.33)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>47.1 (1.85)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>47.1 (1.85)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Manual and Auto Drain.
## Mini Particulate Filter - P31

![Mini Particulate Filter - P31](image)

### Symbols

- Manual drain
- Auto drain

- Integral 1/4" ports (NPT, BSPP & BSPT)
- High efficiency 5 micron element as standard
- Excellent water removal efficiency
- Robust but lightweight aluminum construction
- One-hand operation for easy element cartridge removal
- Positive bayonet latch to ensure correct & safe fitting

### Options:

<table>
<thead>
<tr>
<th>P 3 1</th>
<th>F A</th>
<th>E</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Thread type</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BSP/</td>
<td>1</td>
<td>G</td>
<td>M</td>
</tr>
<tr>
<td>BSPT</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NPT</td>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Port size</strong></td>
<td>1/8</td>
<td>1/4</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Bowl type</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poly bowl with bowl guard</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Metal bowl without sight gauge</td>
<td>G</td>
<td>M</td>
<td></td>
</tr>
<tr>
<td><strong>Element</strong></td>
<td>5µ Element</td>
<td>E</td>
<td></td>
</tr>
<tr>
<td><strong>Drain type</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pulse drain</td>
<td>B</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manual drain</td>
<td>M</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Mounting</strong></td>
<td>No bracket</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Port size

<table>
<thead>
<tr>
<th>Port size</th>
<th>Description</th>
<th>Order Code†</th>
<th>Flow dm³/s (scfm)</th>
<th>Max. bar (psig)</th>
<th>Height mm (inches)</th>
<th>Width mm (inches)</th>
<th>Depth mm (inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4&quot; Poly bowl - Manual drain</td>
<td>P31FA22EGMN</td>
<td>12 (25)</td>
<td>10 (150)</td>
<td>116.3 (4.58)</td>
<td>40 (1.58)</td>
<td>42.7 (1.68)</td>
<td></td>
</tr>
<tr>
<td>1/4&quot; Poly bowl - Pulse drain</td>
<td>P31FA22EGBN</td>
<td>12 (25)</td>
<td>10 (150)</td>
<td>116.3 (4.58)</td>
<td>40 (1.58)</td>
<td>42.7 (1.68)</td>
<td></td>
</tr>
<tr>
<td>1/4&quot; Metal bowl - Manual drain</td>
<td>P31FA22EMMN</td>
<td>12 (25)</td>
<td>17 (250)</td>
<td>116.3 (4.58)</td>
<td>40 (1.58)</td>
<td>42.7 (1.68)</td>
<td></td>
</tr>
<tr>
<td>1/4&quot; Metal bowl - Pulse drain</td>
<td>P31FA22EMBN</td>
<td>12 (25)</td>
<td>17 (250)</td>
<td>116.3 (4.58)</td>
<td>40 (1.58)</td>
<td>42.7 (1.68)</td>
<td></td>
</tr>
</tbody>
</table>

* flow with 6.3 bar (91.3 psig) inlet pressure and 0.34 (4.9 psig) pressure drop.
† Standard part numbers shown in bold. For other models refer to Options chart above.
Specifications

Flow Capacity* 1/4 12 dm³/s (25 scfm)
Max. Operating Plastic Bowl 52°C (125°F)
Temperature Metal Bowl 65.5°C (150°F)
Max. Supply Plastic Bowl 10 bar (150 psig)
Pressure Metal Bowl 17 bar (250 psig)
Standard Filtration 5 Micron
Useful Retention† 12 cm³ (0.4 US oz.)
Port Size BSPP / BSPT / NPT 1/8, 1/4
Weight 0.11 kg (0.24 lbs)

* Inlet pressure 6.3 bar (91.3 psig). Pressure drop 0.34 bar (4.9 psig).
† Useful retention refers to volume below the quiet zone baffle.

Air quality:
Within ISO 8573-1: 1991 Class 3 (Particulates)
Within ISO 8573-1: 2001 Class 6 (Particulates)

Materials of Construction

| Body       | Aluminum    |
| Body Cap   | ABS         |
| Bowl       | Polycarbonate |
| Bowl Guard | Nylon       |
| Element Retainer | Acetal |
| Baffle     | Acetal      |
| Filter Element | Sintered Polyethylene |
| Seals      | Nitrile     |

Dimensions

| 40.0 (1.58") |
| 42.7 (1.68") |
| 21.3 (0.84") |
| 116.3 (4.58") |
| 16.3 (0.72") |
| 33.3 (1.31") |

Flow Charts

1/4 Filter

<table>
<thead>
<tr>
<th>Primary Pressure - bar</th>
<th>Primary Pressure - psig</th>
</tr>
</thead>
<tbody>
<tr>
<td>23.2</td>
<td>39.3 (58)</td>
</tr>
<tr>
<td>4.8</td>
<td>6.3 (91.4)</td>
</tr>
<tr>
<td>10</td>
<td>145 (250)</td>
</tr>
</tbody>
</table>

Repair and Service Kits

Plastic bowl / Bowl guard manual drain P31KA00BGM
Metal bowl / w/o sight gauge manual drain P31KA00BMM
Plastic bowl / Bowl guard pulse drain P31KA00BGB
Metal bowl / w/o sight gauge pulse drain P31KA00BMB
5µ particle filter element P31KA00ESE
C-Bracket (fits to body) P31KA00MW
T-Bracket with body connector P31KA00MT
Body connector P31KA00CB
## Compact Particulate Filter - P32

### Symbols

- **Manual drain**
- **Auto drain**

**Options:**

**Thread type**
- BSP 1
- BSPT 2
- NPT 9

**Port size**
- 1/4” 2
- 3/8” 3
- 1/2” 4

**Bowl type**
- Poly bowl with bowl guard G
- Metal bowl without sight gauge M
- Metal bowl with sight gauge S

**Element**
- 5µ Element E

**Drain type**
- Manual drain M
- Auto drain A

<table>
<thead>
<tr>
<th>Port size</th>
<th>Description</th>
<th>Order Code†</th>
<th>Flow dm³/s (scfm)</th>
<th>Max. bar (psig)</th>
<th>Height mm (inches)</th>
<th>Width mm (inches)</th>
<th>Depth mm (inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4”</td>
<td>Poly bowl - Manual drain</td>
<td>P32FA22EGMN</td>
<td>18 (38)</td>
<td>10 (150)</td>
<td>188 (7.4)</td>
<td>60 (2.36)</td>
<td>60 (2.36)</td>
</tr>
<tr>
<td>1/4”</td>
<td>Poly bowl - Auto drain</td>
<td>P32FA22EGAN</td>
<td>18 (38)</td>
<td>10 (150)</td>
<td>182 (7.2)</td>
<td>60 (2.36)</td>
<td>60 (2.36)</td>
</tr>
<tr>
<td>1/4”</td>
<td>Metal bowl - Manual drain</td>
<td>P32FA22ESMN</td>
<td>18 (38)</td>
<td>17 (250)</td>
<td>188 (7.4)</td>
<td>60 (2.36)</td>
<td>60 (2.36)</td>
</tr>
<tr>
<td>1/4”</td>
<td>Metal bowl - Auto drain</td>
<td>P32FA22ESAN</td>
<td>18 (38)</td>
<td>17 (250)</td>
<td>182 (7.2)</td>
<td>60 (2.36)</td>
<td>60 (2.36)</td>
</tr>
<tr>
<td>3/8”</td>
<td>Poly bowl - Manual drain</td>
<td>P32FA23EGMN</td>
<td>30 (64)</td>
<td>10 (150)</td>
<td>188 (7.4)</td>
<td>60 (2.36)</td>
<td>60 (2.36)</td>
</tr>
<tr>
<td>3/8”</td>
<td>Poly bowl - Auto drain</td>
<td>P32FA23EGAN</td>
<td>30 (64)</td>
<td>10 (150)</td>
<td>182 (7.2)</td>
<td>60 (2.36)</td>
<td>60 (2.36)</td>
</tr>
<tr>
<td>3/8”</td>
<td>Metal bowl - Manual drain</td>
<td>P32FA23ESMN</td>
<td>30 (64)</td>
<td>17 (250)</td>
<td>188 (7.4)</td>
<td>60 (2.36)</td>
<td>60 (2.36)</td>
</tr>
<tr>
<td>3/8”</td>
<td>Metal bowl - Auto drain</td>
<td>P32FA23ESAN</td>
<td>30 (64)</td>
<td>17 (250)</td>
<td>182 (7.2)</td>
<td>60 (2.36)</td>
<td>60 (2.36)</td>
</tr>
<tr>
<td>1/2”</td>
<td>Poly bowl - Manual drain</td>
<td>P32FA24EGMN</td>
<td>38 (80)</td>
<td>10 (150)</td>
<td>188 (7.4)</td>
<td>60 (2.36)</td>
<td>60 (2.36)</td>
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<tr>
<td>1/2”</td>
<td>Poly bowl - Auto drain</td>
<td>P32FA24EGAN</td>
<td>38 (80)</td>
<td>10 (150)</td>
<td>182 (7.2)</td>
<td>60 (2.36)</td>
<td>60 (2.36)</td>
</tr>
<tr>
<td>1/2”</td>
<td>Metal bowl - Manual drain</td>
<td>P32FA24ESMN</td>
<td>38 (80)</td>
<td>17 (250)</td>
<td>188 (7.4)</td>
<td>60 (2.36)</td>
<td>60 (2.36)</td>
</tr>
<tr>
<td>1/2”</td>
<td>Metal bowl - Auto drain</td>
<td>P32FA24ESAN</td>
<td>38 (80)</td>
<td>17 (250)</td>
<td>182 (7.2)</td>
<td>60 (2.36)</td>
<td>60 (2.36)</td>
</tr>
</tbody>
</table>

* Flow with 6.3 bar (91.3 psig) inlet pressure and 0.34 (4.9 psig) pressure drop.
† Standard part numbers shown in bold. For other models refer to Options chart above.
Specifications

Flow Capacity* 1/4 18 dm^3/s (38 scfm) 3/8 30 dm^3/s (64 scfm) 1/2 38 dm^3/s (80 scfm)

Operating Plastic Bowl 52°C (125°F) Temperature Metal Bowl 65.5°C (150°F)
Max. Supply Plastic Bowl 10 bar (150 psig) Pressure Metal Bowl 17 bar (250 psig)
Standard Filteration 5 Micron
Useful Retention 1 51 cm^3 (1.7 US oz.)
Port Size BSPP / BSPT / NPT 1/4, 3/8, 1/2
Weight 0.28 kg (0.62 lbs)

* Inlet pressure 6.3 bar (91.3 psig). Pressure drop 0.34 bar (4.9 psig).
1 Useful retention refers to volume below the quiet zone baffle.

Materials of Construction

Body Aluminum
Body Cap ABS
Bowls Plastic Bowl Polycarbonate
Metal Bowl Aluminum
Bowl Guard Nylon
Deflector Polypropylene
Element Retainer / Baffle Acetal
Filter Element Sintered Polyethylene
Seals Plastic Bowl Nitrile
Metal Bowl Nitrile
Sight Gauge Metal Bowl Polycarbonate

Air quality:
Within ISO 8573-1: 1991 Class 3 (Particulates)
Within ISO 8573-1: 2001 Class 6 (Particulates)

Dimensions

Flow Charts

1/4 Filter

Primary Pressure - bar
Primary Pressure - psig
1.6 23.2 4.0 58 6.3 91.4 10 146
Pressure Drop - bar
Pressure Drop - (psig)
0 0.1 0.2 0.3 0.4 0.5 0.6 0.7
Flow - dm^3/s
Flow - (scfm)
0 10 20 30

3/8 Filter

Primary Pressure - bar
Primary Pressure - psig
1.6 23.2 4.0 58 6.3 91.4 10 146
Pressure Drop - bar
Pressure Drop - (psig)
0 0.1 0.2 0.3 0.4 0.5 0.6 0.7
Flow - dm^3/s
Flow - (scfm)
0 10 20 30 40 50

1/2 Filter

Primary Pressure - bar
Primary Pressure - psig
1.6 23.2 4.0 58 6.3 91.4 10 146
Pressure Drop - bar
Pressure Drop - (psig)
0 0.1 0.2 0.3 0.4 0.5 0.6 0.7
Flow - dm^3/s
Flow - (scfm)
0 20 40 60 80 100

Repair and Service Kits

Plastic bowl / Bowl guard manual drain P32KA00BGM
Metal bowl / Sight gauge manual drain P32KA00BSM
Auto drain P32KA00DA
5µ particle filter element P32KA00ESE
L-Bracket (fits to body) P32KA00ML
T-Bracket (fits to body connector) P32KA00MB
T-Bracket with body connector P32KA00MT
Body connector P32KA00CB
Differential pressure indicator (replacement) P32KA00RQ
## Standard Particulate Filter - P33

### Options:

**Thread type**
- BSPP 1
- BSPT 2
- NPT 9

**Port size**
- 1/2" 4
- 3/4" 6

**Bowl type**
- Poly bowl with bowl guard G
- Metal bowl without sight gauge M
- Metal bowl with sight gauge S

**Mounting**
- No bracket N

**Element**
- 5µ Element E

**Drain type**
- Manual drain M
- Auto drain A

### Symbols

- Manual drain
- Auto drain

- Integral 1/2" or 3/4" ports (NPT, BSPP & BSPT)
- High efficiency 5 micron element as standard
- Excellent water removal efficiency
- Robust but lightweight aluminum construction
- Positive bayonet latch to ensure correct & safe fitting

### Order Codes

<table>
<thead>
<tr>
<th>Port size</th>
<th>Description</th>
<th>Order Code</th>
<th>Flow dm³/s (scfm)</th>
<th>Max. bar (psig)</th>
<th>Height mm (inches)</th>
<th>Width mm (inches)</th>
<th>Depth mm (inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/2&quot;</td>
<td>Poly bowl - Manual drain</td>
<td>P33FA24EGMN</td>
<td>40 (85)</td>
<td>10 (150)</td>
<td>213 (8.4)</td>
<td>73 (2.9)</td>
<td>73 (2.9)</td>
</tr>
<tr>
<td>1/2&quot;</td>
<td>Poly bowl - Auto drain</td>
<td>P33FA24EGAN</td>
<td>40 (85)</td>
<td>10 (150)</td>
<td>207 (8.2)</td>
<td>73 (2.9)</td>
<td>73 (2.9)</td>
</tr>
<tr>
<td>1/2&quot;</td>
<td>Metal bowl - Manual drain</td>
<td>P33FA24ESMN</td>
<td>40 (85)</td>
<td>17 (250)</td>
<td>213 (8.4)</td>
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<td>73 (2.9)</td>
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<tr>
<td>1/2&quot;</td>
<td>Metal bowl - Auto drain</td>
<td>P33FA24ESAN</td>
<td>40 (85)</td>
<td>17 (250)</td>
<td>207 (8.2)</td>
<td>73 (2.9)</td>
<td>73 (2.9)</td>
</tr>
<tr>
<td>3/4&quot;</td>
<td>Poly bowl - Manual drain</td>
<td>P33FA26EGMN</td>
<td>48 (102)</td>
<td>10 (150)</td>
<td>213 (8.4)</td>
<td>73 (2.9)</td>
<td>73 (2.9)</td>
</tr>
<tr>
<td>3/4&quot;</td>
<td>Poly bowl - Auto drain</td>
<td>P33FA26EGAN</td>
<td>48 (102)</td>
<td>10 (150)</td>
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<td>3/4&quot;</td>
<td>Metal bowl - Manual drain</td>
<td>P33FA26ESMN</td>
<td>48 (102)</td>
<td>17 (250)</td>
<td>213 (8.4)</td>
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<tr>
<td>3/4&quot;</td>
<td>Metal bowl - Auto drain</td>
<td>P33FA26ESAN</td>
<td>48 (102)</td>
<td>17 (250)</td>
<td>207 (8.2)</td>
<td>73 (2.9)</td>
<td>73 (2.9)</td>
</tr>
</tbody>
</table>

* flow with 6.3 bar (91.3 psig) inlet pressure and 0.34 (4.9 psig) pressure drop.
† Standard part numbers shown in bold. For other models refer to Options chart above.
Specifications

Flow Capacity*  
1/2  40 dm³/s (85 scfm)  
3/4  48 dm³/s (102 scfm)

Max. Operating  
Plastic Bowl  52°C (125°F)  
Metal Bowl  65.5°C (150°F)

Temperature  
Plastic Bowl  10 bar (150 psig)  
Metal Bowl  17 bar (250 psig)

Max. Supply  
Plastic Bowl  8.3 bar (120 psig)  
Metal Bowl  12.7 bar (185 psig)

Pressure

Standard Filtration  
5 Micron

Useful Retention†  
85 cm³ (2.8 US oz.)

Port Size  
BSPP / BSPT / NPT  1/2, 3/4

Weight  
0.46 kg (1.01 lbs)

Flow Charts

1/2 Filter

<table>
<thead>
<tr>
<th>Primary Pressure - bar</th>
<th>Pressure Drop - bar</th>
<th>Primary Pressure - psig</th>
<th>Pressure Drop - psig</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.6</td>
<td>0.3</td>
<td>23.2</td>
<td>3.5</td>
</tr>
<tr>
<td>4.0</td>
<td>0.9</td>
<td>58</td>
<td>8.0</td>
</tr>
<tr>
<td>6.3</td>
<td>1.6</td>
<td>91.4</td>
<td>13.2</td>
</tr>
<tr>
<td>10</td>
<td>2.4</td>
<td>145</td>
<td>20.6</td>
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</table>

3/4 Filter

<table>
<thead>
<tr>
<th>Primary Pressure - bar</th>
<th>Pressure Drop - bar</th>
<th>Primary Pressure - psig</th>
<th>Pressure Drop - psig</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.6</td>
<td>0.3</td>
<td>23.2</td>
<td>3.5</td>
</tr>
<tr>
<td>4.0</td>
<td>0.9</td>
<td>58</td>
<td>8.0</td>
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<tr>
<td>6.3</td>
<td>1.6</td>
<td>91.4</td>
<td>13.2</td>
</tr>
<tr>
<td>10</td>
<td>2.4</td>
<td>145</td>
<td>20.6</td>
</tr>
</tbody>
</table>

Materials of Construction

Body  Aluminum  
Body Cap  ABS  
Bowls  Plastic Bowl  Polycarbonate  
        Metal Bowl  Aluminum  
Bowl Guard  Nylon  
Deflector  Polypropylene  
Element Retainer / Baffle  Acetal  
Filter Element  Sintered Polyethylene  
Seals  Plastic Bowl  Nitrile  
        Metal Bowl  Nitrile  
Sight Gauge  Metal Bowl  Polycarbonate

Dimensions

Repair and Service Kits

Plastic bowl / Bowl guard manual drain  P33KA00BGM  
Metal bowl / Sight gauge manual drain  P33KA00BSM  
Auto drain  P32KA00DA  
5µ particle filter element  P33KA00ESE  
L-Bracket (fits to body)  P33KA00ML  
T-Bracket (fits to body connector)  P32KA00MB  
T-Bracket with body connector  P33KA00MT  
Body connector  P32KA00CB  
Differential pressure indicator (replacement)  P32KA00RQ

Air quality:

Within ISO 8573-1: 1991 Class 3 (Particulates)  
Within ISO 8573-1: 2001 Class 6 (Particulates)

* Inlet pressure 6.3 bar (91.3 psig). Pressure drop 0.34 bar (4.9 psig).
† Useful retention refers to volume below the quiet zone baffle.
Mini Coalescing and Adsorber Filters - P31

- Integral 1/4" ports (NPT, BSPP & BSPT)
- Removes liquid aerosols and sub micron particles
- Oil free air for critical applications, such as air gauging, pneumatic instrumentation and control
- Positive bayonet latch to ensure correct & safe fitting
- Adsorbing activated carbon element removes oil vapors and most hydrocarbons

**Note:** To optimize the life of coalescing element, it is advisable to install a P31F pre-filter with a 5 micron element upstream of the coalescing filter.

To optimize the life of an Adsorber it is advisable to install a P31 Coalescing Filter upstream of the Adsorber. Adsorber element should be replaced approximately every 1000 hours of service.

### Options:

**Port size**
- 1/8
- 1/4

**Thread type**
- BSPP
- BSPT
- NPT

**Bowl type**
- Poly bowl with bowl guard
- Metal bowl without sight gauge

**Drain type**
- Pulse drain
- Manual drain

**Element**
- 0.01µ Element
- 1µ Element
- Adsorber

**Mounting**
- No bracket

<table>
<thead>
<tr>
<th>Port size</th>
<th>Description</th>
<th>Order Code</th>
<th>Flow dm³/s (acfm)</th>
<th>Max. bar (psig)</th>
<th>Height mm (inches)</th>
<th>Width mm (inches)</th>
<th>Depth mm (inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/8</td>
<td>Poly bowl - 0.01 micron - Manual drain</td>
<td>P31FA22CGMN</td>
<td>2 (4.2)</td>
<td>10 (150)</td>
<td>116.3 (4.58)</td>
<td>40 (1.58)</td>
<td>42.7 (1.68)</td>
</tr>
<tr>
<td>1/4</td>
<td>Poly bowl - 0.01 micron - Pulse drain</td>
<td>P31FA22CBGN</td>
<td>2 (4.2)</td>
<td>10 (150)</td>
<td>116.3 (4.58)</td>
<td>40 (1.58)</td>
<td>42.7 (1.68)</td>
</tr>
<tr>
<td>1/4</td>
<td>Metal bowl - 0.01 micron - Manual drain</td>
<td>P31FA22CMMN</td>
<td>2 (4.2)</td>
<td>17 (250)</td>
<td>116.3 (4.58)</td>
<td>40 (1.58)</td>
<td>42.7 (1.68)</td>
</tr>
<tr>
<td>1/4</td>
<td>Metal bowl - 0.01 micron - Pulse drain</td>
<td>P31FA22CMBN</td>
<td>2 (4.2)</td>
<td>17 (250)</td>
<td>116.3 (4.58)</td>
<td>40 (1.58)</td>
<td>42.7 (1.68)</td>
</tr>
</tbody>
</table>

* Standard part numbers shown in bold. For other models refer to Options chart above.

* flow with 6.3 bar (91.3 psig) inlet pressure and 0.2 (3 psig) pressure drop.

Indicates stocked product.
Specifications

Flow Capacity
- 1.0 Micron Coalescing: Energy Efficient Flow*: 3.8 (8)
- Maximum Flow**: 6 (13)
- Activated Carbon Adsorber: Rated Flow*: 6 (13)

Max. Operating
- Plastic Bowl: 52°C (125°F)
- Metal Bowl: 65.5°C (150°F)

Max. Supply
- Plastic Bowl: 10 bar (150 psig)
- Metal Bowl: 17 bar (250 psig)

Standard Filtration
- 1.0 and 0.01 Micron (ppm wt)

Adsorber: Max. oil carryover (ppm w/w) 0.003 @ 21°C (70°F)

Useful Retention†
- 12 cm³ (0.4 US oz.)

Port Size
- BSPP / BSPT / NPT: 1/4

Weight
- 0.11 kg (0.24 lbs)

* Inlet pressure 6.3 bar (91.3 psig), Pressure drop 0.2 bar (3 psig), Saturated Element.
** Inlet pressure 6.3 bar (91.3 psig), Pressure drop 0.4 bar (6 psig), Saturated Element.
† Useful retention refers to volume below the quiet zone baffle.

Materials of Construction

Body: Aluminum
Body Cap: ABS
Bowl: Plastic Bowl Polycarbonate
- Metal Bowl: Aluminum
Filter Element: 1.0 and .01 Micron Borosilicate Cloth
Adsorber: Activated Carbon
Seals: Nitrile

Flow Charts

P31 - 1.0 micron flow

Flow Charts

- Primary Pressure - bar
- Primary Pressure - psig
- Flow - dm³/s
- Flow - scfm

- Pressure Drop - bar
- Pressure Drop - (psig)

Dimensions

Repair and Service Kits

Plastic bowl / Bowl guard manual drain: P31KA00BGM
Metal bowl / w/o sight gauge manual drain: P31KA00BMM
Plastic bowl / Bowl guard pulse drain: P31KA00BGB
Metal bowl / w/o sight gauge pulse drain: P31KA00BMB
1µ coalescing filter element: P31KA00ES9
0.01µ coalescing filter element: P31KA00ESC
Activated carbon adsorber filter element: P31KA00ESA
C-Bracket (fits to body): P31KA00MW
T-Bracket with body connector: P31KA00MT
Body connector: P31KA00CB
**Compact Coalescing and Adsorber Filter - P32**

- Integral 1/4", 3/8" or 1/2" ports (NPT, BSPP & BSPT)
- Removes liquid aerosols and sub micron particles
- Oil free air for critical applications, such as air gauging, pneumatic instrumentation and control
- Differential Pressure Indicator (DPI) standard on Coalescing Filters
- Positive bayonet latch to ensure correct & safe fitting
- Adsorbing activated carbon element removes oil vapors and most hydrocarbons

**Note:** To optimize the life of coalescing element, it is advisable to install a P32F pre-filter with a 5 micron element upstream of the coalescing filter.

To optimize the life of an Adsorber it is advisable to install a P32 Coalescing Filter upstream of the Adsorber. Adsorber element should be replaced approximately every 1000 hours of service.

**Options:**

<table>
<thead>
<tr>
<th>Port size</th>
<th>Description</th>
<th>Order Code</th>
<th>Flow (dm³/s/scfm)</th>
<th>Max. bar (psig)</th>
<th>Height (mm, inches)</th>
<th>Width (mm, inches)</th>
<th>Depth (mm, inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4&quot;</td>
<td>Poly bowl - 0.01 Micron, Manual drain</td>
<td>P32FA22DGMN</td>
<td>11 (23)</td>
<td>10 (150)</td>
<td>209 (8.2)</td>
<td>60 (2.36)</td>
<td>60 (2.36)</td>
</tr>
<tr>
<td>1/4&quot;</td>
<td>Poly bowl - 0.01 Micron, Auto drain</td>
<td>P32FA22DGAN</td>
<td>11 (23)</td>
<td>10 (150)</td>
<td>203 (8.0)</td>
<td>60 (2.36)</td>
<td>60 (2.36)</td>
</tr>
<tr>
<td>1/4&quot;</td>
<td>Metal bowl - 0.01 Micron, Manual drain</td>
<td>P32FA22DSMN</td>
<td>11 (23)</td>
<td>17 (250)</td>
<td>209 (8.2)</td>
<td>60 (2.36)</td>
<td>60 (2.36)</td>
</tr>
<tr>
<td>1/4&quot;</td>
<td>Metal bowl - 0.01 Micron, Auto drain</td>
<td>P32FA22DSAN</td>
<td>11 (23)</td>
<td>17 (250)</td>
<td>203 (8.0)</td>
<td>60 (2.36)</td>
<td>60 (2.36)</td>
</tr>
<tr>
<td>3/8&quot;</td>
<td>Poly bowl - 0.01 Micron, Manual drain</td>
<td>P32FA23DGMN</td>
<td>11 (23)</td>
<td>10 (150)</td>
<td>209 (8.2)</td>
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<tr>
<td>3/8&quot;</td>
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<td>Metal bowl - 0.01 Micron, Auto drain</td>
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<td>60 (2.36)</td>
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<tr>
<td>1/2&quot;</td>
<td>Poly bowl - 0.01 Micron, Manual drain</td>
<td>P32FA24DGMN</td>
<td>11 (23)</td>
<td>10 (150)</td>
<td>209 (8.2)</td>
<td>60 (2.36)</td>
<td>60 (2.36)</td>
</tr>
<tr>
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<td>Poly bowl - 0.01 Micron, Auto drain</td>
<td>P32FA24DGAN</td>
<td>11 (23)</td>
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<td>60 (2.36)</td>
<td>60 (2.36)</td>
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<tr>
<td>1/2&quot;</td>
<td>Metal bowl - 0.01 Micron, Manual drain</td>
<td>P32FA24DSMN</td>
<td>11 (23)</td>
<td>17 (250)</td>
<td>209 (8.2)</td>
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<tr>
<td>1/2&quot;</td>
<td>Metal bowl - 0.01 Micron, Auto drain</td>
<td>P32FA24DSAN</td>
<td>11 (23)</td>
<td>17 (250)</td>
<td>203 (8.0)</td>
<td>60 (2.36)</td>
<td>60 (2.36)</td>
</tr>
</tbody>
</table>

* flow with 6.3 bar (91.3 psig) inlet pressure and 0.2 (3 psig) pressure drop.
† Standard part numbers shown in bold. For other models refer to Options chart above.
## Specifications

<table>
<thead>
<tr>
<th>Feature</th>
<th>Information</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Flow Capacity</strong></td>
<td><strong>dm³/s SCFM</strong></td>
</tr>
<tr>
<td>1.0 Micron Coalescing</td>
<td>Energy Efficient Flow* 17 (36)</td>
</tr>
<tr>
<td>Max. Flow**</td>
<td>27 (57)</td>
</tr>
<tr>
<td>0.01 Micron Coalescing</td>
<td>Energy Efficient Flow* 11 (23)</td>
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<tr>
<td>Max. Flow**</td>
<td>28 (38)</td>
</tr>
<tr>
<td>Activated Carbon Adsorber</td>
<td>Rated Flow* 27 (57)</td>
</tr>
<tr>
<td>Max. Operating Pressure</td>
<td>Plastic Bowl 52°C (125°F)</td>
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<tr>
<td>Temperature</td>
<td>Metal Bowl 65.5°C (150°F)</td>
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<tr>
<td>Max. Supply Pressure</td>
<td>Plastic Bowl 10 bar (150 psig)</td>
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<tr>
<td>Pressure</td>
<td>Metal Bowl 17 bar (250 psig)</td>
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<tr>
<td>Standard Filtration</td>
<td>1.0 and 0.01 Micron ppm wt</td>
</tr>
<tr>
<td>Adsorber</td>
<td>Max. oil carryover (ppm w/w) 0.003 @ 21°C (70°F)</td>
</tr>
<tr>
<td>Useful Retention†</td>
<td>51 cm³ (1.7 US oz.)</td>
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<tr>
<td>Port Size</td>
<td>BSPP / BSPT / NPT 1/4, 3/8, 1/2</td>
</tr>
<tr>
<td>Weight</td>
<td>0.32 kg (0.71 lbs)</td>
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</tbody>
</table>

* Inlet pressure 6.3 bar (91.3 psig), Pressure drop 0.2 bar (3 psig), Saturated Element.
** Inlet pressure 6.3 bar (91.3 psig), Pressure drop 0.4 bar (6 psig), Saturated Element.
† Useful retention refers to volume below the quiet zone baffle.

## Flow Charts

### P32 - 1.0 micron flow

- **Primary Pressure - bar**: 2.0, 4.0, 6.3
- **Primary Pressure - psig**: 29, 58, 91.4

### P32 - 0.01 micron flow

- **Primary Pressure - bar**: 2.0, 4.0, 6.3
- **Primary Pressure - psig**: 29, 58, 91.4

## Materials of Construction

<table>
<thead>
<tr>
<th>Component</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body</td>
<td>Aluminum</td>
</tr>
<tr>
<td>Body Cap</td>
<td>ABS</td>
</tr>
<tr>
<td>Bowls</td>
<td>Plastic Bowl, Polycarbonate</td>
</tr>
<tr>
<td>Metal Bowl</td>
<td>Aluminum</td>
</tr>
<tr>
<td>Filter Element</td>
<td>1.0 and .01 Micron Borosilicate Cloth</td>
</tr>
<tr>
<td>Adsorber</td>
<td>Activated Carbon</td>
</tr>
<tr>
<td>Seals</td>
<td>Nitrile</td>
</tr>
<tr>
<td>Sight Gauge</td>
<td>Metal Bowl, Polycarbonate</td>
</tr>
</tbody>
</table>

## Repair and Service Kits

- Plastic bowl / Bowl guard manual drain: **P32KA00BGM**
- Metal bowl / Sight gauge manual drain: **P32KA00BSM**
- Auto drain: **P32KA00DA**
- 1µ coalescing filter element: **P32KA00ES9**
- 0.01µ coalescing filter element: **P32KA00ESC**
- Activated carbon adsorber filter element: **P32KA00ESA**
- L-Bracket (fits to body): **P32KA00ML**
- T-Bracket (fits to body connector): **P32KA00MB**
- T-Bracket with body connector: **P32KA00MT**
- Body connector: **P32KA00CB**
- Differential pressure indicator (replacement): **P32KA00RQ**
Standard Coalescing and Adsorber Filter - P33

- Integral 1/2" or 3/4" ports (NPT, BSPP & BSPT)
- Removes liquid aerosols and sub micron particles
- Oil free air for critical applications, such as air gauging, pneumatic instrumentation and control
- Differential Pressure Indicator (DPI) standard on Coalescing Filters
- Positive bayonet latch to ensure correct & safe fitting
- Adsorbing activated carbon element removes oil vapors and most hydrocarbons

**Note:** To optimize the life of coalescing element, it is advisable to install a P33F pre-filter with a 5 micron element upstream of the coalescing filter. To optimize the life of an Adsorber it is advisable to install a P33 Coalescing Filter upstream of the Adsorber. Adsorber element should be replaced approximately every 1000 hours of service.

### Options:

<table>
<thead>
<tr>
<th>P33</th>
<th>F</th>
<th>A</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Thread type</strong></td>
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<td>BSPT</td>
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<td></td>
</tr>
<tr>
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<tr>
<td><strong>Port size</strong></td>
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<td></td>
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<tr>
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</tr>
<tr>
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<td>6</td>
<td></td>
</tr>
<tr>
<td><strong>Bowl type</strong></td>
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<tr>
<td>Poly bowl with bowl guard</td>
<td>G</td>
<td></td>
</tr>
<tr>
<td>Metal bowl without sight gauge</td>
<td>M</td>
<td></td>
</tr>
<tr>
<td>Metal bowl with sight gauge</td>
<td>S</td>
<td></td>
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<tr>
<td><strong>Mounting</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No bracket</td>
<td>N</td>
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</tr>
<tr>
<td><strong>Element</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.01µ Element</td>
<td>C</td>
<td></td>
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<tr>
<td>0.01µ Element with dpi</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td>1µ Element</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>1µ Element with dpi</td>
<td>Q</td>
<td></td>
</tr>
<tr>
<td>Adsorber</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td><strong>Drain type</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manual drain</td>
<td>M</td>
<td></td>
</tr>
<tr>
<td>Auto drain</td>
<td>A</td>
<td></td>
</tr>
</tbody>
</table>

### Table of Specifications

<table>
<thead>
<tr>
<th>Port size</th>
<th>Description</th>
<th>Order Code</th>
<th>Flow dm³/s (acfm)</th>
<th>Max. bar (psig)</th>
<th>Height mm (inches)</th>
<th>Width mm (inches)</th>
<th>Depth mm (inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/2&quot;</td>
<td>Poly bowl - 0.01 Micron, Manual drain</td>
<td>P33FA24DGMMN</td>
<td>20 (42)</td>
<td>10 (150)</td>
<td>235 (9.3)</td>
<td>73 (2.9)</td>
<td>73 (2.9)</td>
</tr>
<tr>
<td>1/2&quot;</td>
<td>Poly bowl - 0.01 Micron, Auto drain</td>
<td>P33FA24DGAMN</td>
<td>20 (42)</td>
<td>10 (150)</td>
<td>229 (9.0)</td>
<td>73 (2.9)</td>
<td>73 (2.9)</td>
</tr>
<tr>
<td>1/2&quot;</td>
<td>Metal bowl - 0.01 Micron, Manual drain</td>
<td>P33FA24DSMMN</td>
<td>20 (42)</td>
<td>17 (250)</td>
<td>235 (9.3)</td>
<td>73 (2.9)</td>
<td>73 (2.9)</td>
</tr>
<tr>
<td>1/2&quot;</td>
<td>Metal bowl - 0.01 Micron, Auto drain</td>
<td>P33FA24DSAN</td>
<td>20 (42)</td>
<td>17 (250)</td>
<td>229 (9.0)</td>
<td>73 (2.9)</td>
<td>73 (2.9)</td>
</tr>
<tr>
<td>3/4&quot;</td>
<td>Poly bowl - 0.01 Micron, Manual drain</td>
<td>P33FA26DGMMN</td>
<td>20 (42)</td>
<td>10 (150)</td>
<td>235 (9.3)</td>
<td>73 (2.9)</td>
<td>73 (2.9)</td>
</tr>
<tr>
<td>3/4&quot;</td>
<td>Poly bowl - 0.01 Micron, Auto drain</td>
<td>P33FA26DGAMN</td>
<td>20 (42)</td>
<td>10 (150)</td>
<td>229 (9.0)</td>
<td>73 (2.9)</td>
<td>73 (2.9)</td>
</tr>
<tr>
<td>3/4&quot;</td>
<td>Metal bowl - 0.01 Micron, Manual drain</td>
<td>P33FA26DSMMN</td>
<td>20 (42)</td>
<td>17 (250)</td>
<td>235 (9.3)</td>
<td>73 (2.9)</td>
<td>73 (2.9)</td>
</tr>
<tr>
<td>3/4&quot;</td>
<td>Metal bowl - 0.01 Micron, Auto drain</td>
<td>P33FA26DSAN</td>
<td>20 (42)</td>
<td>17 (250)</td>
<td>229 (9.0)</td>
<td>73 (2.9)</td>
<td>73 (2.9)</td>
</tr>
</tbody>
</table>

* Flow with 6.3 bar (91.3 psig) inlet pressure and 0.2 (3 psig) pressure drop.
† Standard part numbers shown in bold. For other models refer to Options chart above.
Specifications

Flow Capacity
1.0 Micron Coalescing  Energy Efficient Flow*  32 (68)
Maximum Flow**  44 (93)
0.01 Micron Coalescing  Energy Efficient Flow*  20 (42)
Maximum Flow**  34 (72)
Activated Carbon Adsorber  Rated Flow*  44 (93)
Max. Operating Temperature
Plastic Bowl  52°C (125°F)
Metal Bowl  65.5°C (150°F)
Max. Supply Pressure
Plastic Bowl  10 bar (150 psig)
Metal Bowl    17 bar (250 psig)
Standard Filtration  1.0 and 0.01 Micron
Adsorber Max. oil carryover (ppm w/w) 0.003 @ 21°C (70°F)
Useful Retention†  85 cm³ (2.8 US oz.)
Port Size  BSPP / BSPT / NPT  1/2, 3/4
Weight  0.50 kg (1.10 lbs)

* Inlet pressure 6.3 bar (91.3 psig), Pressure drop 0.2 bar (3 psig), Saturated Element.
** Inlet pressure 6.3 bar (91.3 psig), Pressure drop 0.4 bar (6 psig), Saturated Element.
† Useful retention refers to volume below the quiet zone baffle.

Flow Charts

P33 - 1.0 micron flow

P33 - 0.01 micron flow

Materials of Construction

Body  Aluminum
Body Cap  ABS
Bowls  Plastic Bowl / Polycarbonate
Metal Bowl / Zinc
Filter Element  1.0 and 0.01 Micron / Borosilicate Cloth
Adsorber  Activated Carbon
Seals  Nitrile
Sight Gauge  Metal Bowl / Polycarbonate

Repair and Service Kits

Plastic bowl / Bowl guard manual drain  P33KA00BGM
Metal bowl / Sight gauge manual drain  P33KA00BSM
Auto drain  P32KA00DA
1μ coalescing filter element  P33KA00ES9
0.01μ coalescing filter element  P33KA00ESC
Activated carbon adsorber filter element  P33KA00ESA
L-Bracket (fits to body)  P33KA00ML
T-Bracket (fits to body connector)  P32KA00MB
T-Bracket with body connector  P32KA00MT
Body connector  P32KA00CB
Differential pressure indicator (replacement)  P32KA00RQ

Dimensions

Use 10mm or 3/8" Flex Tubing
4.8 mm (.19) I.D. Tube Barb fitting
48 (1.9) DPI
46 (1.9)

Use 10mm or 3/8" Flex Tubing
235 (9.3)

Manual Drain  Automatic Drain
Mini Regulator - P31

Options:

<table>
<thead>
<tr>
<th>Thread type</th>
<th>Port size</th>
<th>Relief</th>
<th>P</th>
<th>R</th>
<th>A</th>
<th>N</th>
</tr>
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<tbody>
<tr>
<td>BSPP</td>
<td>1/4</td>
<td>Relieving</td>
<td>B</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BSPT</td>
<td>2</td>
<td>Non relieving</td>
<td>N</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NPT</td>
<td>9</td>
<td>Reverse flow / relieving</td>
<td>R</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Symbols

- Integral 1/4” ports (NPT, BSPP & BSPT)
- Robust but lightweight aluminum construction
- Secondary pressure ranges 0-2 bar (0-30 psig), 0-4 bar, (0-60 psig), 0-8 bar (0-125 psig)
- Secondary aspiration plus balanced poppet provides quick response and accurate pressure regulation.
- Relieving & Non-relieving types
- Non-rising knob

Options chart:

<table>
<thead>
<tr>
<th>Port size Description</th>
<th>Order Code</th>
<th>Flow dm³/s (scfm)</th>
<th>Max. bar (psig)</th>
<th>Height mm (inches)</th>
<th>Width mm (inches)</th>
<th>Depth mm (inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4” 8 bar (125 psig) relieving</td>
<td>P31RA22BNNP</td>
<td>30 (64)</td>
<td>20 (300)</td>
<td>100.1 (3.94)</td>
<td>40 (1.58)</td>
<td>40 (1.58)</td>
</tr>
<tr>
<td>1/4” 8 bar (125 psig) + gauge</td>
<td>P31RA22BN6P</td>
<td>30 (64)</td>
<td>20 (300)</td>
<td>100.1 (3.94)</td>
<td>40 (1.58)</td>
<td>64.3 (2.53)</td>
</tr>
</tbody>
</table>

* flow with 10 bar (145 psig) inlet pressure, 6.3 bar (91.3) psig set pressure and 1 bar (14.5) psig pressure drop.
† Standard part numbers shown in bold. For other models refer to Options chart above.
Specifications

**Flow Capacity**  
1/4 30 dm³/s (64 scfm)

**Max. Operating Temperature**  
65.5°C (150°F)

**Max. Supply Pressure**  
20 bar (300 psig)

**Adjusting Range Pressure**  
0-2 bar (30 psig), 0-4 bar (60 psig), 0-8 bar (125 psig)

**Port Size**  
BSPP / BSPT / NPT 1/4

**Gauge Port (2 ea.)**  
BSPP / BSPT / NPT 1/8

**Weight**  
0.17 kg (0.37 lbs)

* Inlet pressure 10 bar (145 psig). Secondary pressure 6.3 bar (91.3 psig).
** Non-gauge option only.

Materials of Construction

- **Body**  
  Aluminum
- **Adjustment Knob**  
  Acetal
- **Body Cap**  
  ABS
- **Bonnet**  
  PBT
- **Diaphragm Assembly**  
  Brass / Nitrile
- **Bottom Plug**  
  33% Glass-Filled Nylon
- **Valve Assembly**  
  Brass / Nitrile
- **Springs**  
  Steel
- **Seals**  
  Nitrile
- **Panel Nut**  
  Acetal

Dimensions

![Dimensions Diagram]

**NOTE:** 31.7 mm (1.25 in.) hole required for panel nut mounting.

⚠️ **WARNING**

Product rupture can cause serious injury. 
Do not connect regulator to bottled gas. 
Do not exceed Maximum primary pressure rating.

⚠️ **CAUTION:**

**REGULATOR PRESSURE ADJUSTMENT** – The working range of knob adjustment is designed to permit outlet pressures within their full range. Pressure adjustment beyond this range is also possible because the knob is not a limiting device. This is a common characteristic of most industrial regulators, and limiting devices may be obtained only by special design. For best performance, regulated pressure should always be set by increasing the pressure up to the desired setting.

Flow Charts

**1/4 Regulator**

![Flow Chart Graph]

Repair and Service Kits

- Regulator repair kit - Relieving  
  P31KA00RB
- Regulator repair kit - Non-relieving  
  P31KA00RC
- Panel mount nut - Aluminum  
  P31KA00MM
- Panel mount nut - Plastic  
  P31KA00MP
- Angle Bracket (uses panel mount threads)  
  P31KA00MR
- C-Bracket (fits to body)  
  P31KA00MW
- T-Bracket with body connector  
  P31KA00MT
- Body connector  
  P31KA00CB

Gauges

- Square flush mount gauge  
  K4511SCR04B
  K4511SCR11B
  K4511SCR060
  K4511SCR150
  K45SCR04M
  K45SCR11M

40mm Round 1/8" center back mount

- (Not for use with Common Port Regulators)  
  K4515R1402B
  K4515R1404B
  K4515R1411B

For best performance, regulated pressure should always be set by increasing the pressure up to the desired setting.
Mini Common - P1 Regulator - P31

Symbols

- Self relieving regulator with gauge
- Non relieving regulator

- Manifold style regulator with line pressure on both sides.
- Pressure output is at front or rear.
- Integral 1/4” ports (NPT, BSPP & BSPT)
- Robust construction
- Secondary pressure ranges 0-2 bar (0-30 psig), 0-4 bar, (0-60 psig), 0-8 bar (0-125 psig)
- Secondary aspiration plus balanced poppet provides quick response and accurate pressure regulation
- Relieving & Non-relieving types
- Non-rising knob

Options:

<table>
<thead>
<tr>
<th>P31</th>
<th>H A</th>
<th>N P</th>
</tr>
</thead>
</table>

- Thread type
  - BSPP 1
  - BSPT 2
  - NPT 9

- Port size
  - 1/4

- Relief
  - Relieving B
  - Non relieving N

- Adjustment range
  - Without gauge
    - 2 bar; 30 psig Y
    - 4 bar; 60 psig L
    - 8 bar; 125 ps

Order gauges separately - see next page.

<table>
<thead>
<tr>
<th>Port size</th>
<th>Description</th>
<th>Order Code</th>
<th>Flow dm³/s (scfm)</th>
<th>Max. bar (psig)</th>
<th>Height mm (inches)</th>
<th>Width mm (inches)</th>
<th>Depth mm (inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4</td>
<td>8 bar (125 psig) Relieving</td>
<td>P31HA22BNNP</td>
<td>18 (38)</td>
<td>20 (300)</td>
<td>100.1 (3.94)</td>
<td>40 (1.58)</td>
<td>40 (1.58)</td>
</tr>
</tbody>
</table>

* flow with 10 bar (145 psig) inlet pressure, 6.3 bar (91.3 psig) set pressure and 1 bar (14.5 psig) pressure drop.
† Standard part numbers shown in bold. For other models refer to Options chart above.
Specifications

Flow Capacity* 1/4 18 dm³/s (38 scfm)
Max. Operating Temperature 65.5°C (150°F)
Max. Supply Pressure 20 bar (300 psig)
Adjusting Range Pressure 0-2 bar (30 psig)
0-4 bar (60 psig)
0-8 bar (125 psig)
P1 Port Size (Inlet / Outlet) BSPP / BSPT / NPT 1/4
P2 Regulated Ports (2 ea.) BSPP / BSPT / NPT 1/8
Weight 0.30 kg (0.66 lbs)

* Inlet pressure 10 bar (145 psig). Secondary pressure 6.3 bar (91.4 psig).

Materials of Construction

Body Zinc
Adjustment Knob Acetal
Body Cap ABS
Bonnet 33% Glass-filled PBT
Diaphragm Assembly Brass / Nitrile
Bottom Plug 33% Glass-filled Nylon
Valve Assembly Brass / Nitrile

Dimensions

NOTE: 31.7 mm (1.25 in.) hole required for panel nut mounting.

WARNING
Product rupture can cause serious injury.
Do not connect regulator to bottled gas.
Do not exceed Maximum primary pressure rating.

CAUTION:
REGULATOR PRESSURE ADJUSTMENT – The working range of knob adjustment is designed to permit outlet pressures within their full range. Pressure adjustment beyond this range is also possible because the knob is not a limiting device. This is a common characteristic of most industrial regulators, and limiting devices may be obtained only by special design. For best performance, regulated pressure should always be set by increasing the pressure up to the desired setting.

Flow Charts

1/4 Common Regulator

![Flow Chart Image]

**Gauges**

1.25" Round 1/8" center back mount

<table>
<thead>
<tr>
<th>0-0 psig / 0-4 bar</th>
<th>K4513N18060</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-160 psig / 0-11 bar</td>
<td>K4513N18160</td>
</tr>
</tbody>
</table>

For best performance, regulated pressure should always be set by increasing the pressure up to the desired setting.
### Compact Regulator – P32

#### Symbols

- **Self relieving regulator with gauge**
- **Non relieving regulator**

- Integral 1/4”, 3/8” or 1/2” ports (NPT, BSPP & BSPT)
- Robust but lightweight aluminum construction
- Secondary pressure ranges 0-2 bar (0-30 psig), 0-4 bar, (0-60 psig), 0-8 bar (0-125 psig), 0-17 bar (0-250 psig)
- Secondary aspiration plus balanced poppet provides quick response and accurate pressure regulation
- Relieving & Non-relieving types
- Non-rising knob

#### Options:

<table>
<thead>
<tr>
<th>Port size</th>
<th>Order Code</th>
<th>Flow dm³/s (scfm)</th>
<th>Max. bar (psig)</th>
<th>Height mm (inches)</th>
<th>Width mm (inches)</th>
<th>Depth mm (inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4&quot;</td>
<td>P32RA22BNNP</td>
<td>41 (81)</td>
<td>20 (300)</td>
<td>136 (5.4)</td>
<td>60 (2.36)</td>
<td>60 (2.36)</td>
</tr>
<tr>
<td>1/4&quot;</td>
<td>P32RA22BNGP</td>
<td>41 (81)</td>
<td>20 (300)</td>
<td>136 (5.4)</td>
<td>60 (2.36)</td>
<td>60 (2.36)</td>
</tr>
<tr>
<td>3/8&quot;</td>
<td>P32RA23BNNP</td>
<td>65 (138)</td>
<td>20 (300)</td>
<td>136 (5.4)</td>
<td>60 (2.36)</td>
<td>60 (2.36)</td>
</tr>
<tr>
<td>3/8&quot;</td>
<td>P32RA23BNGP</td>
<td>65 (138)</td>
<td>20 (300)</td>
<td>136 (5.4)</td>
<td>60 (2.36)</td>
<td>60 (2.36)</td>
</tr>
<tr>
<td>1/2&quot;</td>
<td>P32RA24BNNP</td>
<td>67 (142)</td>
<td>20 (300)</td>
<td>136 (5.4)</td>
<td>60 (2.36)</td>
<td>60 (2.36)</td>
</tr>
<tr>
<td>1/2&quot;</td>
<td>P32RA24BNGP</td>
<td>67 (142)</td>
<td>20 (300)</td>
<td>136 (5.4)</td>
<td>60 (2.36)</td>
<td>60 (2.36)</td>
</tr>
</tbody>
</table>

* flow with 10 bar (145 psig) inlet pressure, 6.3 bar (91.3 psig) set pressure and 1 bar (14.5 psig) pressure drop.
† Standard part numbers shown in bold. For other models refer to Options chart above.
### Specifications

| Flow Capacity* | 1/4 | 41 dm³/s (81 scfm) |
| 3/8 | 65 dm³/s (138 scfm) |
| 1/2 | 67 dm³/s (142 scfm) |
| Max. Operating Temperature | 65.5°C (150°F) |
| Max. Supply Pressure | 20 bar (300 psig) |
| Adjusting Range Pressure | 0-2 bar (30 psig) |
| | 0-4 bar (60 psig) |
| | 0-8 bar (125 psig) |
| | 0-17 bar (250 psig) |
| Port Size | BSPP / BSPT / NPT |
| 1/4, 3/8, 1/2 |
| Gauge Port (2 ea.) | BSPP / BSPT / NPT |
| 1/4 |
| Weight | 0.41 kg (0.90 lbs) |

* Inlet pressure 10 bar (145 psig). Secondary pressure 6.3 bar (91.3 psig).

### Materials of Construction

| Body | Aluminum |
| Adjustment Knob | Acetal |
| Body Cap | ABS |
| Bonnet | 33% Glass-filled nylon |
| Diaphragm Assembly | Nitrile / Zinc |
| Bottom Plug | 33% Glass-filled Nylon |
| Valve Assembly | Brass / Nitrile |
| Springs | Main Regulating Valve Steel S.S. |
| Seals | Nitrile |
| Panel Nut | Acetal |

### Dimensions

![Dimensions Diagram]

NOTE: 51 mm (2.00 in.) hole required for panel nut mounting.

### Flow Charts

#### 1/4 Regulator

- **Inlet Pressure - 10 bar (145 psig)**
- Secondary Pressure - 2.5 bar (36.3 psig)
- 4.0 bar (58 psig)
- 6.3 bar (91.4 psig)

#### 3/8 Regulator

- **Inlet Pressure - 10 bar (145 psig)**
- Secondary Pressure - 2.5 bar (36.3 psig)
- 4.0 bar (58 psig)
- 6.3 bar (91.4 psig)

#### 1/2 Regulator

- **Inlet Pressure - 10 bar (145 psig)**
- Secondary Pressure - 2.5 bar (36.3 psig)
- 4.0 bar (58 psig)
- 6.3 bar (91.4 psig)

### Repair and Service Kits

- Regulator repair kit - Relieving: P32KA00RB
- Regulator repair kit - Non-relieving: P32KA00RC
- Panel mount nut - Aluminum: P32KA00MM
- Panel mount nut - Plastic: P32KA00MP
- Angle Bracket (uses panel mount threads): P32KA00MR
- T-Bracket with body connector: P32KA00MT
- T-Bracket: P32KA00MB
- Body connector: P32KA00CB

### Gauges

- **50mm (2") Round 1/4" center back mount**
- **0-2 bar / 0-0.2 Mpa / 0-30 psig** K4520R1402B
- **0-4 bar / 0-0.4 Mpa / 0-60 psig** K4520R1404B
- **0-11 bar / 0-1.1 Mpa / 0-160 psig** K4520R1411B
- **0-20 bar / 0-2 Mpa / 0-300 psig** K4520R1420B

For best performance, regulated pressure should always be set by increasing the pressure up to the desired setting.
## Compact Common P1 Regulator - P32

**Symbols**

- Self relieving regulator with gauge
- Non relieving regulator

- Manifold style regulator with line pressure on both sides.
- Pressure output is at front or rear.
- Integral 1/4", 3/8" or 1/2" ports (NPT, BSPP & BSPT)
- Robust construction
- Secondary pressure ranges 0-2 bar (0-30 psig), 0-4 bar, (0-60 psig), 0-8 bar (0-125 psig), 0-17 bar (0-250 psig)
- Secondary aspiration plus balanced poppet provides quick response and accurate pressure regulation
- Relieving & Non-relieving types
- Non-rising knob

### Options:

<table>
<thead>
<tr>
<th>Port size</th>
<th>Description</th>
<th>Order Code</th>
<th>Flow dm³/s (scfm)</th>
<th>Max. bar (psig)</th>
<th>Height mm (inches)</th>
<th>Width mm (inches)</th>
<th>Depth mm (inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4&quot;</td>
<td>8 bar (125 psig) Relieving</td>
<td>P32HA22BNPN</td>
<td>28 (99)</td>
<td>20 (300)</td>
<td>136 (5.4)</td>
<td>60 (2.36)</td>
<td>60 (2.36)</td>
</tr>
<tr>
<td>3/8&quot;</td>
<td>8 bar (125 psig) Relieving</td>
<td>P32HA23BNPN</td>
<td>28 (99)</td>
<td>20 (300)</td>
<td>136 (5.4)</td>
<td>60 (2.36)</td>
<td>60 (2.36)</td>
</tr>
<tr>
<td>1/2&quot;</td>
<td>8 bar (125 psig) Relieving</td>
<td>P32HA24BNPN</td>
<td>28 (99)</td>
<td>20 (300)</td>
<td>136 (5.4)</td>
<td>60 (2.36)</td>
<td>60 (2.36)</td>
</tr>
</tbody>
</table>

* Standard part numbers shown in bold. For other models refer to Options chart above.

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* Standard part numbers shown in bold. For other models refer to Options chart above.
Specifications

Flow Capacity*
- 1/4: 28 dm³/s (59 scfm)
- 3/8: 28 dm³/s (59 scfm)
- 1/2: 28 dm³/s (59 scfm)

Max. Operating Temperature: 65.5°C (150°F)
Max. Supply Pressure: 20 bar (300 psig)
Adjusting Range Pressure:
- 0-2 bar (30 psig)
- 0-4 bar (60 psig)
- 0-8 bar (125 psig)
- 0-17 bar (250 psig)

Port Size: BSPP / BSPT / NPT
- 1/4, 3/8, 1/2

Gauge Port (2 ea.): BSPP / BSPT / NPT
- 1/4

Weight: 0.50 kg (1.10 lbs)

*Inlet pressure 10 bar (145 psig), Secondary pressure 6.3 bar (91.3 psig).

Materials of Construction

- Body: Zinc
- Adjustment Knob: Acetal
- Body Cap: ABS
- Bonnet: 33% Glass-filled nylon
- Diaphragm Assembly: Nitrile / Zinc
- Bottom Plug: 33% Glass-filled nylon
- Valve Assembly: Brass / Nitrile
- Springs: Main Regulating Steel
- Valve: S.S.
- Seals: Nitrile
- Panel Nut: Acetal

Flow Charts

P32 Common Port Regulator

Flow Capacity: 1/4, 3/8, 1/2

Regulator repair kit - Relieving: P32KA00RB
Regulator repair kit - Non-relieving: P32KA00RC
Panel mount nut - Aluminum: P32KA00MM
Panel mount nut - Plastic: P32KA00MP
Angle Bracket (uses panel mount threads): P32KA00MR
T-Bracket with body connector: P32KA00MT
T-Bracket: P32KA00MB
Body connector: P32KA00CB

Gauges

50mm (2") Round 1/4" center back mount

<table>
<thead>
<tr>
<th>Pressure Range</th>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-2 bar / 0-0.2 Mpa / 0-30 psig</td>
<td>K4520R1402B</td>
<td></td>
</tr>
<tr>
<td>0-4 bar / 0-0.4 Mpa / 0-60 psig</td>
<td>K4520R1404B</td>
<td></td>
</tr>
<tr>
<td>0-11 bar / 0-1.1 Mpa / 0-160 psig</td>
<td>K4520R1411B</td>
<td></td>
</tr>
<tr>
<td>0-20 bar / 0-2 Mpa / 0-300 psig</td>
<td>K4520R1420B</td>
<td></td>
</tr>
</tbody>
</table>

For best performance, regulated pressure should always be set by increasing the pressure up to the desired setting.

NOTE: 51 mm (2.00 in.) hole required for panel nut mounting.

WARNING
Product rupture can cause serious injury.
Do not connect regulator to bottled gas.
Do not exceed Maximum primary pressure rating.

CAUTION:
REGULATOR PRESSURE ADJUSTMENT — The working range of knob adjustment is designed to permit outlet pressures within their full range. Pressure adjustment beyond this range is also possible because the knob is not a limiting device. This is a common characteristic of most industrial regulators, and limiting devices may be obtained only by special design. For best performance, regulated pressure should always be set by increasing the pressure up to the desired setting.
Parker One Pneumatic

Standard Regulator - P33

Options:

<table>
<thead>
<tr>
<th>Port size</th>
<th>Description</th>
<th>Order Code 1</th>
<th>Flow dm³/s (scfm)</th>
<th>Max. bar (psig)</th>
<th>Height mm (inches)</th>
<th>Width mm (inches)</th>
<th>Depth mm (inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/2&quot;</td>
<td>8 bar (125 psig) Relieving</td>
<td>P33RA24BNNP</td>
<td>100 (212)</td>
<td>20 (300)</td>
<td>149 (5.9)</td>
<td>73 (2.9)</td>
<td>73 (2.9)</td>
</tr>
<tr>
<td>1/2&quot;</td>
<td>8 bar (125 psig) Relieving + Gauge</td>
<td>P33RA24BNGP</td>
<td>100 (212)</td>
<td>20 (300)</td>
<td>149 (5.9)</td>
<td>73 (2.9)</td>
<td>73 (2.9)</td>
</tr>
<tr>
<td>3/4&quot;</td>
<td>8 bar (125 psig) Relieving</td>
<td>P33RA26BNNP</td>
<td>100 (212)</td>
<td>20 (300)</td>
<td>149 (5.9)</td>
<td>73 (2.9)</td>
<td>73 (2.9)</td>
</tr>
<tr>
<td>3/4&quot;</td>
<td>8 bar (125 psig) Relieving + Gauge</td>
<td>P33RA26BNGP</td>
<td>100 (212)</td>
<td>20 (300)</td>
<td>149 (5.9)</td>
<td>73 (2.9)</td>
<td>73 (2.9)</td>
</tr>
</tbody>
</table>

- With round gauge:
  - 2 bar; 30 psig; 0.2 MPa: Z
  - 4 bar; 60 psig; 0.4 MPa: M
  - 8 bar; 125 psig; 0.8 MPa: G
  - 17 bar; 250 psig; 1.7 MPa: J

- Without gauge:
  - 2 bar; 30 psig; 0.2 MPa: Y
  - 4 bar; 60 psig; 0.4 MPa: L
  - 8 bar; 125 psig; 0.8 MPa: N
  - 17 bar; 250 psig; 1.7 MPa: H

Symbols:

- Self relieving regulator with gauge
- Non relieving regulator

- Integral 1/2" or 3/4" ports (NPT, BSPP & BSPT)
- Robust but lightweight aluminum construction
- Secondary pressure ranges: 0-2 bar (0-30 psig), 0-4 bar, (0-60 psig), 0-8 bar (0-125 psig), 0-17 bar (0-250 psig)
- Secondary aspiration plus balanced poppet provides quick response and accurate pressure regulation
- Relieving & Non-relieving types
- Non-rising knob

* With 10 bar (145 psig) inlet pressure, 6.3 bar (91.3 psig) set pressure and 1 bar (14.5 psig) pressure drop.
† Standard part numbers shown in bold. For other models refer to Options chart above.
Specifications

Flow Capacity*  
1/2 100 dm³/s (212 scfm)  
3/4 100 dm³/s (212 scfm)

Max. Operating temperature 65.5°C (150°F)

Max. Supply Pressure 20 bar (300 psig)

Adjusting Range Pressure  
0-2 bar (30 psig)  
0-4 bar (60 psig)  
0-8 bar (125 psig)  
0-17 bar (250 psig)

Port Size BSPP / BSPT / NPT 1/2, 3/4

Gauge Port (2 ea.) BSPP / BSPT / NPT 1/4

Weight 0.62 kg (1.37 lbs)

*Inlet pressure 10 bar (145 psig). Secondary pressure 6.3 bar (91.3) psig.

Materials of Construction

Body Aluminum

Adjustment Knob Acetal

Body Cap ABS

Bonnet 33% Glass-filled Nylon

Diaphragm Assembly Nitrile / Zinc

Valve Assembly Brass / Nitrile / Acetal

Springs Steel S.S.

Seals Nitrile

Panel Nut Acetal

Dimensions

WARNING

Product rupture can cause serious injury.  
Do not connect regulator to bottled gas.  
Do not exceed Maximum primary pressure rating.

CAUTION:

REGULATOR PRESSURE ADJUSTMENT – The working range of knob adjustment is designed to permit outlet pressures within their full range. Pressure adjustment beyond this range is also possible because the knob is not a limiting device. This is a common characteristic of most industrial regulators, and limiting devices may be obtained only by special design. For best performance, regulated pressure should always be set by increasing the pressure up to the desired setting.

Flow Charts

1/2 Regulator

3/4 Regulator

Repair and Service Kits

Regulator repair kit - Relieving  P33KA00RB

Regulator repair kit - Non-relieving  P33KA00RC

Panel mount nut - Aluminum  P33KA00MM

Panel mount nut - Plastic  P33KA00MP

Angle Bracket (uses panel mount threads)  P33KA00MR

T-Bracket with body connector  P32KA00MT

T-Bracket  P32KA00MB

Body connector  P32KA00CB

Gauges

50mm (2") Round 1/4" center back mount

0-2 bar / 0-0.2 Mpa / 0-30 psig  K4520R1402B

0-4 bar / 0-0.4 Mpa / 0-60 psig  K4520R1404B

0-11 bar / 0-1.1 Mpa / 0-160 psig  K4520R1411B

0-20 bar / 0-2 Mpa / 0-300 psig  K4520R1420B

For best performance, regulated pressure should always be set by increasing the pressure up to the desired setting.
Mini Filter / Regulator - P31

Options:

Options: 
- Integral 1/4" ports (NPT, BSPP & BSPT)
- High efficiency 5 micron element as standard
- Excellent water removal efficiency
- Robust but lightweight aluminum construction
- Positive bayonet latch to ensure correct & safe fitting
- Secondary pressure ranges 0-2 bar (0-30 psig), 0-4 bar, (0-60 psig), 0-8 bar (0-125 psig)
- Secondary aspiration plus balanced poppet provides quick response and accurate pressure regulation

Options chart:

<table>
<thead>
<tr>
<th>Thread type</th>
<th>Drain type</th>
<th>Adjustment range</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSPP 1</td>
<td>Pulse drain B</td>
<td>2 bar (0.2 MPa)*</td>
</tr>
<tr>
<td>BSPT 2</td>
<td>Manual drain M</td>
<td>2 bar (0.2 MPa) Z</td>
</tr>
<tr>
<td>NPT 9</td>
<td></td>
<td>2 bar (0.2 MPa) Y</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Port size</th>
<th>Description</th>
<th>Order Code†</th>
<th>Flow dm³/s (scfm)</th>
<th>Max. bar (psig)</th>
<th>Height mm (inches)</th>
<th>Width mm (inches)</th>
<th>Depth mm (inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/8&quot;</td>
<td>8 bar (125 psig) Relieving - Poly bowl - Manual drain</td>
<td>P31EA22EQMBN6P</td>
<td>14 (30)</td>
<td>10 (150)</td>
<td>164.1 (6.46)</td>
<td>40 (1.58)</td>
<td>64 (2.53)</td>
</tr>
<tr>
<td>1/4&quot;</td>
<td>8 bar (125 psig) Relieving - Poly bowl - Pulse drain</td>
<td>P31EA22EQBBN6P</td>
<td>14 (30)</td>
<td>10 (150)</td>
<td>164.1 (6.46)</td>
<td>40 (1.58)</td>
<td>64 (2.53)</td>
</tr>
<tr>
<td>1/4&quot;</td>
<td>8 bar (125 psig) Relieving - Metal bowl - Manual drain</td>
<td>P31EA22EMMBN6P</td>
<td>14 (30)</td>
<td>17 (250)</td>
<td>164.1 (6.46)</td>
<td>40 (1.58)</td>
<td>64 (2.53)</td>
</tr>
<tr>
<td>1/4&quot;</td>
<td>8 bar (125 psig) Relieving - Metal bowl - Pulse drain</td>
<td>P31EA22EMBBN6P</td>
<td>14 (30)</td>
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<td>164.1 (6.46)</td>
<td>40 (1.58)</td>
<td>64 (2.53)</td>
</tr>
</tbody>
</table>

* flow with 10 bar (145 psig) inlet pressure, 6.3 bar (91.3 psig) set pressure and 1 bar (14.5 psig) pressure drop.
† Standard part numbers shown in bold. For other models refer to Options chart above.
Specifications

Flow Capacity* 1/4 14 dm³/s (30.0 scfm)
Max. Operating Plastic Bowl 52°C (125°F)
Temperature Metal Bowl 65.5°C (150°F)
Max. Supply Plastic Bowl 10 bar (150 psig)
Pressure Metal Bowl 17 bar (250 psig)
Standard Filtration 5 Micron
Useful Retention 12 cm³ (0.4 US oz.)
Adjusting Range 0-2 bar (30 psig)
Pressure 0-4 bar (60 psig)
0-8 bar (125 psig)

Flow Charts

1/4 Filter/Regulator

Inlet Pressure - 10 bar (145 psig)

Flow Charts

40mm Round 1/8" center back mount
(Not for use with Common Port Regulators)

For best performance, regulated pressure should always be set by increasing the pressure up to the desired setting.

Materials of Construction

Body Aluminum
Adjustment Knob Acetal
Body Cap ABS
Bonnet PBT
Bowl Plastic Bowl Polycarbonate
Metal Bowl Aluminum
Bowl Guard Nylon
Filter Element Polyethylene
Seals Plastic Bowl Nitrile
Metal Bowl Nitrile
Springs Steel
Valve Assembly Brass / Nitrile
Diaphragm Assembly Brass / Nitrile
Panel Nut Acetal

For best performance, regulated pressure should always be set by increasing the pressure up to the desired setting.

Dimensions

Gauges

Square flush mount gauge

0-4 bar K4511SCR04B
0-10 bar K4511SCR11B
0-60 psig K4511SCR060
0-150 psig K4511SCR150
0-0.4 Mpa K45SCR04M
0-1.1 Mpa K45SCR11M

40mm Round 1/8" center back mount

For best performance, regulated pressure should always be set by increasing the pressure up to the desired setting.

WARNING

Product rupture can cause serious injury.
Do not connect regulator to bottled gas.
Do not exceed Maximum primary pressure rating.
### Options:

<table>
<thead>
<tr>
<th>Port Size</th>
<th>Description</th>
<th>Order Code</th>
<th>Flow dm³/s (sccm)</th>
<th>Max. bar (psig)</th>
<th>Height mm (inches)</th>
<th>Width mm (inches)</th>
<th>Depth mm (inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4&quot;</td>
<td>8 bar (125 psig) Relieving - Poly bowl - Manual drain</td>
<td>P32EA22EGMBNGP</td>
<td>42 (89)</td>
<td>10 (150)</td>
<td>254 (10.0)</td>
<td>60 (2.36)</td>
<td>60 (2.36)</td>
</tr>
<tr>
<td>1/4&quot;</td>
<td>8 bar (125 psig) Relieving - Poly bowl - Auto drain</td>
<td>P32EA22EBNGABNGP</td>
<td>42 (89)</td>
<td>10 (150)</td>
<td>248 (9.76)</td>
<td>60 (2.36)</td>
<td>60 (2.36)</td>
</tr>
<tr>
<td>1/4&quot;</td>
<td>8 bar (125 psig) Relieving - Metal bowl - Manual drain</td>
<td>P32EA22ESMBNGP</td>
<td>42 (89)</td>
<td>17 (250)</td>
<td>245 (9.66)</td>
<td>60 (2.36)</td>
<td>60 (2.36)</td>
</tr>
<tr>
<td>1/4&quot;</td>
<td>8 bar (125 psig) Relieving - Metal bowl - Auto drain</td>
<td>P32EA22ESABNGP</td>
<td>42 (89)</td>
<td>17 (250)</td>
<td>254 (10.0)</td>
<td>60 (2.36)</td>
<td>95 (3.74)</td>
</tr>
<tr>
<td>3/8&quot;</td>
<td>8 bar (125 psig) Relieving - Poly bowl - Manual drain</td>
<td>P32EA23EGMBNGP</td>
<td>58 (123)</td>
<td>10 (150)</td>
<td>254 (10.0)</td>
<td>60 (2.36)</td>
<td>60 (2.36)</td>
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<td>3/8&quot;</td>
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<td>P32EA23EGABNGP</td>
<td>58 (123)</td>
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<td>8 bar (125 psig) Relieving - Metal bowl - Auto drain</td>
<td>P32EA23ESABNGP</td>
<td>58 (123)</td>
<td>17 (250)</td>
<td>254 (10.0)</td>
<td>60 (2.36)</td>
<td>95 (3.74)</td>
</tr>
<tr>
<td>1/2&quot;</td>
<td>8 bar (125 psig) Relieving - Poly bowl - Manual drain</td>
<td>P32EA24EGMBNGP</td>
<td>64 (136)</td>
<td>10 (150)</td>
<td>245 (9.66)</td>
<td>60 (2.36)</td>
<td>95 (3.74)</td>
</tr>
<tr>
<td>1/2&quot;</td>
<td>8 bar (125 psig) Relieving - Poly bowl - Auto drain</td>
<td>P32EA24EGABNGP</td>
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<td>17 (250)</td>
<td>254 (10.0)</td>
<td>60 (2.36)</td>
<td>60 (2.36)</td>
</tr>
</tbody>
</table>

† Standard part numbers shown in bold. For other models refer to Options chart above.

* flow with 10 bar (145 psig) inlet pressure, 6.3 bar (91.3 psi) set pressure and 1 bar (14.5 psig) pressure drop.
Specifications

Flow Capacity*  1/4  42 dm³/s (89 scfm)  3/8  58 dm³/s (123 scfm)  1/2  64 dm³/s (136 scfm)
Max. Operating  Plastic Bowl  52°C (125°F)  Temperature  Metal Bowl  65.5°C (150°F)
Max. Supply  Plastic Bowl  10 bar (150 psig)  Pressure  Metal Bowl  17 bar (250 psig)
Standard Filtration  5 Micron  Useful Retention†  51 cm³ (1.7 US oz.)
Adjusting Range  0-2 bar (30 psig)  Pressure  0-4 bar (60 psig)  0-8 bar (125 psig)  0-17 bar (250 psig)
Port Size  BSPP / BSPT / NPT  1/4, 3/8, 1/2  Gauge Port (2 ea.)  BSPP / BSPT / NPT  1/4
Weight  0.53 kg (1.17 lbs)

Materials of Construction

Body  Aluminum  Adjustment Knob  Acetal  Body Cap  ABS  Element Rattainer / Baffle  Acetal
Bowl  Plastic Bowl  Polycarbonate  Metal Bowl  Zinc  Bowl Guard  Nylon
Filter Element  Sintered Polyethylene  Seals  Plastic Bowl  Nitrile  Metal Bowl  Nitrile
Springs  Main Regulating / Valve Steel / S.S.  Valve Assembly  Brass / Nitrile
Diaphragm Assembly  Nitrile / Zinc  Panel Nut  Acetal  Sight Gauge  Metal Bowl  Polycarbonate

Dimensions

Flow Charts

1/4 Filter/Regulator

3/8 Filter/Regulator

1/2 Filter/Regulator

Repair and Service Kits

Plastic bowl / Bowl guard manual drain  P32KA00BGM  Metal bowl / Sight gauge manual drain  P32KA00BSM
Auto drain  P32KA00DA  5µ particle filter element  P32KA005ESE  Regulator repair kit - Relieving  P32KA00RB
Regulator repair kit - Non-relieving  P32KA00RC  Panel mount nut - Aluminum  P32KA00MM  Panel mount nut - Plastic  P32KA00MP
Angle Bracket (fits to panel mount threads)  P32KA00MR  T-Bracket (fits to body connector)  P32KA00MT
T-Bracket with body connector  P32KA00MC  Body connector  P32KA00CB

Gauges

50mm (2") Round 1/4" center back mount

For best performance, regulated pressure should always be set by increasing the pressure up to the desired setting.

WARNING

Product rupture can cause serious injury.
Do not connect regulator to bottled gas.
Do not exceed Maximum primary pressure rating.
Standard Filter / Regulator - P33

Options:

<table>
<thead>
<tr>
<th>Port size</th>
<th>Description</th>
<th>Order Code</th>
<th>Flow rate</th>
<th>Pressure</th>
<th>Height</th>
<th>Width</th>
<th>Depth</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/2&quot;</td>
<td>8 bar (125 psig) Relieving - Poly bowl - Manual drain</td>
<td>P33EA24EGMBNGP</td>
<td>90 (191)</td>
<td>10 (150)</td>
<td>73 (2.9)</td>
<td>73 (2.9)</td>
<td></td>
</tr>
<tr>
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<td>8 bar (125 psig) Relieving - Poly bowl - Auto drain</td>
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</tr>
<tr>
<td>3/4&quot;</td>
<td>8 bar (125 psig) Relieving - Poly bowl - Manual drain</td>
<td>P33EA26EGMBNGP</td>
<td>98 (208)</td>
<td>10 (150)</td>
<td>73 (2.9)</td>
<td>108 (4.27)</td>
<td></td>
</tr>
<tr>
<td>3/4&quot;</td>
<td>8 bar (125 psig) Relieving - Poly bowl - Auto drain</td>
<td>P33EA26EGBNGP</td>
<td>98 (208)</td>
<td>10 (150)</td>
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<td>8 bar (125 psig) Relieving - Metal bowl - Manual drain</td>
<td>P33EA26EGMBNGP</td>
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<td>73 (2.9)</td>
<td>108 (4.27)</td>
<td></td>
</tr>
</tbody>
</table>

* flow with 10 bar (145 psig) inlet pressure, 6.3 bar (91.3 psig) set pressure and 1 bar (14.5 psig) pressure drop.
† Standard part numbers shown in bold. For other models refer to Options chart above.

- Integral 1/2" or 3/4" ports (NPT, BSPP & BSPT)
- High efficiency 5 micron element as standard
- Excellent water removal efficiency
- Robust but lightweight aluminum construction
- Positive bayonet latch to ensure correct & safe fitting
- Secondary pressure ranges 0-2 bar (0-30 psig), 0-4 bar, (0-60 psig), 0-8 bar (0-125 psig), 0-17 bar (0-250 psig)
- Secondary aspiration plus balanced poppet provides quick response and accurate pressure regulation
Specifications

Flow Capacity*  
- 1/2  90 dm³/s (191 scfm)  
- 3/4  98 dm³/s (208 scfm)

Max. Operating Temperature  
- Plastic Bowl  52°C (125°F)  
- Metal Bowl  65.5°C (150°F)

Supply Pressure  
- Plastic Bowl  10 bar (150 psig)  
- Metal Bowl  17 bar (250 psig)

Standard Filtration  5 Micron

Useful Retention†  85 cm³ (2.8 US oz.)

Adjusting Range  
- 0-2 bar (30 psig)  
- 0-4 bar (60 psig)  
- 0-8 bar (125 psig)  
- 0-17 bar (250 psig)

Port Size  
- BSPP / BSPT / NPT  1/2, 3/4

Gauge Port (2 ea.)  
- BSPP / BSPT / NPT  1/4

Weight  0.85 kg (1.87 lbs)

Flow Capacity* 1/2  90 dm³/s (191 scfm)

3/4  98 dm³/s (208 scfm)

Warning:  
Product rupture can cause serious injury.  
Do not connect regulator to bottled gas.  
Do not exceed Maximum primary pressure rating.

Flow Charts

1/2 Filter/Regulator

1002-1/Asia Dec 2010

Parker One Pneumatic

Inlet Pressure - 10 bar (145 psig)

Secondary Pressure - bar

Secondary Pressure - (psig)

0 20 40 60 80 100 120 140

2.5 bar

36.3 psig

8.0 bar

116 psig

4.0 bar

58 psig

6.5 bar

94.3 psig

Flow - dm³/s

Flow - (scfm)

0 20 40 60 80 100 120 140 240 260

200 220 180 160

20 40 60 80 100 120 140

50 70 90 110 130 150 170

3/4 Filter/Regulator

Inlet Pressure - 10 bar (145 psig)

Secondary Pressure - bar

Secondary Pressure - (psig)

0 20 40 60 80 100 120 140

2.5 bar

36.3 psig

8.0 bar

116 psig

4.0 bar

58 psig

6.5 bar

94.3 psig

Flow - dm³/s

Flow - (scfm)

0 20 40 60 80 100 120 140 240 260

200 220 180 160

20 40 60 80 100 120 140

50 70 90 110 130 150 170

Repair and Service Kits

Plastic bowl / Bowl guard manual drain  P33KA00BGM

Metal bowl / Sight gauge manual drain  P33KA00BSM

Auto drain  P32KA00DA

5µ particle filter element  P33KA00ESE

Regulator repair kit - Relieving  P33KA00RB

Regulator repair kit - Non-relieving  P33KA00RC

Panel mount nut - Aluminum  P33KA00MM

Panel mount nut - Plastic  P33KA00MP

Angle Bracket (fits to panel mount threads)  P33KA00MR

T-Bracket (fits to body connector)  P32KA00MB

T-Bracket with body connector  P32KA00MT

Body connector  P32KA00CB

Gauges

50mm (2") Round 1/4° center back mount

0-2 bar / 0-0.2 Mpa / 0-30 psig  K4520R1402B

0-4 bar / 0-0.4 Mpa / 0-60 psig  K4520R1404B

0-11 bar / 0-1.1 Mpa / 0-160 psig  K4520R1411B

0-20 bar / 0-2 Mpa / 0-300 psig  K4520R1420B

For best performance, regulated pressure should always be set by increasing the pressure up to the desired setting.

Specifications

Flow Capacity*  
- 1/2  90 dm³/s (191 scfm)  
- 3/4  98 dm³/s (208 scfm)

Max. Operating Temperature  
- Plastic Bowl  52°C (125°F)  
- Metal Bowl  65.5°C (150°F)

Supply Pressure  
- Plastic Bowl  10 bar (150 psig)  
- Metal Bowl  17 bar (250 psig)

Standard Filtration  5 Micron

Useful Retention†  85 cm³ (2.8 US oz.)

Adjusting Range  
- 0-2 bar (30 psig)  
- 0-4 bar (60 psig)  
- 0-8 bar (125 psig)  
- 0-17 bar (250 psig)

Port Size  
- BSPP / BSPT / NPT  1/2, 3/4

Gauge Port (2 ea.)  
- BSPP / BSPT / NPT  1/4

Weight  0.85 kg (1.87 lbs)

Flow Capacity* 1/2  90 dm³/s (191 scfm)

3/4  98 dm³/s (208 scfm)

Warning:  
Product rupture can cause serious injury.  
Do not connect regulator to bottled gas.  
Do not exceed Maximum primary pressure rating.

Flow Charts

1/2 Filter/Regulator

Inlet Pressure - 10 bar (145 psig)

Secondary Pressure - bar

Secondary Pressure - (psig)

0 20 40 60 80 100 120 140

2.5 bar

36.3 psig

8.0 bar

116 psig

4.0 bar

58 psig

6.5 bar

94.3 psig

Flow - dm³/s

Flow - (scfm)

0 20 40 60 80 100 120 140 240 260

200 220 180 160

20 40 60 80 100 120 140

50 70 90 110 130 150 170

3/4 Filter/Regulator

Inlet Pressure - 10 bar (145 psig)

Secondary Pressure - bar

Secondary Pressure - (psig)

0 20 40 60 80 100 120 140

2.5 bar

36.3 psig

8.0 bar

116 psig

4.0 bar

58 psig

6.5 bar

94.3 psig

Flow - dm³/s

Flow - (scfm)

0 20 40 60 80 100 120 140 240 260

200 220 180 160

20 40 60 80 100 120 140

50 70 90 110 130 150 170

Repair and Service Kits

Plastic bowl / Bowl guard manual drain  P33KA00BGM

Metal bowl / Sight gauge manual drain  P33KA00BSM

Auto drain  P32KA00DA

5µ particle filter element  P33KA00ESE

Regulator repair kit - Relieving  P33KA00RB

Regulator repair kit - Non-relieving  P33KA00RC

Panel mount nut - Aluminum  P33KA00MM

Panel mount nut - Plastic  P33KA00MP

Angle Bracket (fits to panel mount threads)  P33KA00MR

T-Bracket (fits to body connector)  P32KA00MB

T-Bracket with body connector  P32KA00MT

Body connector  P32KA00CB

Gauges

50mm (2") Round 1/4° center back mount

0-2 bar / 0-0.2 Mpa / 0-30 psig  K4520R1402B

0-4 bar / 0-0.4 Mpa / 0-60 psig  K4520R1404B

0-11 bar / 0-1.1 Mpa / 0-160 psig  K4520R1411B

0-20 bar / 0-2 Mpa / 0-300 psig  K4520R1420B

For best performance, regulated pressure should always be set by increasing the pressure up to the desired setting.
# Mini Lubricator - P31

## Symbols

- 1: Lubricator with drain

## Options:

<table>
<thead>
<tr>
<th>P 3 1</th>
<th>L A</th>
<th>L</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thread type</td>
<td>Port size</td>
<td>Bowl type</td>
<td>Mounting</td>
</tr>
<tr>
<td>BSPP 1</td>
<td>1/8</td>
<td>Poly bowl with bowl guard</td>
<td>No bracket N</td>
</tr>
<tr>
<td>BSPT 2</td>
<td>1/4</td>
<td>Metal bowl without sight gauge</td>
<td>N</td>
</tr>
<tr>
<td>NPT 9</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Options Chart

<table>
<thead>
<tr>
<th>Port size</th>
<th>Description</th>
<th>Order Code</th>
<th>Flow ( \text{dm}^3/\text{s} ) (scfm)</th>
<th>Max. ( \text{bar (psig)} )</th>
<th>Height ( \text{mm (inches)} )</th>
<th>Width ( \text{mm (inches)} )</th>
<th>Depth ( \text{mm (inches)} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4&quot;</td>
<td>Poly bowl - No drain</td>
<td>P31LA22LGNN</td>
<td>13 (28)</td>
<td>10 (150)</td>
<td>147.5 (5.80)</td>
<td>40 (1.58)</td>
<td>42.7 (1.68)</td>
</tr>
<tr>
<td>1/4&quot;</td>
<td>Metal bowl - No drain</td>
<td>P31LA22LNN</td>
<td>13 (28)</td>
<td>17 (250)</td>
<td>147.5 (5.80)</td>
<td>40 (1.58)</td>
<td>42.7 (1.68)</td>
</tr>
</tbody>
</table>

* Standard part numbers shown in bold. For other models refer to Options chart above.

- Integral 1/4" ports (NPT, BSPP & BSPT)
- Robust but lightweight aluminum construction
- Proportional oil delivery over a wide range of air flows
- Finger tip rachet control for precise oil drip rate adjustment
Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flow Capacity*</td>
<td>1/4 13 dm³/s (28 scfm)</td>
</tr>
<tr>
<td>Max. Operating Temperature Plastic Bowl</td>
<td>52°C (125°F)</td>
</tr>
<tr>
<td>Max. Supply Pressure</td>
<td>Plastic Bowl 10 bar (150 psig)</td>
</tr>
<tr>
<td>Useful Retention</td>
<td>Plastic Bowl 18 cm³ (0.6 US oz.)</td>
</tr>
<tr>
<td>Port Size</td>
<td>BSPP / BSPT / NPT 1/4</td>
</tr>
<tr>
<td>Weight</td>
<td>0.13 kg (0.29 lbs)</td>
</tr>
</tbody>
</table>

* Inlet pressure 6.3 bar (91.3 psig). Pressure drop 0.34 bar (4.9 psig).

Materials of Construction

<table>
<thead>
<tr>
<th>Component</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body</td>
<td>Aluminum</td>
</tr>
<tr>
<td>Body Cap</td>
<td>ABS</td>
</tr>
<tr>
<td>Bowl</td>
<td>Plastic Bowl</td>
</tr>
<tr>
<td></td>
<td>Polycarbonate</td>
</tr>
<tr>
<td></td>
<td>Metal Bowl</td>
</tr>
<tr>
<td></td>
<td>Aluminum</td>
</tr>
<tr>
<td>Seals</td>
<td>Plastic Bowl</td>
</tr>
<tr>
<td></td>
<td>Nitrile</td>
</tr>
<tr>
<td></td>
<td>Metal Bowl</td>
</tr>
<tr>
<td></td>
<td>Nitrile</td>
</tr>
<tr>
<td>Sight Dome</td>
<td>Polycarbonate</td>
</tr>
<tr>
<td>Suggested Lubricant</td>
<td>ISO / ASTM VG32</td>
</tr>
<tr>
<td>Pick-up Filter</td>
<td>Sintered Bronze</td>
</tr>
</tbody>
</table>

Dimensions

Repair and Service Kits

<table>
<thead>
<tr>
<th>Kit Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plastic bowl / Bowl guard no drain</td>
<td>P31KA00BGN</td>
</tr>
<tr>
<td>Drip control assembly</td>
<td>P32KA00PG</td>
</tr>
<tr>
<td>Fill plug</td>
<td>P31KA00PL</td>
</tr>
<tr>
<td>C-Bracket (fits to body)</td>
<td>P31KA00MW</td>
</tr>
<tr>
<td>T-Bracket with body connector</td>
<td>P31KA00MT</td>
</tr>
<tr>
<td>Body connector</td>
<td>P31KA00CB</td>
</tr>
</tbody>
</table>

Suggested Lubricant

F442 Oil

Petroleum based oil of 100 to 200 SUS viscosity at 38°C (100°F) and an aniline point greater than 93°C (200°F) (DO NOT USE OILS WITH ADDITIVES, COMPOUNDED OILS CONTAINING SOLVENTS, GRAPHITE, DETERGENTS, OR SYNTHETIC OILS.)
## Compact Lubricator - P32

![Image of compact lubricator](image)

### Symbols

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lubricator with drain</td>
<td></td>
</tr>
</tbody>
</table>

- Integral 1/4”, 3/8” or 1/2” ports (NPT, BSPP & BSPT)
- Robust yet lightweight aluminum construction
- Proportional oil delivery over a wide range of air flows
- Finger tip ratchet control for precise oil drip rate adjustment
- Fill from top under system pressure

### Options:

<table>
<thead>
<tr>
<th>P 3 2</th>
<th>L A</th>
<th>L</th>
<th>N</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thread type</td>
<td>Port size</td>
<td>Bowl type</td>
<td>Mounting</td>
<td>Drain type</td>
</tr>
<tr>
<td>BSPP 1</td>
<td>1/4”</td>
<td>Poly bowl with bowl guard</td>
<td>No bracket</td>
<td>No drain; closed end</td>
</tr>
<tr>
<td>BSPT 2</td>
<td>3/8”</td>
<td>Metal bowl with sight gauge</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NPT 9</td>
<td>1/2”</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Table: P32 Series

<table>
<thead>
<tr>
<th>Port size</th>
<th>Description</th>
<th>Order Code*</th>
<th>Flow (\text{dm}^3/\text{s}) (scfm)</th>
<th>Max. bar (psig)</th>
<th>Height (\text{mm}) (inches)</th>
<th>Width (\text{mm}) (inches)</th>
<th>Depth (\text{mm}) (inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4”</td>
<td>Poly bowl - No drain</td>
<td>P32LA22LGNN</td>
<td>18 (38)</td>
<td>10 (150)</td>
<td>211 (8.30)</td>
<td>60 (2.36)</td>
<td>60 (2.36)</td>
</tr>
<tr>
<td>1/4”</td>
<td>Metal bowl - No drain</td>
<td>P32LA22LSNN</td>
<td>18 (38)</td>
<td>17 (250)</td>
<td>211 (8.30)</td>
<td>60 (2.36)</td>
<td>60 (2.36)</td>
</tr>
<tr>
<td>3/8”</td>
<td>Poly bowl - No drain</td>
<td>P32LA23LGNN</td>
<td>32 (88)</td>
<td>10 (150)</td>
<td>211 (8.30)</td>
<td>60 (2.36)</td>
<td>60 (2.36)</td>
</tr>
<tr>
<td>3/8”</td>
<td>Metal bowl - No drain</td>
<td>P32LA23LSNN</td>
<td>32 (88)</td>
<td>17 (250)</td>
<td>211 (8.30)</td>
<td>60 (2.36)</td>
<td>60 (2.36)</td>
</tr>
<tr>
<td>1/2”</td>
<td>Poly bowl - No drain</td>
<td>P32LA24LGNN</td>
<td>47 (100)</td>
<td>10 (150)</td>
<td>211 (8.30)</td>
<td>60 (2.36)</td>
<td>60 (2.36)</td>
</tr>
<tr>
<td>1/2”</td>
<td>Metal bowl - No drain</td>
<td>P32LA24LSNN</td>
<td>47 (100)</td>
<td>17 (250)</td>
<td>211 (8.30)</td>
<td>60 (2.36)</td>
<td>60 (2.36)</td>
</tr>
</tbody>
</table>

* *Standard part numbers shown in bold. For other models refer to Options chart above.*

---

* flow with 6.3 bar (91.3 psig) inlet pressure and 0.34 bar (4.9 psig) pressure drop.

† Standard part numbers shown in bold. For other models refer to Options chart above.
Specifications

Flow Capacity*
1/4 18 dm³/s (38 scfm)
3/8 32 dm³/s (68 scfm)
1/2 47 dm³/s (100 scfm)

Max. Operating
Plastic Bowl 52°C (125°F)
Metal Bowl 65.5°C (150°F)

Temperature
Plastic Bowl 10 bar (150 psig)
Metal Bowl 17 bar (250 psig)

Max. Supply
Plastic Bowl 121 cm³ (4.09 US oz.)

Useful Retention
Primary Pressure - Plastic Bowl 10 bar (150 psig)
Primary Pressure - Metal Bowl 17 bar (250 psig)

Port Size
BSPP / BSPT / NPT 1/4, 3/8, 1/2

Weight
0.31 kg (0.68 lbs)

* Inlet pressure 6.3 bar (91.3 psig). Pressure drop 0.34 bar (4.9 psig).

Materials of Construction

Body Aluminum
Body Cap ABS
Bowls Plastic Bowl Polycarbonate
Metal Bowl Aluminum
Seals Plastic Bowl Nitrile
Metal Bowl Nitrile
Sight Dome Polycarbonate
Sight Gauge Metal Bowl Polycarbonate
Suggested Lubricant ISO / ASTM VG32

Pick-up Filter Sintered Bronze

Dimensions

Flow Charts

1/4 Lubricator

3/8 Lubricator

1/2 Lubricator

Repair and Service Kits

Plastic bowl / Bowl guard no drain P32KA00BGN
Drip control assembly P31KA00PG
Fill plug P32KA00PL
L-Bracket (fits to body) P32KA00ML
T-Bracket (fits to body connector) P32KA00MB
T-Bracket with body connector P32KA00MT
Body connector P32KA00CB

Suggested Lubricant .............................................. F442 Oil

Petroleum based oil of 100 to 200 SUS viscosity at 38°C (100°F) and an aniline point greater than 93°C (200°F)
(Do not use oils with additives, compounded oils containing solvents, graphite, detergents, or synthetic oils.)
# Standard Lubricator - P33

![Image]

**Symbols**
- 1: Lubricator with drain

- Integral 1/2” or 3/4” ports (NPT, BSPP & BSPT)
- Robust but lightweight aluminum construction
- Proportional oil delivery over a wide range of air flows
- Finger tip ratchet control for precise oil drip rate adjustment
- Fill from top under system pressure

## Options:

<table>
<thead>
<tr>
<th>P33</th>
<th>L</th>
<th>A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thread type</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BSPP</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>BSPT</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>NPT</td>
<td>9</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Port size</th>
<th>Description</th>
<th>Order Code†</th>
<th>Flow dm³/s (scfm)</th>
<th>Max. bar (psig)</th>
<th>Height mm (inches)</th>
<th>Width mm (inches)</th>
<th>Depth mm (inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/2&quot;</td>
<td>Poly bowl - No drain</td>
<td>P33LA24LGNN</td>
<td>48 (102)</td>
<td>10 (150)</td>
<td>234 (9.21)</td>
<td>73 (2.9)</td>
<td>73 (2.9)</td>
</tr>
<tr>
<td>1/2&quot;</td>
<td>Metal bowl - No drain</td>
<td>P33LA24LSNN</td>
<td>48 (102)</td>
<td>17 (250)</td>
<td>234 (9.21)</td>
<td>73 (2.9)</td>
<td>73 (2.9)</td>
</tr>
<tr>
<td>3/4&quot;</td>
<td>Poly bowl - No drain</td>
<td>P33LA26LGNN</td>
<td>68 (144)</td>
<td>10 (150)</td>
<td>234 (9.21)</td>
<td>73 (2.9)</td>
<td>73 (2.9)</td>
</tr>
<tr>
<td>3/4&quot;</td>
<td>Metal bowl - No drain</td>
<td>P33LA26LSNN</td>
<td>68 (144)</td>
<td>17 (250)</td>
<td>234 (9.21)</td>
<td>73 (2.9)</td>
<td>73 (2.9)</td>
</tr>
</tbody>
</table>

* flow with 6.3 bar (91.3 psig) inlet pressure and 0.34 bar (4.9 psig) pressure drop.
† Standard part numbers shown in bold. For other models refer to Options chart above.
Specifications

- **Flow Capacity**: 1/2 48 dm³/s (102 scfm), 3/4 68 dm³/s (144 scfm)
- **Max. Operating Temperature**: Plastic Bowl 52°C (125°F), Metal Bowl 65.5°C (150°F)
- **Max. Supply Pressure**: Plastic Bowl 10 bar (150 psig), Metal Bowl 17 bar (250 psig)
- **Useful Retention**: Plastic Bowl 181 cm³ (6.1 US oz.), Metal Bowl 234 cm³ (8.1 US oz.)
- **Port Size**: BSPP / BSPT / NPT 1/2, 3/4
- **Weight**: 0.47 kg (1.04 lbs)

* Inlet pressure 6.3 bar (91.3 psig), Pressure drop 0.34 bar (4.9 psig).

Materials of Construction

- **Body**: Aluminum
- **Body Cap**: ABS
- **Bowls**: Plastic Bowl Polycarbonate, Metal Bowl Aluminum
- **Seals**: Plastic Bowl Nitrile, Metal Bowl Nitrile
- **Sight Dome**: Polycarbonate
- **Sight Gauge**: Metal Bowl Polycarbonate
- **Suggested Lubricant**: ISO / ASTM VG32
- **Pick-up Filter**: Sintered Bronze

Flow Charts

- **1/2 Lubricator**
- **3/4 Lubricator**

Repair and Service Kits

- **Plastic bowl / Bowl guard no drain**: P33KA00BGN
- **Drip control assembly**: P31KA00PG
- **Fill plug**: P32KA00PL
- **L-Bracket (fits to body)**: P33KA00ML
- **T-Bracket (fits to body connector)**: P32KA00MB
- **T-Bracket with body connector**: P32KA00MT
- **Body connector**: P32KA00CB

Suggested Lubricant

Petroleum based oil of 100 to 200 SUS viscosity at 38°C (100°F) and an aniline point greater than 93°C (200°F) (DO NOT USE OILS WITH ADDITIVES, COMPOUNDED OILS CONTAINING SOLVENTS, GRAPHITE, DETERGENTS, OR SYNTHETIC OILS.)
# Proportional Regulators

## P31P Series

- **Bottom exhaust**

## P32P Series

- **Bottom exhaust**

## Order Key

<table>
<thead>
<tr>
<th>Body size</th>
<th>Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global Mini (1/4&quot;)</td>
<td>Bottom ported exhaust (NC) A</td>
</tr>
<tr>
<td>Global Compact (1/2&quot;)</td>
<td>Bottom ported forced exhaust (NO)* E</td>
</tr>
</tbody>
</table>

### Pressure Range
- 0 - 2 bar (0-29 psig) Z
- 0 - 10 bar (0-145 psig) D

### Power supply
- 24 volts 2

### Control Signal
- 0-10 V† V

† Factory setting is 0-10 V control signal. 4-20 mA control signal available via parameter 4 on keypad.

### Output Signal
- Digital, PNP D
- PNP or 0-10V P
- NPN or 0-10V N
- 4-20mA fixed M

D) Digital PNP output only, no analog output selectable
P) Digital PNP and analogue 0-10V outputs selectable, by means of parameter 6. (Factory default 0-10V)
N) Digital NPN and analog 0-10 V outputs selectable by means of parameter 6. (Factory default 0-10V)
M) Analog 4-20mA output only.

Note: On all analog outputs the F.S. value can be adjusted by means of parameter 8.

### Port size
- Global Mini (1/4") 2
- Global Compact (1/2") 4

### Thread type
- BSPP 1
- BSPT 2
- NPT 9

### Input connector
- M12 (4 pin) 1

## Cables

<table>
<thead>
<tr>
<th>Order Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CB-M12-4P-2M</td>
<td>2 mtr. cable with moulded straight M12x1 connector</td>
</tr>
</tbody>
</table>

## P31P Mounting brackets

<table>
<thead>
<tr>
<th>Order Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>P3HKA00ML</td>
<td>L-Bracket mounting kit</td>
</tr>
<tr>
<td>P3HKA00MC</td>
<td>Foot bracket mounting kit</td>
</tr>
</tbody>
</table>

## P32P Mounting brackets

<table>
<thead>
<tr>
<th>Order Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>P3KKA00ML</td>
<td>L-Bracket mounting kit</td>
</tr>
<tr>
<td>P3KKA00MC</td>
<td>Foot bracket mounting kit</td>
</tr>
</tbody>
</table>

## Note:

These brackets fit both Proportional Regulators and Combined Soft Start & Dump Valves.
Technical Information

Working medium
Compressed air or inert gasses, filtered to 40µ.

Supply pressure
Max. Operating Pressure:
- 2 bar unit: 3 bar (43.5 psig)
- 10 bar unit: 10.5 bar (152 psig)
Min. Operating Pressure .... P2 Pressure + 0.5 bar (7.3 psig)

Pressure control range
Available in three pressure ranges, 0-2 bar (0-29 psig), 0-7 bar (0-101.5 psig) or 0-10 bar (0-145 psig). Pressure range can be changed through the software at all times.
(parameter 19)

Temperature range
0°C up to +50°C (32°F up to 122°F)

Weights:
- P31P = 0.281 kg (0.64 lbs)
- P32P = 0.645 kg (1.42 lbs)

Air consumption
No consumption in stable regulated situation.

Display
The regulator is provided with a digital display, indicating the output pressure, either in bar or psig.
The factory setting is as indicated on the label, can be changed through to software at all times (parameter 14)

Supply voltage
24 VDC +/- 10%

Power consumption
Max. 1.1W with unloaded signal outputs

Control signals
The electronic pressure regulator can be externally controlled through an analogue control signal of either 0-10V or 4-20mA. (parameter 4).

Output signals
As soon as the output pressure is within the signal band a signal is given of 24VDC, PNP Ri = 1 kOhm
Outside the signal band this connection is 0V.

Connections
(In case of output signal (Option D)
Central M12 connector 4-pole

The electrical connections are as follows:

<table>
<thead>
<tr>
<th>Pin No.</th>
<th>Function</th>
<th>Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>24 V Supply</td>
<td>Brown</td>
</tr>
<tr>
<td>2</td>
<td>0 to 10 V Control</td>
<td>White</td>
</tr>
<tr>
<td></td>
<td>Signal Ri = 100k Ω</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>0 V (GND) Supply</td>
<td>Blue</td>
</tr>
<tr>
<td>4</td>
<td>24 V Alarm Output Signal</td>
<td>Black</td>
</tr>
</tbody>
</table>

Connections:

- 1 24 VDC
- 2 control signal
- 3 24 V

Schematic
Technical information

Dead band
The dead band is preset at 1.3% of Full Scale, adjustable via parameter 13.

Accuracy
Linearity: = < 0.3% of Full Scale.

Proportional band
The proportional band is preset at 10% of Full Scale.*

Fail safe operation
- If the P31P / P32P unit has an “0” or “A” in the 12th digit of the model number
  - When the supply voltage drops, the electronic control reverts to the fail safe mode. The last known output pressure is maintained at approximately the same level depending upon air consumption. The digital display indicates the last known pressure setting.
  - When the supply voltage is reinstated to the correct level, the valve moves from the fail safe mode and the output pressure immediately follows the control signal requirement. The display indicates the actual output pressure.
  - Note: In the event of loss of both power and inlet pressure the unit will exhaust downstream pressure.
- If the P31P / P32P unit has an “E” in the 12th digit of the model number
  - When the supply voltage drops, the electronic control reverts to “Forced Exhaust Mode” and will automatically exhaust the downstream (regulated) pressure.
  - When the supply voltage is reinstated to the correct level the unit will return to normal operation and follows the control signal requirement. The display indicates the actual pressure.
- If the unit has been programmed in manual mode (not with a control signal) the unit will EXHAUST and the regulator will need to be rewired when power is applied.

Full exhaust
Complete exhaust of the regulator is defined as P2 ≤ 1% Full Scale

* Full scale (F.S.)
For 2 bar (29 psig) versions this will be 2 barr (29 psig), for the 10 bar (145 psig) version full scale will be 10 bar (145 psig).

Degree of protection
IP65

EU conformity
CE: standard
EMC: according to directive 89/336/EEC

The new pressure regulator is in accordance with:
- EN 61000-6-1:2001
- EN 61000-6-2:2001
- EN 61000-6-3:2001
- EN 61000-6-4:2001

These standards ensure that this unit meets the highest level of EMC protection.

Mounting position
Preferably vertical, with the cable gland on top.

Materials: P31P & P32P
- Magnet Core .................................................................Steel
- Solenoid Valve Poppet ..................................................FPM
- Solenoid Valve Housing ..............................................Techno Polymer
- Regulator Body (P31P & P32P versions) .......................Aluminium
- Regulator Top Housing ......................................................Nylon
- Valve Head .................................................................Brass & NBR
- Remaining Seals .............................................................NBR

Advanced functionality

Pilot valve protection
When the required output pressure can not be achieved because of a lack of input pressure the unit will open fully and will display NoP. Approximately every 10 seconds the unit will retry. The output pressure will then be approximately equal to the inlet pressure. As soon as the input pressure is back on the required level, the normal control function follows.

Safety exhaust
Should the control signal fall below 0.1 volts the valve will automatically dump downstream system pressure.

Input protection
The unit has built-in protection against failure and burnout resulting from incorrect input value, typically:
- The 24VDC supply is incorrectly connected to the setpoint input, the display will show ‘OL’, as an overload indication. The unit will need to be rewired and when correctly connected will operate normally.
- The overload indicator ‘OL’ will also appear should the wrong input value be applied or the wrong input value be programmed: 4 - 20m instead of 0 - 10V. To correct this a different set point value should be input or the unit reprogrammed to correct the set point value acceptance. (via parameter 4).

Response time

<table>
<thead>
<tr>
<th>Pressure</th>
<th>P31P</th>
<th>P32P</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 to 4 bar</td>
<td>25 msecs</td>
<td>35 msecs</td>
</tr>
<tr>
<td>1 to 6 bar</td>
<td>55 msecs</td>
<td>135 msecs</td>
</tr>
<tr>
<td>4 to 2 bar</td>
<td>70 msecs</td>
<td>85 msecs</td>
</tr>
<tr>
<td>6 to 1 bar</td>
<td>80 msecs</td>
<td>225 msecs</td>
</tr>
</tbody>
</table>

To fill volume of:
- 100cm³ - P31P
- 330cm³ - P32P

connected to the outlet of the regulator.

Settings
The regulator is pre-set at the factory. If required, adjustments can be made.

Flow Charts

**P31P Regulator 1/4” Ports**

**P32P Regulator 1/2” Ports**
How to change parameters

Pressing the Accept key “acc” for more than 3 seconds, will activate parameter change mode. The user can then select the parameters by pressing up or down key. (display will show Pxx). When parameter number is correct, pressing accept again will enter parameter number.(display will show parameter value).

Pressing the up or down key will change the parameter itself. (display will flash indicating parameter editing mode). Pressing the accept key will accept the new parameter value. (all digits will flash whilst being accepted).

After releasing all keys, the next parameter number will be presented on the display. (you may step to the next parameter). When no key is pressed, after 3 seconds the display will show the actual output pressure.

Back to Factory Setting

After start up. (Power is on)

Entering this value in parameter 0 will store the calibrated factory data into the working parameters.

(Default calibration data is used)

Parameter Number 0 – Reset Back to Factory Settings

<table>
<thead>
<tr>
<th>Step</th>
<th>Press</th>
<th>Until Display Reads</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>acc 3-6 seconds</td>
<td>P×x</td>
<td>Accesses changeable parameters.</td>
</tr>
<tr>
<td>2</td>
<td>▼ or ▲</td>
<td>PO0</td>
<td>Accesses parameter no. 0.</td>
</tr>
<tr>
<td>3</td>
<td>acc</td>
<td>000</td>
<td>Displays current parameter value.</td>
</tr>
<tr>
<td>4</td>
<td>▼ or ▲</td>
<td>003</td>
<td>Edits parameter. 3 = standard factory settings. If other than 3, use Up or Down Arrow and accept 3</td>
</tr>
<tr>
<td>5</td>
<td>acc</td>
<td>003</td>
<td>Accepts and saves new parameter setting.</td>
</tr>
</tbody>
</table>

Set Control Signal

The unit is factory set for 0-10 V control signal. If 4-20 mA control signal is required, change parameter 4.

Parameter Number 4 – Set Control Signal in Volts or Milliamps

<table>
<thead>
<tr>
<th>Step</th>
<th>Press</th>
<th>Until Display Reads</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>acc 3-6 seconds</td>
<td>P×x</td>
<td>Accesses changeable parameters.</td>
</tr>
<tr>
<td>2</td>
<td>▼ or ▲</td>
<td>PO4</td>
<td>Accesses parameter no. 4.</td>
</tr>
<tr>
<td>3</td>
<td>acc</td>
<td>001</td>
<td>Displays current parameter value. 1 = V 0 = mA</td>
</tr>
<tr>
<td>4</td>
<td>▼ or ▲</td>
<td>000</td>
<td>Edits parameter.</td>
</tr>
<tr>
<td>5</td>
<td>acc</td>
<td>000</td>
<td>Accepts and saves new parameter setting.</td>
</tr>
</tbody>
</table>

Sequences to next parameter.
Set Output Signal

Parameter 6 is used to set the type of output signal to your PLC. This parameter is used as follows:

Output Signal option "0" = Digital Output – PNP
- Factory set at "0" Non Adjustable

Output Signal option "P" = Digital PNP or Analog 1-10V
- Factory set at "1" for Analog Signal
- Convert to Digital PNP by changing parameter to "0" setting

Output Signal option "N" = Digital NPN or Analog 1-10V
- Factory set at "1" Analog Signal
- Convert to Digital NPN by changing parameter to "0"

Output Signal option "M" = Analog 4-20 mA
- Factory set at "2" Non Adjustable

### Parameter Number 6 – Set Output Signal

<table>
<thead>
<tr>
<th>Step</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Press</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Until Display Reads</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Description</td>
<td>Accesses changeable parameters.</td>
<td>Accesses parameter no. 6.</td>
<td>Displays current parameter value. 1 = m factory default for P3H with analog options</td>
<td>Edits parameter. 0 = digital (NPN or PNP) 1 = analog 0..10V 2 = analog 4..20 mA</td>
<td>Accepts and saves new parameter setting.</td>
</tr>
</tbody>
</table>

Adjust Span Analog Output Signal

Set value is a % of Full Analog range. As an example for a 0-10V output signal, the original factory setting of 100% will give you an adjustment of 0-10V. If you reset Parameter 8 to 50%, the new output range would be 0-5V or 50% of the full range.

In the event that the output signal is too low, in a certain application, you can adjust it by increasing Parameter 8 to a maximum value of 130% of scale.

Note that all values are nominal and that an actual measurement may be required to ensure signal strength.

### Parameter Number 8 – Adjust Span Analog Output Signal

<table>
<thead>
<tr>
<th>Step</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Press</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Until Display Reads</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Adjust Digital Display

If necessary, adjustments can be made to the digital display when using an external pressure sensor.

#### Parameter Number 9 – Adjust Digital Display Value (Pressure Calibration)

<table>
<thead>
<tr>
<th>Step</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Press</td>
<td><img src="image" alt="acc" /></td>
<td><img src="image" alt="▼ or ▲" /></td>
<td><img src="image" alt="acc" /></td>
<td><img src="image" alt="▼ or ▲" /></td>
<td><img src="image" alt="acc" /></td>
</tr>
<tr>
<td>Until Display Reads</td>
<td><img src="image" alt="P × x" /></td>
<td><img src="image" alt="P 0 9" /></td>
<td><img src="image" alt="## #" /></td>
<td><img src="image" alt="## #" /></td>
<td><img src="image" alt="## #" /></td>
</tr>
<tr>
<td>Description</td>
<td>Accesses changeable parameters.</td>
<td>Accesses parameter no. 9.</td>
<td>Displays current digital display</td>
<td>Use up or down arrows and accept to adjust the display value if using an external pressure sensor.</td>
<td>Accepts and saves new parameter setting.</td>
</tr>
</tbody>
</table>

### Set Pressure Scale

Units with NPT port threads are supplied with a factory set psig pressure scale. Use parameter 14 to change scale to bar.

#### Parameter Number 14 – Set Pressure Scale in psig or bar

<table>
<thead>
<tr>
<th>Step</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Press</td>
<td><img src="image" alt="acc" /></td>
<td><img src="image" alt="▼ or ▲" /></td>
<td><img src="image" alt="acc" /></td>
<td><img src="image" alt="▼ or ▲" /></td>
<td><img src="image" alt="acc" /></td>
</tr>
<tr>
<td>Until Display Reads</td>
<td><img src="image" alt="P × x" /></td>
<td><img src="image" alt="P 1 4" /></td>
<td><img src="image" alt="0 0 1" /></td>
<td><img src="image" alt="0 0 0" /></td>
<td><img src="image" alt="0 0 0" /></td>
</tr>
</tbody>
</table>
### Parameter Number 18 – Set Minimum Preset Pressure

<table>
<thead>
<tr>
<th>Step</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Press</td>
<td><strong>acc</strong></td>
<td><strong>△</strong> or <strong>▼</strong></td>
<td><strong>acc</strong></td>
<td><strong>△</strong> or <strong>▼</strong></td>
<td><strong>acc</strong></td>
</tr>
<tr>
<td>Until Display Reads</td>
<td><img src="image" alt="P × x" /></td>
<td><img src="image" alt="P 18" /></td>
<td>000</td>
<td># # #</td>
<td><img src="image" alt="P 19" /></td>
</tr>
<tr>
<td>Description</td>
<td>Accesses changeable parameters.</td>
<td>Accesses parameter no. 18.</td>
<td>Displays current parameter value. Incremental value is: 2 bar unit: ( \times 2 \text{ mbar} \times % \text{ P19} ) 10 bar unit: ( \times 10 \text{ mbar} \times % \text{ P19} )</td>
<td>Edits parameter.</td>
<td>Accepts and saves new parameter setting.</td>
</tr>
</tbody>
</table>

### Preset Minimum Pressure

If there is a need for a pre-set Minimum pressure, use parameter 18. (Note: preset pressure is affected by % P19.)

### Parameter Number 19 – Set Maximum Preset Pressure

<table>
<thead>
<tr>
<th>Step</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Press</td>
<td><strong>acc</strong></td>
<td><strong>△</strong> or <strong>▼</strong></td>
<td><strong>acc</strong></td>
<td><strong>△</strong> or <strong>▼</strong></td>
<td><strong>acc</strong></td>
</tr>
<tr>
<td>Until Display Reads</td>
<td><img src="image" alt="P × x" /></td>
<td><img src="image" alt="P 19" /></td>
<td>100</td>
<td># # #</td>
<td><img src="image" alt="P 20" /></td>
</tr>
</tbody>
</table>
Behavior Control
The regulation speed of the pressure regulator can be modified by means of one parameter. (P 20)
The value in this parameter has a range from 0-5. A higher value indicates slower regulation speed, but will be more stable.

<table>
<thead>
<tr>
<th>Parameter Number 20 – Set Behavior Control</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step</strong></td>
</tr>
<tr>
<td>Press</td>
</tr>
<tr>
<td>3-6 seconds</td>
</tr>
<tr>
<td>Until Display Reads</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Description</td>
</tr>
</tbody>
</table>

* When the value 0 is entered, you are able to create your own custom settings true parameters 12, 13 and 21.

Fine Settings
Set Proportional Band
Proportional band is used for setting the reaction sensitivity of the regulator. The displayed value is X 10 mbar and has a range between 50 (0.5 bar) and 250 (2.5 bar).

<table>
<thead>
<tr>
<th>Parameter Number 12 – Set Proportional Band (P20 Must be Set to 0)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step</strong></td>
</tr>
<tr>
<td>Press</td>
</tr>
<tr>
<td>3-6 seconds</td>
</tr>
<tr>
<td>Until Display Reads</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>
**Set Deadband**

Deadband is the Minimum limit of accuracy at which the regulator is set for normal operation. The displayed value is X 10 mbar and has a range between 4 (40 mbar) and 40 (400 mbar).

### Parameter Number 13 – Set Deadband (P20 Must be Set to 0)

<table>
<thead>
<tr>
<th>Step</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Press</td>
<td>![acc]</td>
<td>![▼ or ▲]</td>
<td>![acc]</td>
<td>![▼ or ▲]</td>
<td>![acc]</td>
</tr>
<tr>
<td>Until Display Reads</td>
<td>![Pxx]</td>
<td>![P13]</td>
<td>![015]</td>
<td>![###]</td>
<td>![###]</td>
</tr>
<tr>
<td>Description</td>
<td>Accesses changeable parameters.</td>
<td>Accesses parameter no. 13.</td>
<td>Displays current parameter value. Incremental value is x 10 mbar</td>
<td>Edits parameter.</td>
<td>Accepts and saves new parameter setting.</td>
</tr>
</tbody>
</table>

### Proportional Effect

### Parameter Number 21 – Set Proportional Effect (P20 Must be Set to 0)

<table>
<thead>
<tr>
<th>Step</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Press</td>
<td>![acc]</td>
<td>![▼ or ▲]</td>
<td>![acc]</td>
<td>![▼ or ▲]</td>
<td>![acc]</td>
</tr>
<tr>
<td>Until Display Reads</td>
<td>![Pxx]</td>
<td>![P21]</td>
<td>![010]</td>
<td>![###]</td>
<td>![###]</td>
</tr>
</tbody>
</table>

### Parameter Number 39 – Displays Current Software Version

<table>
<thead>
<tr>
<th>Step</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Press</td>
<td>![acc]</td>
<td>![▼ or ▲]</td>
<td>![acc]</td>
</tr>
<tr>
<td>Until Display Reads</td>
<td>![Pxx]</td>
<td>![P39]</td>
<td>![###]</td>
</tr>
<tr>
<td>Description</td>
<td>Accesses changeable parameters.</td>
<td>Accesses parameter no. 39.</td>
<td>Displays current parameter value. XXX = current software version</td>
</tr>
</tbody>
</table>
Parker Hannifin Corporation
Pneumatic Division - Asia

Parker One Pneumatic

P31P

Dimensions are in mm (Inches)

P32P

Proportional Regulators

Foot Bracket

L-Bracket

Dimensions are in mm (Inches)
**Combined Soft Start / Dump Valve**

Parker Global Series Combined Soft Start / Dump Valves, provide for the safe introduction of pressure to machines or systems. Soft Start / Dump Valves when set, allow the pressure to gradually build to the set point before fully opening to deliver full flow at line pressure.

**Options:**

<table>
<thead>
<tr>
<th>Body size</th>
<th>Port size</th>
<th>Pilot type</th>
<th>Actuator interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mini (1/4&quot;) 1</td>
<td>Mini (1/4&quot;) 2</td>
<td>External Air Pilot</td>
<td>15mm solenoid (P31 only) G</td>
</tr>
<tr>
<td>Compact (1/2&quot;) 2</td>
<td>Compact (1/2&quot;) 4</td>
<td>Solenoid Pilot</td>
<td>30mm solenoid C</td>
</tr>
<tr>
<td>Thread Type</td>
<td></td>
<td></td>
<td>Threaded air pilot P</td>
</tr>
</tbody>
</table>

**Thread Type**
- BSPP (G) 1
- BSPT 2
- NPT 9

**Actuator interface**
- 15mm solenoid (P31 only) G
- 30mm solenoid C
- Threaded air pilot P

**Solenoid type only**
- 24VDC non locking manual override 2CN
- 120VAC non locking manual override 3GN
- 120VAC non locking manual override (P31 series only) 1FN

**Note:** P32 unit used for both P32 & P33 series

**Compact combined soft start dump valve**

<table>
<thead>
<tr>
<th>Port size</th>
<th>Description</th>
<th>Order Code†</th>
<th>Flow dm³/s (scfm)</th>
<th>Max. bar (psig)</th>
<th>Height mm (inches)</th>
<th>Width mm (inches)</th>
<th>Depth mm (inches)</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4&quot; 1/2&quot;</td>
<td>120VAC Solenoid &amp; cable plug</td>
<td>P31TA22SGNA1FN</td>
<td>17 (36)</td>
<td>10 (150)</td>
<td>115.6 (4.5)</td>
<td>57 (2.2)</td>
<td>40 (1.5)</td>
<td>0.37kg (0.8lbs)</td>
</tr>
<tr>
<td>1/4&quot; 1/2&quot;</td>
<td>24VDC Solenoid &amp; cable plug</td>
<td>P31TA22SGNC2CN</td>
<td>17 (36)</td>
<td>10 (150)</td>
<td>166.5 (6.5)</td>
<td>57 (2.2)</td>
<td>40 (1.5)</td>
<td>0.41kg (0.9lbs)</td>
</tr>
<tr>
<td>1/4&quot; 1/2&quot;</td>
<td>External air pilot operated</td>
<td>P31TA22PPN</td>
<td>17 (36)</td>
<td>17 (250)</td>
<td>115.6 (4.5)</td>
<td>57 (2.2)</td>
<td>40 (1.5)</td>
<td>0.37kg (0.8lbs)</td>
</tr>
<tr>
<td>1/2&quot; 1/2&quot;</td>
<td>120VAC 30mm coil &amp; cable plug incl.</td>
<td>P32TA24SCNA3GN</td>
<td>46 (97)</td>
<td>10 (150)</td>
<td>162.5 (6.3)</td>
<td>88 (3.4)</td>
<td>57 (2.2)</td>
<td>0.87kg (1.9lbs)</td>
</tr>
<tr>
<td>1/2&quot; 1/2&quot;</td>
<td>24VDC 30mm coil &amp; cable plug incl.</td>
<td>P32TA24SCNA2CN</td>
<td>46 (97)</td>
<td>10 (150)</td>
<td>227.5 (8.9)</td>
<td>88 (3.4)</td>
<td>57 (2.2)</td>
<td>0.91kg (2.0lbs)</td>
</tr>
<tr>
<td>1/2&quot; 1/2&quot;</td>
<td>External air pilot operated</td>
<td>P32TA24PPN</td>
<td>46 (97)</td>
<td>17 (250)</td>
<td>162.5 (6.3)</td>
<td>75 (2.9)</td>
<td>57 (2.2)</td>
<td>0.87kg (1.9lbs)</td>
</tr>
</tbody>
</table>

* Includes exhaust silencer. Flow with 6.3 bar (91.3 psig) inlet and 1 bar (14.5 psig) pressure drop.
† Standard part numbers shown in bold. For other models refer to Options chart above.

- Modular design with 1/4" or 1/2" integral ports (NPT, BSPP & BSPT)
- Provides for the safe introduction of pressure
- The 3-way, 2-position function automatically dumps downstream pressure on the loss of pilot signal
- Adjustable slow start
- Solenoid or air pilot options
- High flow & exhaust capability
- Silencer included

The controlled introduction of pressure can be an important safety factor and prevent damage to tooling when air pressure is introduced at machine or system start up.

To maintain these units in the open position a pilot supply to the air pilot operated version or an electrical signal to the solenoid operated version must be maintained. The valve will automatically dump when the holding signal is removed.

Parker Hannifin Corporation
Pneumatic Division - Asia
**Technical Information**

- **Fluid:** Compressed air
- **Max. pressure Solenoid operated:** 10 bar (150 psig)
- **Max. pressure Air Pilot operated:** 17 bar (250 psig)
- **Min. operating pressure:** 3 bar (44 psig)
- **Temperature Max.** Solenoid operated: 50°C (122°F)
- **Temperature Max.** Air Pilot operated: 80°C (176°F)

**Exhaust port:**

- P31 - 1/4" / P32 - 1/2"

**Typical flow with 6.3 bar inlet pressure and 1 bar pressure drop:**

- **P31**
  - 17 dm³/s (36 scfm)

- **P32**
  - 48 dm³/s (97 scfm)

* Air supply must be dry enough to avoid ice formation at temperatures below +2°C

**Snap pressure:** Full flow when downstream pressure reaches 50% of the inlet pressure

---

**Material Specification**

- **Body:** Aluminum
- **Body cover:** Polyester
- **Seals:** Nitrile NBR

---

**Mounting Brackets**

<table>
<thead>
<tr>
<th>Description</th>
<th>Order code P31P</th>
<th>Order code P32P</th>
</tr>
</thead>
<tbody>
<tr>
<td>L-Bracket mounting kit</td>
<td>P3HKA00ML</td>
<td>P3KKA00ML</td>
</tr>
<tr>
<td>Foot bracket mounting kit</td>
<td>P3HKA00MC</td>
<td>P3KKA00MC</td>
</tr>
</tbody>
</table>

**Note:** For solenoid operators and cable plugs (connectors) see pages 68 to 69.

---

**Dimensions**

**P31**

- 37 (1.45)
- 40 (1.57)
- 4 (0.15)
- 24 (0.94)
- 57 (2.24)
- 30.5 (1.20)
- 136 (5.35)
- 166 (6.53)

**P32**

- 88 (3.46)
- 109.5 (4.31)
- 227.5 (8.95)
- 53 (2.08)
- 75 (2.95)
- 26 (1.02)
- 57.2 (2.28)
- 6 (0.23)
- 24 (0.94)
- 57 (2.24)
- 136 (5.35)
- 166 (6.53)

For mounting brackets see page 52
Dump Valve

Remotely operated dump valves automatically shut off upstream pressure and exhaust the downstream pressure when the pilot pressure is released.

**Options:**

- Modular design with 1/4" or 1/2" integral ports (NPT, BSPP & BSPT)
- Provides for the safe introduction of pressure
- The 3-way, 2-position function automatically dumps downstream pressure on the loss of pilot signal
- Adjustable slow start
- Solenoid or air pilot options
- High flow & exhaust capability
- Silencer included

To maintain these units in the open position a pilot supply to the air pilot operated version or an electrical signal to the solenoid operated version must be maintained. The valve will automatically dump when the holding signal is removed.

Remote operated dump valve

<table>
<thead>
<tr>
<th>Port size</th>
<th>Description</th>
<th>Order Code†</th>
<th>Flow dm³/s (scfm)</th>
<th>Max. bar (psig)</th>
<th>Height mm (inches)</th>
<th>Width mm (inches)</th>
<th>Depth mm (inches)</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4&quot;</td>
<td>120VAC Solenoid &amp; cable plug</td>
<td>P31DA22SGNA1FN</td>
<td>17 (36)</td>
<td>10 (150)</td>
<td>115.6 (4.5)</td>
<td>57 (2.2)</td>
<td>40 (1.5)</td>
<td>0.37kg (0.8lbs)</td>
</tr>
<tr>
<td>1/4&quot;</td>
<td>24VDC Solenoid &amp; cable plug</td>
<td>P31DA22SGNC2CN</td>
<td>17 (36)</td>
<td>10 (150)</td>
<td>166&quot; (6.5)</td>
<td>57 (2.2)</td>
<td>40 (1.5)</td>
<td>0.41kg (0.9lbs)</td>
</tr>
<tr>
<td>1/4&quot;</td>
<td>External air pilot operated</td>
<td>P31DA22PPN</td>
<td>17 (36)</td>
<td>10 (150)</td>
<td>115.6 (4.5)</td>
<td>57 (2.2)</td>
<td>40 (1.5)</td>
<td>0.37kg (0.8lbs)</td>
</tr>
<tr>
<td>1/2&quot;</td>
<td>120VAC 30mm coil &amp; cable plug incl.</td>
<td>P32DA24SCNA3GN</td>
<td>51 (108)</td>
<td>10 (150)</td>
<td>162.5&quot; (6.3)</td>
<td>75 (2.9)</td>
<td>57.2 (2.2)</td>
<td>0.69kg (1.5lbs)</td>
</tr>
<tr>
<td>1/2&quot;</td>
<td>24VDC 30mm coil &amp; cable plug incl.</td>
<td>P32DA24SCNA2CN</td>
<td>51 (108)</td>
<td>10 (150)</td>
<td>227.5&quot; (8.9)</td>
<td>75 (2.9)</td>
<td>57.2 (2.2)</td>
<td>0.91kg (2.0lbs)</td>
</tr>
<tr>
<td>1/2&quot;</td>
<td>External air pilot operated</td>
<td>P32DA24PPN</td>
<td>51 (108)</td>
<td>17 (250)</td>
<td>162.5&quot; (6.3)</td>
<td>75 (2.9)</td>
<td>57.2 (2.2)</td>
<td>0.87kg (1.9lbs)</td>
</tr>
</tbody>
</table>

* Includes exhaust silencer
† Standard part numbers shown in bold. For other models refer to Options chart above.
Technical Information

Fluid: Compressed air
Max. pressure Solenoid operated: 10 bar (150 psig)
Max. pressure Air Pilot operated: 17 bar (250 psig)
Min. operating pressure: 3 bar (44 psig)
Temperature Max.* Solenoid operated: 50°C (122°F)
Temperature Max.* Air Pilot operated: 80°C (176°F)
Air Pilot port: 1/8"
Exhaust port: P31 - 1/4" / P32 - 1/2"

Typical flow with 6.3 bar inlet pressure and 1 bar pressure drop:
- P31: 17 dm³/s (36 scfm)
- P32: 51 dm³/s (108 scfm)

* Air supply must be dry enough to avoid ice formation at temperatures below +2°C
Snap pressure: Full flow when downstream pressure reaches 50% of the inlet pressure

Material Specification

Body: Aluminum
Body cover: Polyester
Seals: Nitrile NBR

Mounting Brackets

<table>
<thead>
<tr>
<th>Description</th>
<th>Order code P31P</th>
<th>Order code P32P</th>
</tr>
</thead>
<tbody>
<tr>
<td>L-Bracket mounting kit</td>
<td>P3HKAA00ML</td>
<td>P3KKA00ML</td>
</tr>
<tr>
<td>Foot bracket mounting kit</td>
<td>P3HKAA00MC</td>
<td>P3KKA00MC</td>
</tr>
</tbody>
</table>

Note:
For solenoid operators and cable plugs (connectors) see pages 68 to 69.

Flow characteristics

1/4 Remote Dump Valve

P31 / P32 Series

Inlet Pressure - 6.3 bar (91.3 psig)

Flow - dm³/s

Secondary Pressure - bar

Flow - (scfm)

1/2 Remote Dump Valve

Inlet Pressure - 6.3 bar (91.3 psig)

Secondary Pressure - bar

Flow - (scfm)

Dimensions

P31

P32

For mounting brackets see page 52.
Soft Start Valve

Parker Global Series Soft Start Valves, provide for the safe introduction of pressure to machines or systems. Soft Start Valves, allow the pressure to gradually build to the set point before fully opening to deliver full flow at line pressure.

The controlled introduction of pressure can be an important safety factor and prevent damage to tooling when air pressure is introduced at machine or system start up.

**Note:** Soft Start Valves must be installed downstream of a 3/2 valve with exhaust capability.

### Options:

<table>
<thead>
<tr>
<th>Port size</th>
<th>Description</th>
<th>Order Code</th>
<th>Flow (dm³/s (scfm))</th>
<th>Max. Bar (psig)</th>
<th>Height (mm) (inches)</th>
<th>Width (mm) (inches)</th>
<th>Depth (mm) (inches)</th>
<th>Weight (kg) (lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4&quot;</td>
<td>120VAC Solenoid &amp; cable plug</td>
<td>P31SA22SNGA1FN</td>
<td>17 (36)</td>
<td>10 (150)</td>
<td>115.6 (4.5)</td>
<td>57 (2.2)</td>
<td>40 (1.5)</td>
<td>0.37 (0.8lbs)</td>
</tr>
<tr>
<td>1/4&quot;</td>
<td>24VDC Solenoid &amp; cable plug</td>
<td>P31SA22SGNC2CN</td>
<td>17 (36)</td>
<td>10 (150)</td>
<td>166.0 (6.5)</td>
<td>57 (2.2)</td>
<td>40 (1.5)</td>
<td>0.41 (0.9lbs)</td>
</tr>
<tr>
<td>1/4&quot;</td>
<td>Internal air pilot operated</td>
<td>P31SA22YY0N</td>
<td>17 (36)</td>
<td>17 (250)</td>
<td>115.6 (4.5)</td>
<td>57 (2.2)</td>
<td>40 (1.5)</td>
<td>0.37 (0.8lbs)</td>
</tr>
<tr>
<td>1/4&quot;</td>
<td>External air pilot (1/8&quot; threaded)</td>
<td>P31SA22PPPN</td>
<td>17 (36)</td>
<td>17 (250)</td>
<td>115.6 (4.5)</td>
<td>57 (2.2)</td>
<td>40 (1.5)</td>
<td>0.37 (0.8lbs)</td>
</tr>
<tr>
<td>1/2&quot;</td>
<td>120VAC 30mm coil &amp; cable plug incl.</td>
<td>P32SA24SCNA3GN</td>
<td>48 (101)</td>
<td>10 (150)</td>
<td>162.5 (6.3)</td>
<td>88 (3.4)</td>
<td>57.2 (2.28)</td>
<td>0.87 (1.9lbs)</td>
</tr>
<tr>
<td>1/2&quot;</td>
<td>24VDC 30mm coil &amp; cable plug</td>
<td>P32SA24SCNA2CN</td>
<td>48 (101)</td>
<td>10 (150)</td>
<td>227.5 (8.9)</td>
<td>88 (3.4)</td>
<td>57.2 (2.28)</td>
<td>0.90 (2.0lbs)</td>
</tr>
<tr>
<td>1/2&quot;</td>
<td>Internal air pilot operated</td>
<td>P32SA24Y0N</td>
<td>48 (101)</td>
<td>17 (250)</td>
<td>162.5 (6.3)</td>
<td>75 (2.9)</td>
<td>57.2 (2.28)</td>
<td>0.90 (2.0lbs)</td>
</tr>
<tr>
<td>1/2&quot;</td>
<td>External air pilot (1/8 threaded)</td>
<td>P32SA24PPN</td>
<td>48 (101)</td>
<td>17 (250)</td>
<td>162.5 (6.3)</td>
<td>75 (2.9)</td>
<td>57.2 (2.28)</td>
<td>0.87 (1.9lbs)</td>
</tr>
</tbody>
</table>

† Standard part numbers shown in bold. For other models refer to Options chart above.
Technical Information

Fluid: Compressed air
Max. pressure Solenoid operated: 10 bar (150 psig)
Max. pressure Air Pilot operated: 17 bar (250 psig)
Min. operating pressure: 3 bar (44 psig)
Temperature Max.* Solenoid operated: 50°C (122°F)
Temperature Max.* Air Pilot operated: 80°C (176°F)
Air Pilot port: 1/8"

Typical flow with 6.3 bar
inlet pressure and 1 bar
pressure drop: P31 17 dm³/s (36 scfm)
P32 48 dm³/s (97 scfm)

* Air supply must be dry enough to avoid ice formation at temperatures below +2°C
Snap pressure: Full flow when downstream pressure reaches 50% of the inlet pressure

Material Specification

Body: Aluminum
Body cover: Polyester
Seals: Nitrile NBR

Mounting Brackets

<table>
<thead>
<tr>
<th>Description</th>
<th>Order code</th>
<th>Order code</th>
</tr>
</thead>
<tbody>
<tr>
<td>L-Bracket mounting kit</td>
<td>P3HKA00ML</td>
<td>P3HKA00ML</td>
</tr>
<tr>
<td>Foot bracket mounting kit</td>
<td>P3HKA00MC</td>
<td>P3HKA00MC</td>
</tr>
</tbody>
</table>

Note:
For solenoid operators and cable plugs (connectors) see pages 68 to 69.

Flow characteristics

1/4 Soft Start Valve

Inlet Pressure - 6.3 bar (91.3 psig)

Secondary Pressure - bar
Secondary Pressure - (psig)

Flow - dm³/s
Flow - (scfm)

1/2 Soft Start Valve

Inlet Pressure - 6.3 bar (91.3 psig)

Secondary Pressure - bar
Secondary Pressure - (psig)

Flow - dm³/s
Flow - (scfm)

Dimensions

P31

P32

For mounting brackets see page 52
Solenoid Operators

Technical data - Solenoid operators, coil combinations

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Order code</th>
<th>Weight (Kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct current</td>
<td>PS2962B49P</td>
<td>0.038</td>
</tr>
<tr>
<td>24VDC</td>
<td>PS2962B53P</td>
<td>0.038</td>
</tr>
</tbody>
</table>

Transients

Interrupting the current through the solenoid coil produces momentary voltage peaks which, under unfavourable conditions, can amount to several hundred times the rated operating voltage. Normally, these transients do not cause problems, but to achieve the Maximum life of relays in the circuit (and particularly of transistors, thyristors and integrated circuits) it is desirable to provide protection by means of voltage-dependent resistors (varistors). All connectors/cable plugs EN175301-803 with LED’s include this type of circuit protection.

Materials

Pilot Valve
- Body: Polyamide
- Armature tube: Brass
- Plunger & core: Corrosion resistant Cr-Ni steel
- Seals: Fluorocarbon
- Screws: Stainless steel

Coil
- Encapsulation material: Thermoplastic as standard Duroplast for M12 connection

Spare solenoid operators

<table>
<thead>
<tr>
<th>Description</th>
<th>Order code</th>
<th>Weight (Kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Duty</td>
<td>P2FP23N4B</td>
<td>0.065</td>
</tr>
<tr>
<td>No Override</td>
<td>P2FP23N4A</td>
<td>0.065</td>
</tr>
</tbody>
</table>

Note: Solenoid pilot operators are fitted to the Global range. Order the above part numbers for spares. The operators are supplied with mounting screws and interface “O” rings. Coils and connectors must be ordered separately.

Solenoid Operator - CNOMO

- Voltage
  - 22mm x 30mm Order code: P2FCA449 Weight (Kg): 0.105
  - 30mm x 30mm Order code: P2FCA453 Weight (Kg): 0.105

Solenoid coils with Din A or Industrial B connection

<table>
<thead>
<tr>
<th>Voltage</th>
<th>22mm x 30mm Weight (Kg)</th>
<th>30mm x 30mm Weight (Kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>24VDC</td>
<td>P2FCA449 0.093</td>
<td>P2FCA453 0.105</td>
</tr>
<tr>
<td>110V 50Hz, 120V 60Hz</td>
<td>P2FCA453 0.105</td>
<td></td>
</tr>
</tbody>
</table>
## Solenoid Coils & Cable Plugs

### Solenoid connectors / Cable plugs EN175301-803

<table>
<thead>
<tr>
<th>Description</th>
<th>Order code</th>
<th>Order code</th>
<th>Order code</th>
</tr>
</thead>
<tbody>
<tr>
<td>With standard screw</td>
<td>PS2932BP</td>
<td>PS2429BP</td>
<td>PS2028BP</td>
</tr>
<tr>
<td>Standard IP65 without flying lead</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>With LED and protection</td>
<td>PS294679BP</td>
<td>PS243079BP</td>
<td>PS203279BP</td>
</tr>
<tr>
<td>24VAC/DC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>With LED and protection</td>
<td>PS294683BP</td>
<td>PS243083BP</td>
<td>PS203283BP</td>
</tr>
<tr>
<td>110VAC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>With cable</td>
<td>PS2932JBP</td>
<td>PS2429JBP</td>
<td>PS2028JBP</td>
</tr>
<tr>
<td>Standard with 2m cable IP65</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24VAC/DC, 2m cable</td>
<td>PS2946J79BP</td>
<td>PS2430J79BP</td>
<td>PS2032J79BP</td>
</tr>
<tr>
<td>LED and protection</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>110VAC/DC, 2m cable</td>
<td>PS2946J83BP</td>
<td>PS2430J83BP</td>
<td>PS2032J83BP</td>
</tr>
<tr>
<td>LED and protection</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Solenoid coil Dimensions mm (inches)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### 15mm ISO 15217

Cable plugs

<table>
<thead>
<tr>
<th>PS2932BP</th>
</tr>
</thead>
<tbody>
<tr>
<td>PS294679BP</td>
</tr>
</tbody>
</table>

#### 22mm Form B Industrial

Cable plugs

| PS2429BP                      |

#### 30mm DIN 43650A

Cable plugs

| PS2028BP                      |

### Electrical schematics

- ![Electrical schematic 1](image1)
- ![Electrical schematic 2](image2)
Safety Lockout Valves

Features
- The Safety Lockout valve is a manually operated, slide-type, 2-position, 3-way valve. In the closed position, downstream air pressure is exhausted to atmosphere.
- The valve slide can be locked in the closed position with a customer supplied padlock.
- The Safety Lockout valves conform to OSHA #29 CFR part 1910 – control of hazardous energy source (lockout / tagout).
- Left to right flow — orange slide
- Right to left — yellow slide

Ordering Information

<table>
<thead>
<tr>
<th>Model type</th>
<th>Port size</th>
<th>Thread type</th>
<th>Flow dm³/s (scfm)</th>
<th>Safety Lockout Valve Flow from left to right</th>
<th>Safety Lockout Valve Flow from right to left</th>
</tr>
</thead>
<tbody>
<tr>
<td>P31</td>
<td>1/4&quot;</td>
<td>NPT</td>
<td>47.2 (100)</td>
<td>P31VA22LSAN</td>
<td>P31VA22LSBN</td>
</tr>
<tr>
<td>P32</td>
<td>1/4&quot;</td>
<td>NPT</td>
<td>66.5 (141)</td>
<td>P32VA22LSAN</td>
<td>P32VA22LSBN</td>
</tr>
<tr>
<td></td>
<td>3/8&quot;</td>
<td>NPT</td>
<td>101.9 (216)</td>
<td>P32VA23LSAN</td>
<td>P32VA23LSBN</td>
</tr>
<tr>
<td></td>
<td>1/2&quot;</td>
<td>NPT</td>
<td>128.4 (272)</td>
<td>P32VA24LSAN</td>
<td>P32VA24LSBN</td>
</tr>
<tr>
<td>P33</td>
<td>1/2&quot;</td>
<td>NPT</td>
<td>136.9 (290)</td>
<td>P33VA24LSAN</td>
<td>P33VA24LSBN</td>
</tr>
<tr>
<td></td>
<td>3/4&quot;</td>
<td>NPT</td>
<td>141.6 (300)</td>
<td>P33VA26LSAN</td>
<td>P33VA26LSBN</td>
</tr>
</tbody>
</table>

For thread type: BSPP 1, BSPT 2, NPT 9

Materials of Construction

<table>
<thead>
<tr>
<th>Body</th>
<th>Zinc</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blade</td>
<td>Acetal</td>
</tr>
<tr>
<td>Seals</td>
<td>Nitrile</td>
</tr>
</tbody>
</table>

Specifications

<table>
<thead>
<tr>
<th>Max. operating temperature</th>
<th>65.5°C (150°F)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. supply pressure</td>
<td>10 bar (150 psig)</td>
</tr>
<tr>
<td>Port size</td>
<td>BSPP / BSPT / NPT 1/4, 3/8, 1/2, 3/4</td>
</tr>
</tbody>
</table>

Weight

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>P31</td>
<td>0.30 kg (0.66 lbs)</td>
</tr>
<tr>
<td>P32</td>
<td>0.34 kg (0.74 lbs)</td>
</tr>
<tr>
<td>P33</td>
<td>0.41 kg (0.90 lbs)</td>
</tr>
</tbody>
</table>

Dimensions

P31

P32

P33
Modular Ball Valve

**Features**
The Modular Ball Valves provide shut off line pressure with a non-sticking 90° turn handle to prevent unauthorised adjustment. When the inlet pressure is turned off, the downstream air pressure vents through the exhaust port. The padlock slide may be assembled on either side. It is recommended that this is assembled after mounting.

**Note:** This padlock slide is a permanent assembly and may not be removed later.

**Ordering Information**

<table>
<thead>
<tr>
<th>Model type</th>
<th>Port size</th>
<th>Thread type</th>
<th>Flow dm³/s (scfm)</th>
<th>Modular Ball Valve Flow from left to right</th>
</tr>
</thead>
<tbody>
<tr>
<td>P31</td>
<td>1/4&quot;</td>
<td>NPT</td>
<td>20 (42.4)</td>
<td>P31VA22LBNN</td>
</tr>
<tr>
<td>P32</td>
<td>3/8&quot;</td>
<td>NPT</td>
<td>90 (190.7)</td>
<td>P32VA23LBNN</td>
</tr>
<tr>
<td>P33</td>
<td>1/2&quot;</td>
<td>NPT</td>
<td>122 (258.5)</td>
<td>P32VA24LBNN</td>
</tr>
<tr>
<td></td>
<td>3/4&quot;</td>
<td>NPT</td>
<td>265 (561.5)</td>
<td>P33VA24LBNN</td>
</tr>
</tbody>
</table>

For thread type: BSPP 1, BSPT 2, NPT 9

**Materials of Construction**

- **Body:** Aluminum
- **Seals:** PTFE
- **Ball:** P31 Brass, P32 / P33 Chrome plated brass

**Specifications**

<table>
<thead>
<tr>
<th>Max. supply pressure</th>
<th>17 bar (250 psig)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Port size</td>
<td>BSPP / BSPT / NPT</td>
</tr>
<tr>
<td>P31</td>
<td>1/4, 3/8, 1/2, 3/4</td>
</tr>
<tr>
<td>Weight</td>
<td></td>
</tr>
<tr>
<td>P31</td>
<td>0.19 kg (0.41 lbs)</td>
</tr>
<tr>
<td>P32</td>
<td>0.47 kg (1.00 lbs)</td>
</tr>
<tr>
<td>P33</td>
<td>0.80 kg (1.70 lbs)</td>
</tr>
</tbody>
</table>

**Dimensions**

**P31**

**P32**

**P33**

---

Parker Hannifin Corporation
Pneumatic Division - Asia
**Manifold Blocks**

![Manifold Blocks Image]

**Features**
- Available in 1/4” or 3/4” threaded inlet / outlet ports
- Two additional top and bottom auxiliary ports standard
- Can be mounted anywhere in the FRL system
- Includes one pipe plug

**Ordering Information**

<table>
<thead>
<tr>
<th>Model type</th>
<th>In / Out port size</th>
<th>Auxiliary port size Top</th>
<th>Auxiliary port size Bottom</th>
<th>Thread type</th>
<th>Order Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>P31</td>
<td>1/4”</td>
<td>1/4”</td>
<td>1/4”</td>
<td>NPT</td>
<td>P31MA22022N</td>
</tr>
<tr>
<td>P33</td>
<td>3/4”</td>
<td>1/4”</td>
<td>1/2”</td>
<td>NPT</td>
<td>P33MA26024N</td>
</tr>
</tbody>
</table>

For thread type:
- BSPP 1
- BSPT 2
- NPT 9

**Materials of Construction**

- Body: Aluminum

**Note:**
P33 unit used for both P32 & P33 series

**Specifications**

- Max. operating temperature: 65.5°C (150°F)
- Max. supply pressure: 20.7 bar (300 psig)

**Dimensions**

- For thread type: BSPP 1
- BSPT 2
- NPT 9

**Note:**
P33 unit used for both P32 & P33 series

**Weight**

- P31: 0.19 kg (0.26 lbs)
- P33: 0.34 kg (0.42 lbs)
### Accessories - P31 Series

#### C-Bracket
(Fits to filter and lubricator body)

- **P31KA00MW**

#### T-Bracket w/ Body Connector

- **P31KA00MT**

#### Body Connector
(O-ring not shown)

- **P31KA00CB**

#### Port Block Kit

- **P31KA91CP**
- **P31KA92CP**
- **P31KA93CP**
- **P31KA11CP**
- **P31KA12CP**
- **P31KA13CP**

#### Port Block Kit w/ T-Bracket

- **P31KA91CN**
- **P31KA92CN**
- **P31KA93CN**
- **P31KA11CN**
- **P31KA12CN**
- **P31KA13CN**

#### Angle Bracket
(Fits to regulator and filter/regulator body)

- **P31KA00MR**
# Accessories - P32 Series

## T-Bracket w/ Body Connector

**P32KA00MT**

![T-Bracket w/ Body Connector](image)

**Body Connector**

**P32KA00CB**

![Body Connector](image)

## Port Block Kit

<table>
<thead>
<tr>
<th>Port Size</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4 NPT</td>
<td>P32KA92CP</td>
</tr>
<tr>
<td>3/8 NPT</td>
<td>P32KA93CP</td>
</tr>
<tr>
<td>1/2 NPT</td>
<td>P32KA94CP</td>
</tr>
<tr>
<td>3/4 NPT</td>
<td>P32KA96CP</td>
</tr>
<tr>
<td>G 1/4</td>
<td>P32KA12CP</td>
</tr>
<tr>
<td>G 3/8</td>
<td>P32KA13CP</td>
</tr>
<tr>
<td>G 1/2</td>
<td>P32KA14CP</td>
</tr>
<tr>
<td>G 3/4</td>
<td>P32KA16CP</td>
</tr>
</tbody>
</table>

## Angle Bracket

(Fits to regulator and filter/regulator bonnet)

**P32KA00MR**

![Angle Bracket](image)

## L-Bracket

(Fits to filter and lubricator body)

**P32KA00ML**

![L-Bracket](image)

## T-Bracket

(fits to body connector or port block)

**P32KA00MB**

![T-Bracket](image)
### Accessories - P33 Series

#### T-Bracket w/ Body Connector

**P32KA00MT**

#### Body Connector

**P32KA00CB**

#### Port Block Kit

<table>
<thead>
<tr>
<th>Size</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4 NPT</td>
<td>P32KA92CP</td>
</tr>
<tr>
<td>3/8 NPT</td>
<td>P32KA93CP</td>
</tr>
<tr>
<td>1/2 NPT</td>
<td>P32KA94CP</td>
</tr>
<tr>
<td>3/4 NPT</td>
<td>P32KA96CP</td>
</tr>
<tr>
<td>G 1/4</td>
<td>P32KA12CP</td>
</tr>
<tr>
<td>G 3/8</td>
<td>P32KA13CP</td>
</tr>
<tr>
<td>G 1/2</td>
<td>P32KA14CP</td>
</tr>
<tr>
<td>G 3/4</td>
<td>P32KA16CP</td>
</tr>
</tbody>
</table>

#### Angle Bracket

(Fits to regulator and filter/regulator bonnet)

**P33KA00MR**

#### L-Bracket

(Fits to filter and lubricator body)

**P33KA00ML**

#### T-Bracket

(fits to body connector or port block)

**P32KA00MB**
## Kits

<table>
<thead>
<tr>
<th>Series</th>
<th>Description</th>
<th>Order Code</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>P31KA00MP</td>
</tr>
<tr>
<td>P31</td>
<td>Panel Mount Nut (Plastic)</td>
<td>P32KA00MP</td>
</tr>
<tr>
<td>P32</td>
<td>Panel Mount Nut (Aluminum)</td>
<td>P33KA00MP</td>
</tr>
<tr>
<td>P33</td>
<td></td>
<td>P31KA00MM</td>
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<tr>
<td></td>
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<td></td>
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<td>P33KA00MM</td>
</tr>
<tr>
<td>P31</td>
<td>5µ Element Kit</td>
<td>P31KA00ESE</td>
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<tr>
<td>P32</td>
<td>1µ Element Kit</td>
<td>P32KA00ESE</td>
</tr>
<tr>
<td>P33</td>
<td>0.01µ Element Kit</td>
<td>P33KA00ESE</td>
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<tr>
<td>P31</td>
<td>Adsorber Element Kit</td>
<td>P31KA00ESA</td>
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<td>P32</td>
<td></td>
<td>P32KA00ESA</td>
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<tr>
<td>P33</td>
<td></td>
<td>P33KA00ESA</td>
</tr>
<tr>
<td>P32</td>
<td>Auto Drain Kit</td>
<td>P32KA00DA</td>
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<tr>
<td></td>
<td></td>
<td>P32KA00RQ</td>
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<tr>
<td>P31</td>
<td>Fill Plug Kit</td>
<td>P31KA00PL</td>
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<td>P32/P33</td>
<td></td>
<td>P32KA00PL</td>
</tr>
<tr>
<td></td>
<td>Drip Control Assembly Kit</td>
<td>P31KA00PG</td>
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</table>
## Kits

<table>
<thead>
<tr>
<th>Series</th>
<th>Description</th>
<th>Order Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>P31</td>
<td>Plastic Bowl w/ Bowl Guard &amp; Manual Drain</td>
<td>P31KA00BGM</td>
</tr>
<tr>
<td></td>
<td></td>
<td>P32KA00BGM</td>
</tr>
<tr>
<td></td>
<td></td>
<td>P33KA00BGM</td>
</tr>
<tr>
<td>P31</td>
<td>Plastic Bowl w/ Bowl Guard &amp; Pulse Drain</td>
<td>P31KA00BGB</td>
</tr>
<tr>
<td>P32</td>
<td>Plastic Bowl w/ Bowl Guard &amp; Auto Drain</td>
<td>P32KA00BGA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>P33KA00BGA</td>
</tr>
<tr>
<td>P31</td>
<td>Metal Bowl w/o Sight Gauge &amp; Manual Drain</td>
<td>P31KA00BMM</td>
</tr>
<tr>
<td></td>
<td></td>
<td>P32KA00BMM</td>
</tr>
<tr>
<td></td>
<td></td>
<td>P33KA00BMM</td>
</tr>
<tr>
<td>P31</td>
<td>Metal Bowl w/o Sight Gauge &amp; Pulse Drain</td>
<td>P31KA00BMB</td>
</tr>
<tr>
<td>P32</td>
<td>Metal Bowl w/o Sight Gauge &amp; Auto Drain</td>
<td>P32KA00BMA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>P33KA00BMA</td>
</tr>
<tr>
<td>P32</td>
<td>Metal Bowl w/ Sight Gauge &amp; Manual Drain</td>
<td>P32KA00BSM</td>
</tr>
<tr>
<td></td>
<td></td>
<td>P33KA00BSM</td>
</tr>
<tr>
<td>P32</td>
<td>Metal Bowl w/ Sight Gauge &amp; Auto Drain</td>
<td>P32KA00BSA</td>
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<tr>
<td></td>
<td></td>
<td>P33KA00BSA</td>
</tr>
<tr>
<td>P31</td>
<td>Lubricator - Plastic Bowl w/ Bowl Guard No Drain</td>
<td>P31KA00BGN</td>
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<tr>
<td></td>
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<td>P32KA00BGN</td>
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<tr>
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<td>P33KA00BGN</td>
</tr>
<tr>
<td>P31</td>
<td>Regulator - Relieving Repair Kit</td>
<td>P31KA00RB</td>
</tr>
<tr>
<td></td>
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<td>P32KA00RB</td>
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<tr>
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<td>P33KA00RB</td>
</tr>
<tr>
<td>P31</td>
<td>Regulator - Non Relieving Repair Kit</td>
<td>P31KA00RC</td>
</tr>
<tr>
<td></td>
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<td>P32KA00RC</td>
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<tr>
<td>P31</td>
<td>Regulator - Main Adjusting Spring 0-2 bar (0-30 psig) Kit</td>
<td>P31KA00PR, P32KA00PR, P33KA00PR</td>
</tr>
<tr>
<td>P31</td>
<td>Regulator - Main Adjusting Spring 0-4.1 bar (0-60 psig) Kit</td>
<td>P31KA00PS, P32KA00PS, P33KA00PS</td>
</tr>
<tr>
<td>P31</td>
<td>Regulator - Main Adjusting Spring 0-8.6 bar (0-125 psig) Kit</td>
<td>P31KA00PT, P32KA00PT, P33KA00PT</td>
</tr>
<tr>
<td>P32</td>
<td>Regulator - Main Adjusting Spring 0-17 bar (0-250 psig) Kit</td>
<td>P32KA00PV</td>
</tr>
<tr>
<td>P33</td>
<td>Regulator - Main Adjusting Spring 0-17 bar (0-250 psig) Kit</td>
<td>P33KA00PV</td>
</tr>
<tr>
<td>P31</td>
<td>40mm Round Gauge</td>
<td>K4515R1402B, K4515R1404B, K4515R1411B</td>
</tr>
<tr>
<td>P32 / P33</td>
<td>50mm Round Gauge</td>
<td>K4520R1402B, K4520R1404B, K4520R1411B, K4520R1420B</td>
</tr>
</tbody>
</table>
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 Gauges: To avoid potential polycarbonate bowl failures:

- Do not locate polycarbonate bowls or sight gauges 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 gauges in air systems where compressors are lubricated with fire resistant fluids such as phosphate ester and di-ester lubricants.
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.
The terms and conditions of sale, including descriptions, quotations, proposals, offers, acknowledgments, acceptances and sales of Parker’s products are subject to and are governed by the terms and conditions stated herein. Buyer’s acceptance of any offer to sell is limited to these terms and conditions. Any terms or conditions in addition to, or inconsistent with those stated herein, proposed by Buyer in any acceptance of an offer by Seller, are hereby objected to. No such additional, different or inconsistent terms and conditions shall become part of the contract between Buyer and Seller unless expressly accepted in writing by Seller. Seller’s acceptance of any offer to purchase by Buyer is expressly conditional upon Buyer’s assent to all the terms and conditions stated herein, including any terms in addition to, or inconsistent with those contained in Buyer’s offer. Acceptance of Seller’s products shall in all events constitute such assent.

1. Terms and Conditions of Sale: All descriptions, quotations, proposals, offers, acknowledgments, acceptances and sales of Seller’s products are subject to and shall be governed exclusively by the terms and conditions stated herein. Buyer’s acceptance of any offer to sell is limited to these terms and conditions. Any terms or conditions in addition to, or inconsistent with those stated herein, proposed by Buyer in any acceptance of an offer by Seller, are hereby objected to. No such additional, different or inconsistent terms and conditions shall become part of the contract between Buyer and Seller unless expressly accepted in writing by Seller.

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 incorrect, lost or missing items in a shipment shall be waived unless Buyer 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 CONCISES THAT THERE ARE NO WARRANTIES EXCEPT AS STATED HEREIN. ANY ITEM PROVIDED HEREUNDER, SELLER MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED, OR ARISING BY OPERATION OF LAW, TRADE USAGE, OR COURSE OF DEALING ARE HEREBY DISCLAIMED.

5. Limitation of Remedy: SELLER’S LIABILITY ARISING FROM OR IN ANY WAY CONNECTED WITH THE ITEMS SOLD OR THIS CONTRACT SHALL BE LIMITED EXCLUSIVELY TO REPAIR OR REPLACEMENT OF THE ITEMS SOLD OR REFUND OF THE PURCHASE PRICE PAID BY BUYER, AT SELLER’S SOLE OPTION. IN NO EVENT SHALL SELLER BE LIABLE FOR ANY INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES OF ANY KIND OR NATURE WHATSOEVER, INCLUDING BUT NOT LIMITED TO, LOST PROFITS ARISING FROM OR IN ANY WAY CONNECTED WITH THIS AGREEMENT OR ITEMS SOLD HEREUNDER, WHETHER ALLEGED TO ARISE FROM BREACH OF CONTRACT, EXPRESS OR IMPLIED WARRANTY, OR IN TORT, INCLUDING WITHOUT LIMITATION, NEGLIGENCE, FAILURE TO WARN OR STRICT LIABILITY.

6. Changes, Reschedules and Cancellations: Buyer may request to modify the designs or specifications for the items sold hereunder as well as the quantities and delivery dates thereof, or may request to cancel all or part of this order, however, no such requested modification or cancellation shall become part of the contract between Buyer and Seller unless accepted by Seller in a written amendment to this Agreement. Acceptance of any such requested modification or cancellation shall be at Seller’s discretion, and shall be upon such terms and conditions as Seller may require.

7. Special Tooling: A tooling charge may be imposed for any special tooling or other property in its sole discretion at any time.

8. Buyer’s Property: Any designs, tools, patterns, materials, drawings, confidential information or equipment furnished by Buyer, or any other items which become Buyer’s property, may be considered obsolete and may be destroyed by Seller after two (2) consecutive years have elapsed without Buyer placing an order for the items which are manufactured using such property. Seller shall not be responsible for any loss or damage to such property while it is in Seller’s possession or control.

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 hereunder. If any such taxes are paid by Buyer 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 hereunder. 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 infringements of any patents, trademarks, copyrights, trade dress, trade secrets or similar rights except as provided in this Part 10. Seller will defend and indemnify Buyer against allegations of infringement of U.S. patents, U.S. trademarks, copyrights, trade dress and trade secrets (hereinafter “Intellectual Property Rights”). Seller will defend at its expense and will pay the cost of any settlement or damages awarded in an action brought against Buyer based on an allegation that an item sold pursuant to this contract infringes the Intellectual Property Rights of a third party. Seller’s obligation to defend and indemnify Buyer is contingent upon Buyer notifying Seller within ten (10) days after Buyer becomes aware of such allegations of infringement, and Seller having sole control over the defense of any allegations or actions including all negotiations for settlement or compromise. If an item sold hereunder is subject to a claim that it infringes the Intellectual Property Rights of a third party, Seller may, at its sole expense and option, procure for Buyer the right to continue using said item, replace or modify said item so as to make it noninfringing, or offer to accept return of said item and return the purchase price less a reasonable allowance for depreciation. Notwithstanding the foregoing, Seller shall have no liability for claims of infringement based on information provided by Buyer, or directed to items delivered hereunder for which the designs are specified in whole or part by Buyer, or infringements resulting from the modification, combination or use in a system of any item sold hereunder. The foregoing provisions of this Part 10 shall constitute Seller’s sole and exclusive liability and Buyer’s sole and exclusive remedy for infringement of Intellectual Property Rights.

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 hereunder and may not be contradicted by any oral or other representations or agreements which pertain thereto. This Agreement shall be governed in all respects by the laws 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.