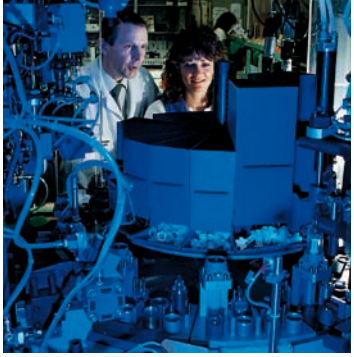

aerospace
climate control
electromechanical
filtration
fluid & gas handling
hydraulics
pneumatics
process control
sealing & shielding

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(Revised 11-21-2011)

Parker Global Air Preparation System

Catalog 0750-2 US

Parker

ENGINEERING YOUR SUCCESS.

DECLARATION OF COMPLIANCE (ROHS)

European Directive 2002/95/EC - RoHS (**R**estriction of use **o**f certain **H**azardous **S**ubstances in electrical and electronic equipment), restricts the use of the 6 substances below in the manufacture of specified electrical equipment.

Substance	Concentration
LEAD:	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.
MERCURY:	The concentration level must not exceed 0.1% by weight.
CADMIUM:	The concentration level must not exceed 0.01% by weight.
HEXAVALENT CHROMIUM:	This is a corrosive protective finish used on our product line. Where this finish is utilized the Chromate solution is Hexavalent (Chrome 6) free.
POLYBROMINATED BIPHENYLS (PBB):	The concentration level must not exceed 0.1% by weight. This substance is not known to be in any of our products.
POLYBROMINATED DIPHENYL ETHERS (PBDE):	The concentration level must not exceed 0.1% by weight. This substance is not known to be in any of our products.

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.

This document and other information from Parker Hannifin Corporation, its subsidiaries and authorized distributors provide product and/or system options for further investigation by users having technical expertise. It is important that you analyze all aspects of your application including consequences of any failure, and review the information concerning the product or system in the current product catalog. Due to the variety of operating conditions and applications for these products or systems, the user, through its own analysis and testing, is solely responsible for making the final selection of the products and systems and assuring that all performance, safety and warning requirements of the application are met.

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

Global.
Economical.
Modular.

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.

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Comprehensive Offering

P31 Mini Series
1/4" ports
40mm body width

P32 Compact Series
1/4", 3/8" and 1/2"
60mm body width

P33 Standard Series
1/2" and 3/4"
73mm body width

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.

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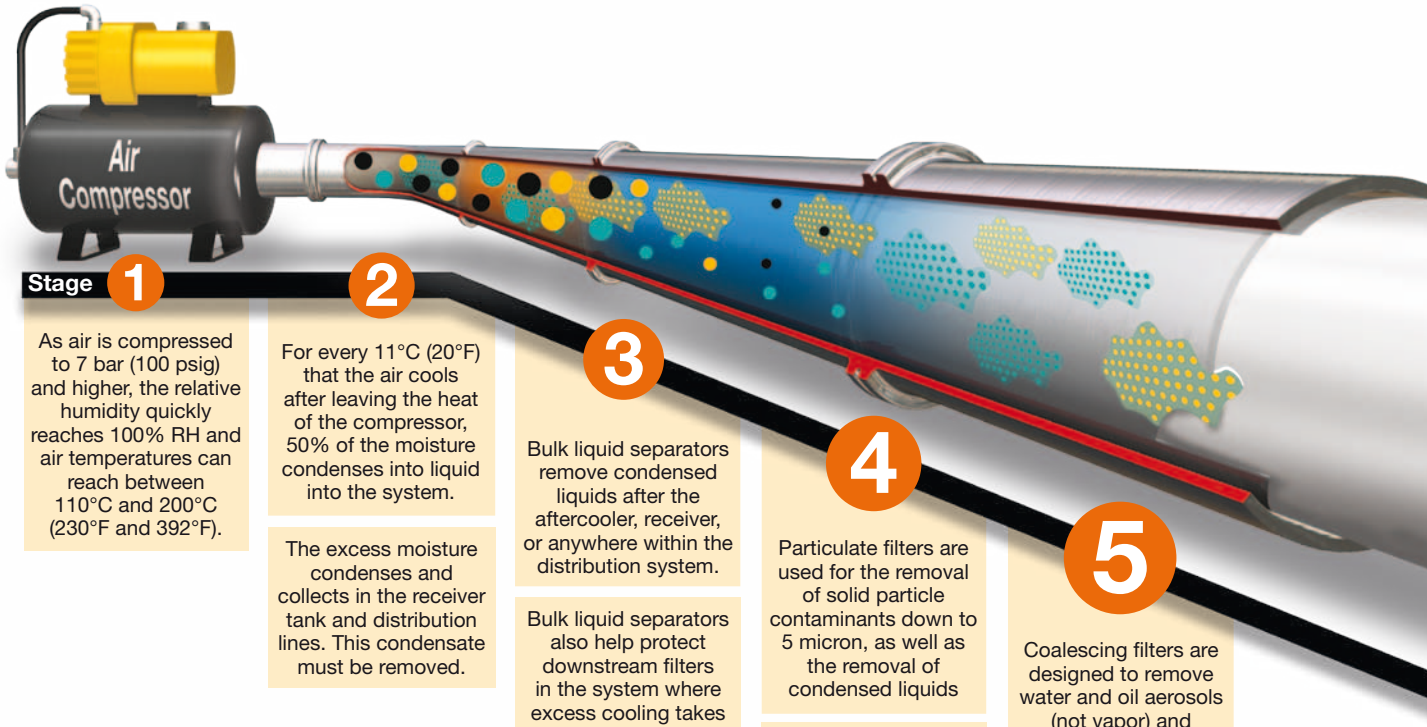
Together we can power your application with clean, dry air

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).

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.

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

3

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

Bulk liquid separators also help protect downstream filters in the system where excess cooling takes place.

4

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

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.

5

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

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

Key

- **Particulate**
- **Oil**
- **Water**
- **Oil Vapor**
- **Water Vapor**

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Stages	1 2	3	4	5	6	7
Function	**Air Compressor**	**Bulk Liquid Removal**	**Particulate Filtration**	**Coalescing Filtration**	**Air Dryers**	**Hydrocarbon Removal**
Application	All pneumatic systems	Basic pneumatic systems	Basic pneumatic systems	Systems requiring highest quality air.	Systems requiring air with reduced moisture content	Systems requiring highest quality air for critical applications
Description	Air leaving the compressor room at 93ºC (200ºF) releases 95% of its moisture into the piping system when it cools to 38ºC (100ºF)	Removes bulk liquid contamination and protects filters where excess cooling takes place in the distribution piping	Removes solid particulates down to 5 micron, and the separation of bulk contaminants.	Removes liquid aerosols and submicron particulates (not vapor) down to 0.01 micron.	Removes water vapor from air stream. Dew point reduced down to 4ºC (40ºF) (refrigeration) or -40ºC (-40ºF) (desiccant).	Removal of odors and trace vapors for critical applications.
Parker Global Air Preparation Solution	Customer supplied	P3TF Bulk Liquid Separator	P31, P32, P33 Particulate Filter	P31, P32, P33 Coalescing Filter	PDRD Refrigeration Dryer P3TJ Regenerative Desiccant Dryer	P31, P32, P33 Activated Carbon (Adsorber) Filter

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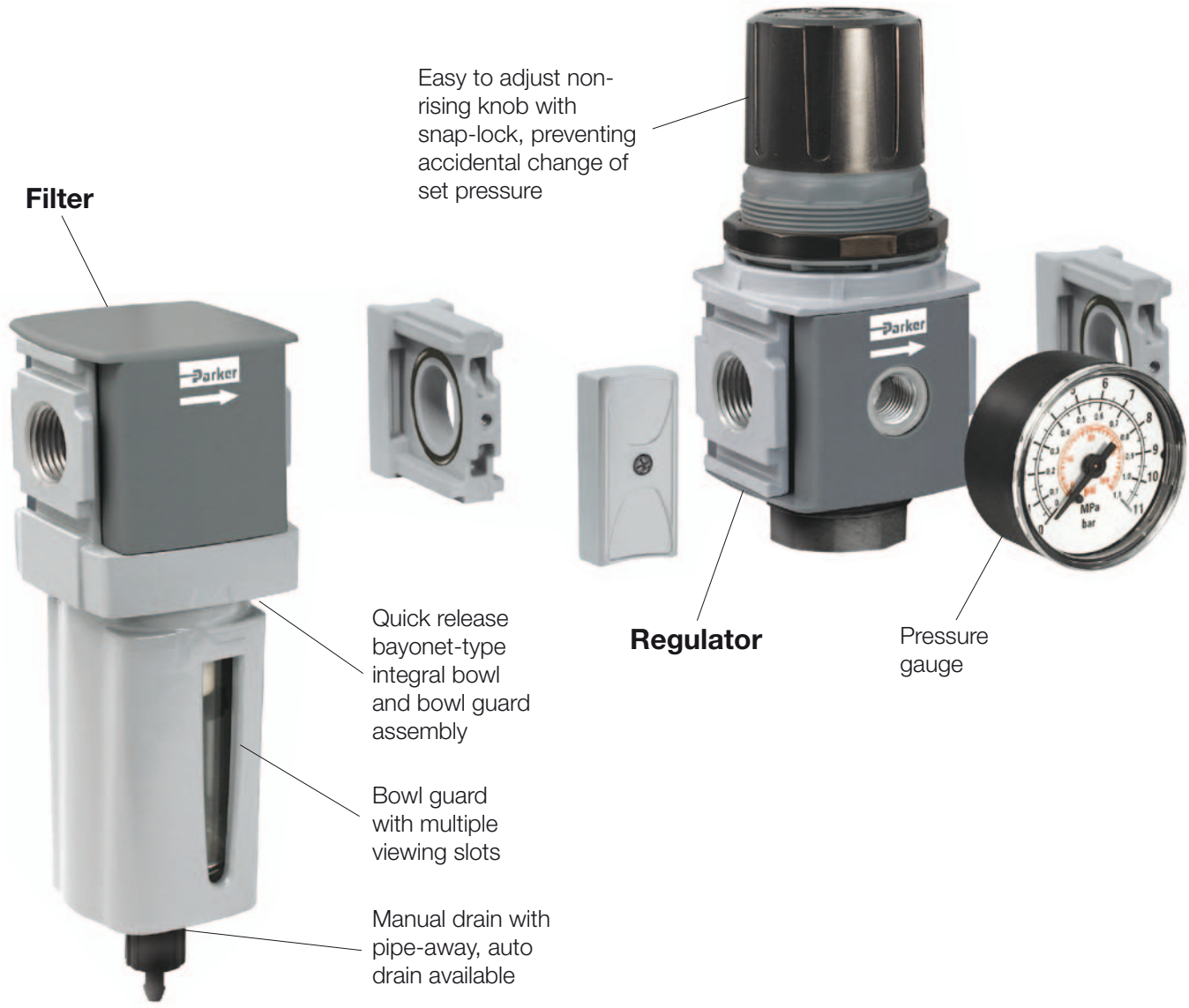
A completely modular air preparation system



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

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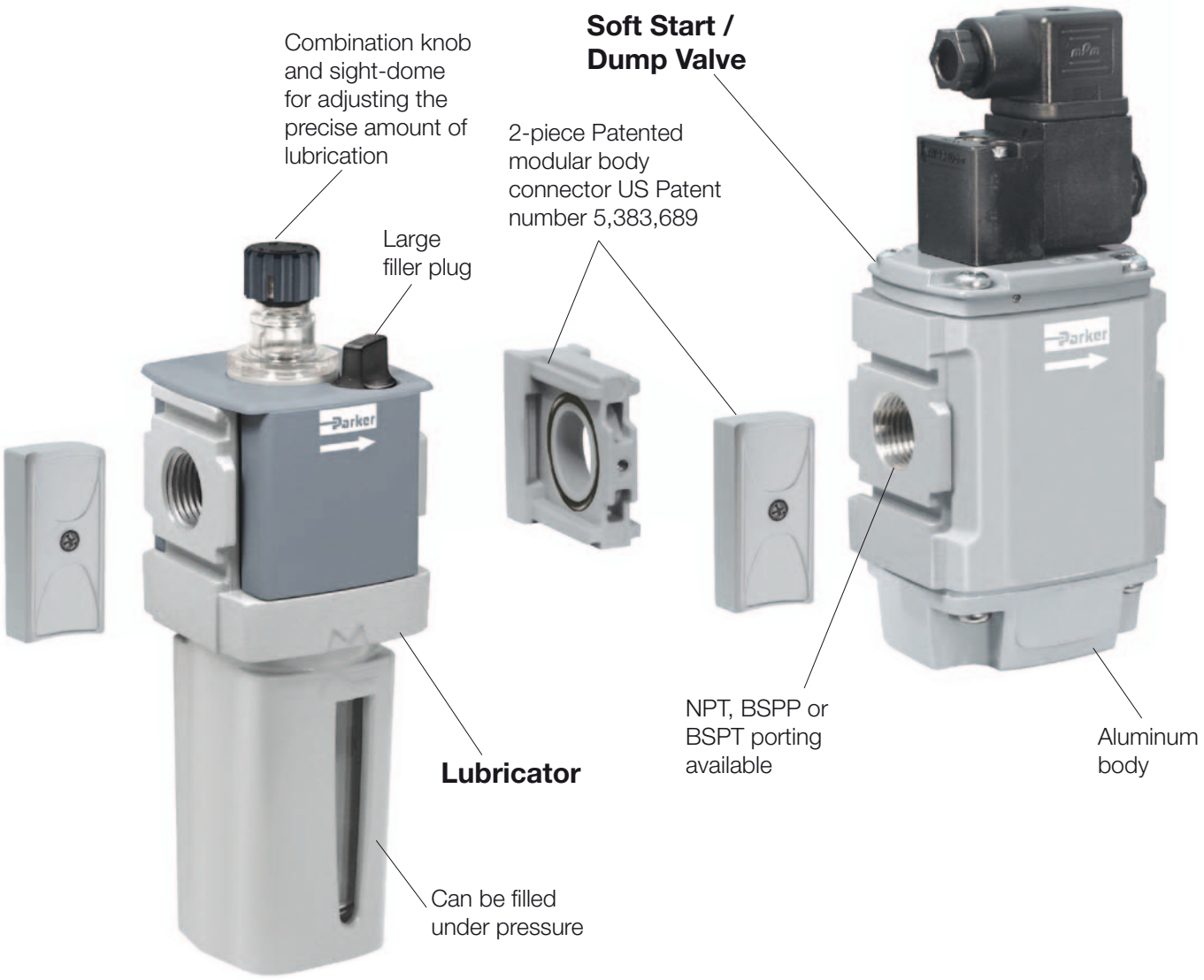

Common Port Manifold Regulators

- 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

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Air Preparation

P31 Mini Series

40mm body width
1/4" Ported

Flows up to:	dm^3/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:	dm^3/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:	dm^3/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)

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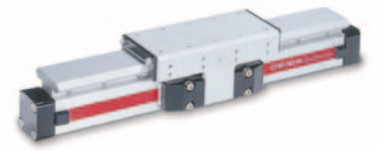
Valves and Actuators

Mini Series Complimentary Products

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

Isys Micro

Moduflex Size 1



OSP-P

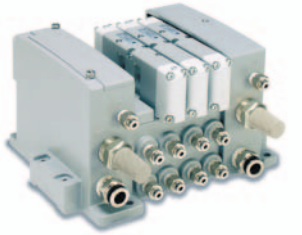
P1D

P1A

Compact Series Complimentary Products

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

Isys Micro



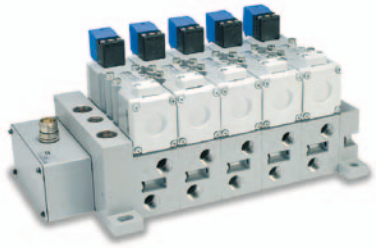
Isys HA / HB

P1D

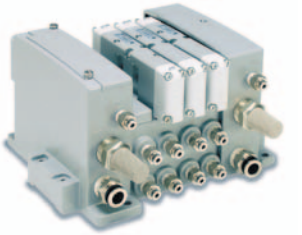
OSP-P

Standard Series Complimentary Products

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



Isys Size 1



Isys HA / HB

P1D

OSP-P

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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.

			
Function	**Single**	**Common Port Manifold**	**Electronic Proportional**
Description	For pneumatic systems requiring single pressure regulation.	For pneumatic systems requiring multiple pressures for different parts of the system, yet still having a common inlet supply.	For pneumatic systems requiring an electronic to pneumatic proportional control signal. Also allows pressure regulation to be integrated into your control systems.
Parker Global Air Preparation Solution	P31R, P32R, P33R	P31H, P32H	P31P, P32P fits Compact & Standard

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.

						
Function	**Ball Valve**	**Slide Valve**	**Soft Start / Quick Dump**	**Soft Start**	**Quick Dump**	**Manifold Block**
Soft Start Function	⊘	⊘	✓	✓	⊘	⊘
Quick Dump Function	Slow Exhaust	Slow Exhaust	✓	⊘	✓	⊘
Operation	Manual Twist	Manual Slide	Solenoid or Air Pilot	Solenoid, Air Pilot, or Internal Air Pilot	Solenoid or Air Pilot	N/A
Placement	Before or after FRL or stand alone	Before or after FRL or stand alone	After FRL	After FRL	After FRL	Anywhere within FRL or stand alone
Parker Global Air Preparation Solution	P31V, P32V, P33V	P31V, P32V, P33V	P31T Mini, P32T fits Compact & Standard	P31S Mini, P32S fits Compact & Standard	P31D Mini, P32D fits Compact & Standard	P31M Mini, P33M fits Compact & Standard

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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.

	P31 Mini Series					P32 Compact Series						P33 Standard Series				
																
	Number of valves that would actuate at once															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Moduflex 1																
Isys Micro																
HB / Viking Xtreme																
Moduflex 2																
HA / Global ISO																
							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 0.5m/s

Cyl Ø mm Cyl Ø inches		Cylinder bore size													
		5 (5/16)	10 (7/16)	16 (9/16)	20 (3/4)	25 (1)	28 (1-1/8)	32 (1-1/4)	40 (1-1/2)	45 (1-3/4)	50 (2)	63 (2-1/2)	75 (3)	80 (3-1/4)	100 (4)
Tube Ø mm Tube Ø inches		Tube diameter external													
		4 (5/32)	4 (5/32)	4 (5/32)	6 (1/4)	6 (1/4)	6 (1/4)	6 (1/4)	8 (5/16)	8 (5/16)	8 (5/16)	10 (3/8)	10 (3/8)	12 (1/2)	12 (1/2)
Number of cylinders actuating at once	1														
	2														
	3														
	4														
	5														
	6														
	7														
	8														
	9														
	10														
		P31 Mini Series					P32 Compact Series			P33 Standard Series			See Larger Parker FRL Offering		
															

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

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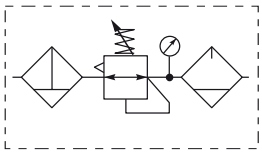
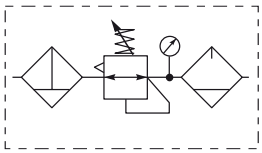
Popular Combinations



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.

Port size	Flow dm^3/s	(scfm)	Manual Drain	Weight	Pulse Drain	Weight
1/4"	13	27	**P31CB92GEMN5LNW**	0.46 kg (1.01 lbs)	**P31CB92GEBN5LNW**	0.46 kg (1.01 lbs)



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.

Port size	Flow dm^3/s	(scfm)	Manual Drain	Weight	Pulse Drain	Weight
1/4"	14	28	**P31CA92GEMN5LNW**	0.35 kg (0.77 lbs)	**P31CA92GEBN5LNW**	0.35 kg (0.77 lbs)

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

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**

Port size

1/4	**2**

Combination type*

F/R+L	**A**	F+Fc+Fa	**G**
F+R+L	**B**	F/R+Fc	**M**
F+Fc	**F**	F+Fc1+Fc	**Q**

* Combination type
F = 5µ
Fc1 = 1µ
Fc = .01µ
Fa = Adsorber

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.

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

Element

5µ Element	**E**
0.01µ Element	**C**
1µ Element	**9**
Adsorber	**A**

Drain type

Manual drain	**M**
Pulse drain	**B**

Regulator coding
(use with combo code: B)

Relief / Adjustment

Non-rising knob	**N**

Adjustment range

With square gauge	
psig	**bar**
30* = **1**	2* = **V**
60 = **3**	4 = **S**
125 = **5**	8 = **T**
Without gauge†	
psig	**bar**
30 = **Y**	2 = **Y**
60 = **L**	4 = **L**
125 = **N**	8 = **N**

* Unit comes with 0-4 bar or 0-60 psig gauge respectively.
† Order round gauges separately - see page 31.

Lubricator coding
(use with combo codes: A B)

Lub type

Oil mist standard sight dome	**L**

Drain type

No drain; closed end	**N**

Assembly configuration

Mounting

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

* For 3/8" Port Blocks please order separately. See Kits section.

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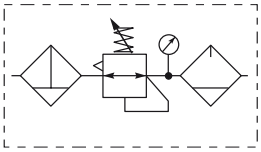
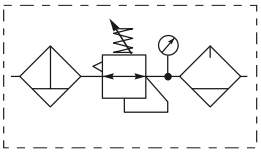
Popular Combinations



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.

Port size	Flow dm³/s	(scfm)	Manual Drain	Weight	Auto Drain	Weight
1/4"	20	42	**P32CB92GEMNGLNW**	1.29 kg (2.84 lbs)	**P32CB92GEANGLNW**	1.29 kg (2.84 lbs)
3/8"	32	68	**P32CB93GEMNGLNW**	1.29 kg (2.84 lbs)	**P32CB93GEANGLNW**	1.29 kg (2.84 lbs)
1/2"	40	85	**P32CB94GEMNGLNW**	1.29 kg (2.84 lbs)	**P32CB94GEANGLNW**	1.29 kg (2.84 lbs)



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.

Port size	Flow dm³/s	(scfm)	Manual Drain	Weight	Auto Drain	Weight
1/4"	22	45	**P32CA92GEMNGLNW**	1.03 kg (2.27 lbs)	**P32CA92GEANGLNW**	1.03 kg (2.27 lbs)
3/8"	33	70	**P32CA93GEMNGLNW**	1.03 kg (2.27 lbs)	**P32CA93GEANGLNW**	1.03 kg (2.27 lbs)
1/2"	43	90	**P32CA94GEMNGLNW**	1.03 kg (2.27 lbs)	**P32CA94GEANGLNW**	1.03 kg (2.27 lbs)

P 3 2 [ ] [ ] [ ] [ ] [ ]

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

Port size

1/4	2
3/8	3
1/2	4

Combination type*

F/R+L	A	F+Fc+Fa	G
F+R+L	B	F/R+Fc	M
F+Fc	F	F+Fc1+Fc	Q

* Combination type
F = 5µ
Fc1 = 1µ
Fc = .01µ
Fa = Adsorber

Bowl type

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

* Not available when using lubricator.
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.

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

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

Element

0.01µ Element	C
0.01µ Element with dpi	D*
5µ Element	E
5µ Element with dpi	F*
1µ Element	9
1µ Element with dpi	Q*
Adsorber	A

* Not available with F/R.

Drain type

Auto drain	A
Manual drain	M

Regulator coding
(use with combo code: B)

Relief / Adjustment

Non-rising knob relieving	N

Adjustment range

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*

* Not available with poly bowl with bowl guard.

Lubricator coding
(use with combo codes: A B)

Lub type

Oil mist standard sight dome	L

Drain type

No drain; closed end	N

Assembly configuration

Mounting

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

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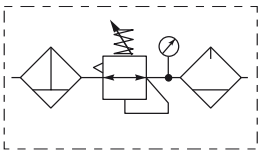
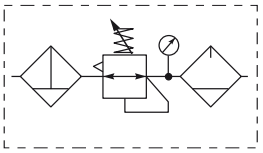
Popular Combinations



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.

Port size	Flow dm³/s	Flow (scfm)	Manual Drain	Weight	Auto Drain	Weight
1/2"	43	90	**P33CB94GEMNGLNW**	1.84 kg (4.06 lbs)	**P33CB94GEANGLNW**	1.84 kg (4.06 lbs)
3/4"	52	110	**P33CB96GEMNGLNW**	1.84 kg (4.06 lbs)	**P33CB96GEANGLNW**	1.84 kg (4.06 lbs)



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.

Port size	Flow dm³/s	Flow (scfm)	Manual Drain	Weight	Auto Drain	Weight
1/2"	52	110	**P33CA94GEMNGLNW**	1.51 kg (3.33 lbs)	**P33CA94GEANGLNW**	1.51 kg (3.33 lbs)
3/4"	71	150	**P33CA96GEMNGLNW**	1.51 kg (3.33 lbs)	**P33CA96GEANGLNW**	1.51 kg (3.33 lbs)

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

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

Regulator coding (use with combo code: B)

Lubricator coding (use with combo codes: A B)

Assembly configuration

P 3 3 [ ] [ ] [ ] [ ] [ ]

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

Port size	
1/2	4
3/4	6

Combination type*			
F/R+L	A	F+Fc+Fa	G
F+R+L	B	F/R+Fc	M
F+Fc	F	F+Fc1+Fc	Q

* Combination type
F = 5µ
Fc1 = 1µ
Fc = .01µ
Fa = Adsorber

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

* Not available when using lubricator.
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.

[ ] [ ]

Element	
0.01µ Element	C
0.01µ Element with dpi	D*
5µ Element	E
5µ Element with dpi	F*
1µ Element	9
1µ Element with dpi	Q*
Adsorber	A

* Not available with F/R.

Drain type	
Auto drain	A
Manual drain	M

[ ] [ ]

Relief / Adjustment	
Non-rising knob relieving	N

Adjustment range	
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*

* Not available with poly bowl with bowl guard.

[ ] [ ]

Lub type	
Oil mist standard sight dome	L

Drain type	
No drain; closed end	N

[ ]

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

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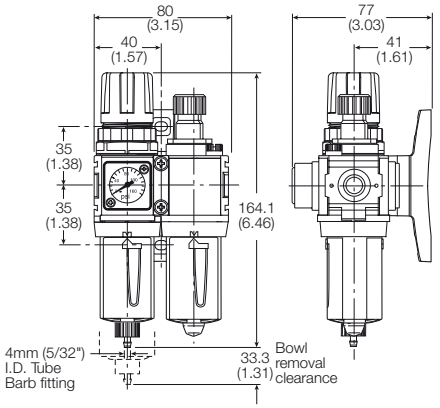
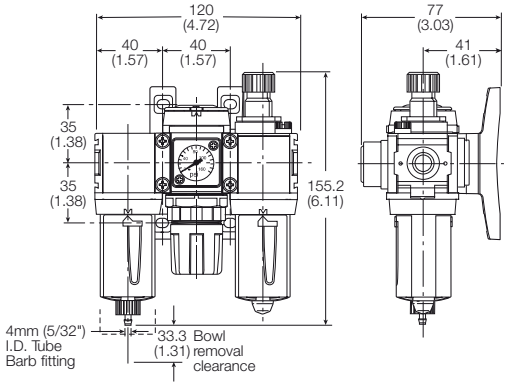
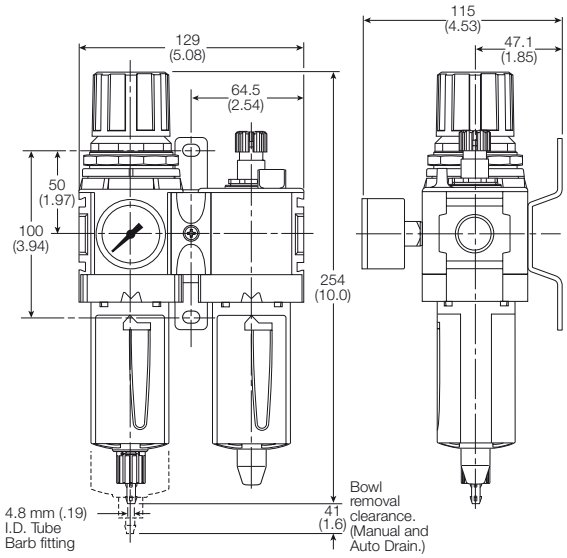
Popular Combination Dimensions mm (inches)

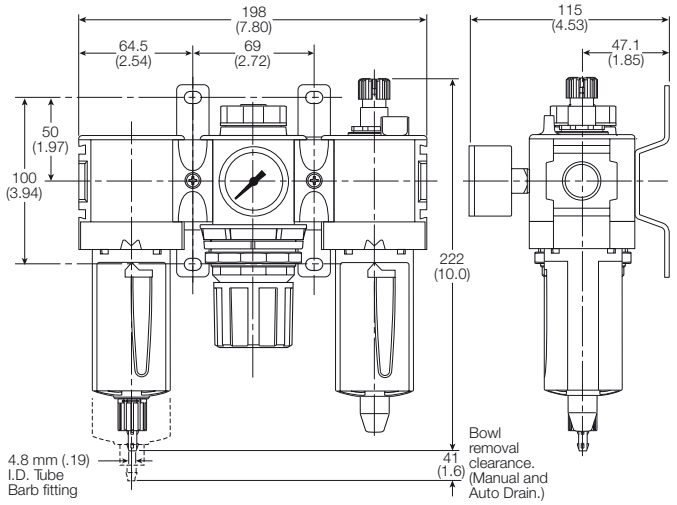
P31C



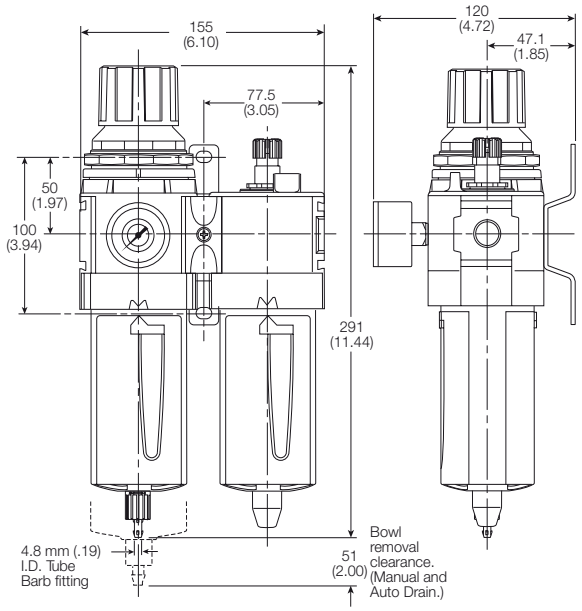


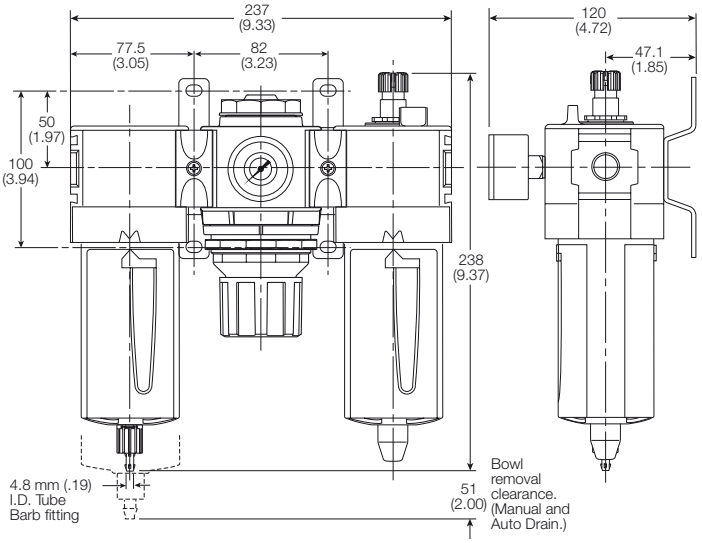
P32C





P33C





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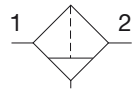
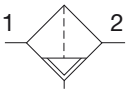
Mini Particulate Filter - P31

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:

P 3 1 F ***** ☐ ☐ **E** ☐ ☐ ☐ **N**

Engr. level
* Will be entered at factory

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

Port size	
1/4	**2**

Element	
5µ Element	**E**

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

Drain type	
Pulse drain	**B**
Manual drain	**M**

Mounting	
No bracket	**N**

*** Engineering Level will be entered at factory.**

Port size	Description	Order Code†	Flow‡ dm^3/s (scfm)	Max. bar (psig)	Height mm (inches)	Width mm (inches)	Depth mm (inches)
1/4"	Poly bowl - Manual drain	**P31F*92EGMN**	12 (25)	10 (150)	116.3 (4.58)	40 (1.58)	42.7 (1.68)
1/4"	Poly bowl - Pulse drain	**P31F*92EGBN**	12 (25)	10 (150)	116.3 (4.58)	40 (1.58)	42.7 (1.68)
1/4"	Metal bowl - Manual drain	**P31F*92EMMN**	12 (25)	17 (250)	116.3 (4.58)	40 (1.58)	42.7 (1.68)
1/4"	Metal bowl - Pulse drain	**P31F*92EMBN**	12 (25)	17 (250)	116.3 (4.58)	40 (1.58)	42.7 (1.68)

† **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 (4.9 psig) pressure drop.

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Specifications

Flow Capacity*	1/4	12 dm^3/s (25 scfm)
Operating Temperature	Plastic Bowl	-10°C to 52°C (14°F to 125°F)
	Metal Bowl	-10°C to 65.5°C (14°F to 150°F)
Max. Supply Pressure	Plastic Bowl	10 bar (150 psig)
	Metal Bowl	17 bar (250 psig)
Standard Filtration		5 Micron
Useful Retention†		12 cm^3 (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 0.34 bar (4.9 psig).
† Useful retention refers to volume below the quiet zone baffle.

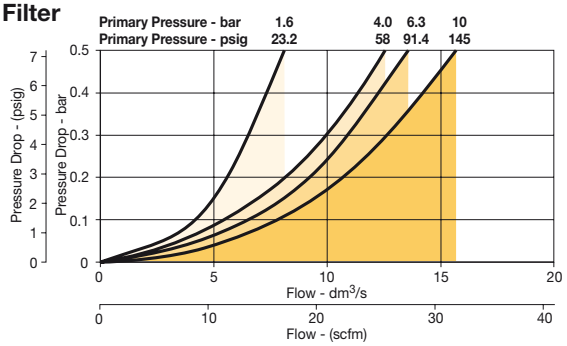
Air quality:
Within ISO 8573-1: 1991 Class 3 (Particulates)
Within ISO 8573-1: 2001 Class 6 (Particulates)

Materials of Construction

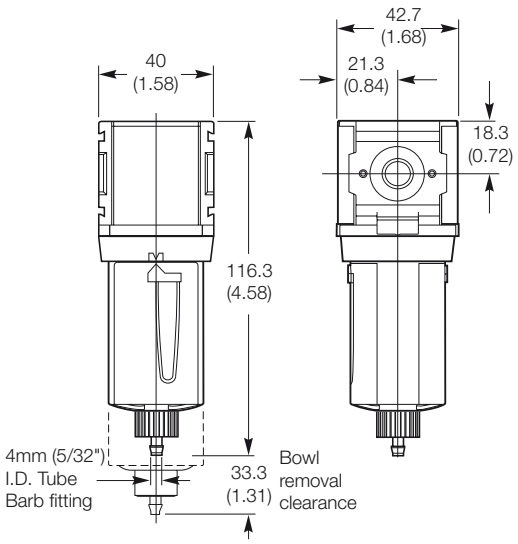
Body	Aluminum
Body Cap	ABS
Bowl	Polycarbonate
Bowl Guard	Nylon
Element Retainer	Acetal
Baffle	Acetal
Filter Element	Sintered Polyethylene
Seals	Nitrile

Flow Charts

1/4 Filter



Dimensions mm (inches)



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**

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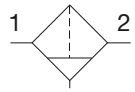
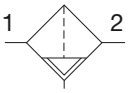
Compact Particulate Filter - P32

Symbols



Manual drain



Auto drain

- Integral 1/4", 3/8" or 1/2" 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

Options:

P 3 2 F ***** ☐ ☐ **E** ☐ ☐ **N**

Engr. level
* Will be entered at factory

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

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

Element	
5µ Element	**E**

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

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

Mounting	
No bracket	**N**

*** Engineering Level will be entered at factory.**

Port size	Description	Order Code†	Flow‡ dm^3/s (scfm)	Max. bar (psig)	Height mm (inches)	Width mm (inches)	Depth mm (inches)
1/4"	Poly bowl - Manual drain	**P32F*92EGMN**	18 (38)	10 (150)	188 (7.4)	60 (2.36)	60 (2.36)
1/4"	Poly bowl - Auto drain	**P32F*92EG*N**	18 (38)	10 (150)	182 (7.2)	60 (2.36)	60 (2.36)
1/4"	Metal bowl - Manual drain	**P32F*92ESMN**	18 (38)	17 (250)	188 (7.4)	60 (2.36)	60 (2.36)
1/4"	Metal bowl - Auto drain	**P32F*92ES*N**	18 (38)	17 (250)	182 (7.2)	60 (2.36)	60 (2.36)
3/8"	Poly bowl - Manual drain	**P32F*93EGMN**	30 (64)	10 (150)	188 (7.4)	60 (2.36)	60 (2.36)
3/8"	Poly bowl - Auto drain	**P32F*93EG*N**	30 (64)	10 (150)	182 (7.2)	60 (2.36)	60 (2.36)
3/8"	Metal bowl - Manual drain	**P32F*93ESMN**	30 (64)	17 (250)	188 (7.4)	60 (2.36)	60 (2.36)
3/8"	Metal bowl - Auto drain	**P32F*93ES*N**	30 (64)	17 (250)	182 (7.2)	60 (2.36)	60 (2.36)
1/2"	Poly bowl - Manual drain	**P32F*94EGMN**	38 (80)	10 (150)	188 (7.4)	60 (2.36)	60 (2.36)
1/2"	Poly bowl - Auto drain	**P32F*94EG*N**	38 (80)	10 (150)	182 (7.2)	60 (2.36)	60 (2.36)
1/2"	Metal bowl - Manual drain	**P32F*94ESMN**	38 (80)	17 (250)	188 (7.4)	60 (2.36)	60 (2.36)
1/2"	Metal bowl - Auto drain	**P32F*94ES*N**	38 (80)	17 (250)	182 (7.2)	60 (2.36)	60 (2.36)

† **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 (4.9 psig) pressure drop.

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Specifications

Flow Capacity*	1/4	18 dm³/s (38 scfm)
	3/8	30 dm³/s (64 scfm)
	1/2	38 dm³/s (80 scfm)
Operating Temperature	Plastic Bowl	-25°C to 52°C (-13°F to 125°F)
	Metal Bowl	-25°C to 65.5°C (-13°F to 150°F)
Max. Supply Pressure	Plastic Bowl	10 bar (150 psig)
	Metal Bowl	17 bar (250 psig)
Standard Filtration		5 Micron
Useful Retention†		51 cm³ (1.7 US oz.)
Port Size	BSPP / BSPT / NPT	1/4, 3/8, 1/2
Weight		0.28 kg (0.62 lbs)

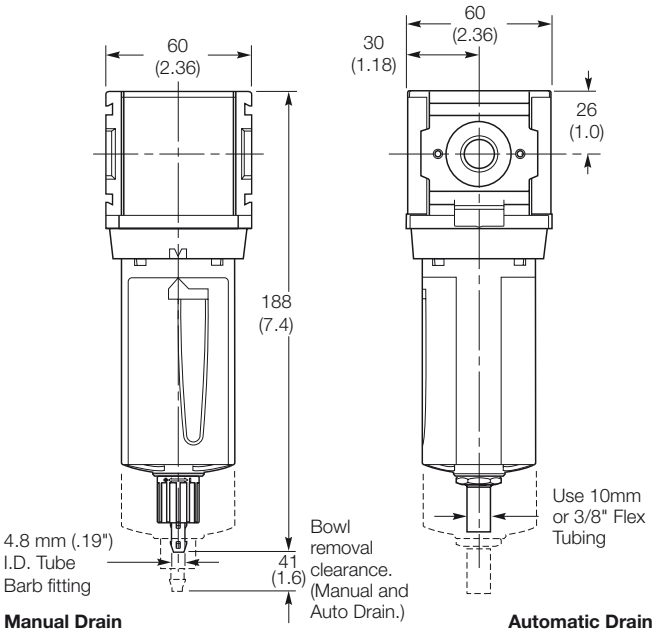
* Inlet pressure 6.3 bar (91.3 psig). Pressure drop 0.34 bar (4.9 psig).
† Useful retention refers to volume below the quiet zone baffle.

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

Materials of Construction

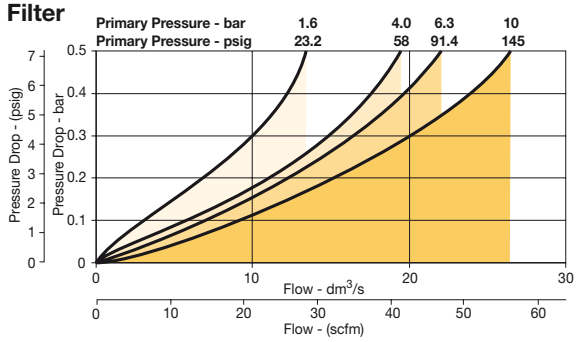
Body		Aluminum
Body Cap		ABS
Bowls	Plastic Bowl	Polycarbonate
	Metal Bowl	Aluminum
Bowl Guard		Nylon
Deflector		Polypropylene
Element Retainer / Baffle		Acetal
Filter Element		Sintered Polyethylene
Seals		Nitrile
Sight Gauge	Metal Bowl	Polycarbonate

Dimensions mm (inches)

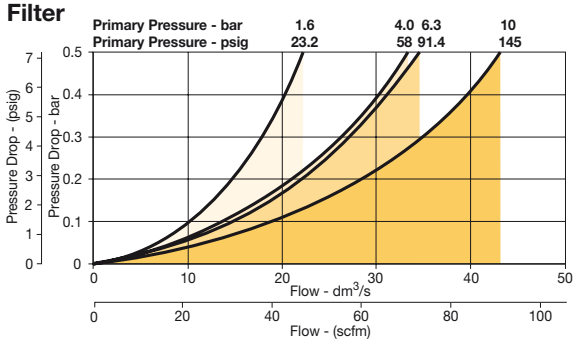


Flow Charts

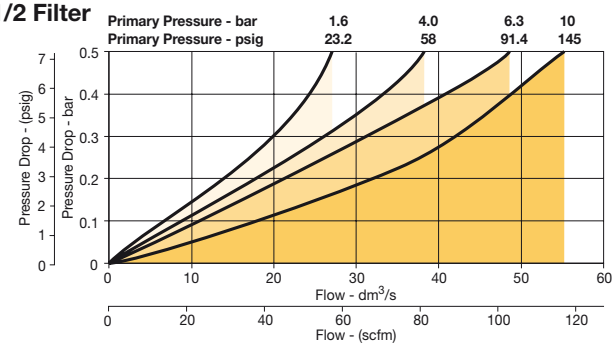
1/4 Filter



3/8 Filter



1/2 Filter



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**

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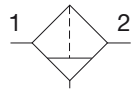
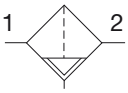
Standard Particulate Filter - P33

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

Options:

P 3 3 F ***** ☐ ☐ **E** ☐ ☐ **N**

Engr. level
* Will be entered at factory

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

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

Element	
5µ Element	**E**

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

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

Mounting	
No bracket	**N**

*** Engineering Level will be entered at factory.**

Port size	Description	Order Code†	Flow‡ dm^3/s (scfm)	Max. bar (psig)	Height mm (inches)	Width mm (inches)	Depth mm (inches)
1/2"	Poly bowl - Manual drain	**P33F*94EGMN**	40 (85)	10 (150)	213 (8.4)	73 (2.9)	73 (2.9)
1/2"	Poly bowl - Auto drain	**P33F*94EG*N**	40 (85)	10 (150)	207 (8.2)	73 (2.9)	73 (2.9)
1/2"	Metal bowl - Manual drain	**P33F*94ESMN**	40 (85)	17 (250)	213 (8.4)	73 (2.9)	73 (2.9)
1/2"	Metal bowl - Auto drain	**P33F*94ES*N**	40 (85)	17 (250)	207 (8.2)	73 (2.9)	73 (2.9)
3/4"	Poly bowl - Manual drain	**P33F*96EGMN**	48 (102)	10 (150)	213 (8.4)	73 (2.9)	73 (2.9)
3/4"	Poly bowl - Auto drain	**P33F*96EG*N**	48 (102)	10 (150)	207 (8.2)	73 (2.9)	73 (2.9)
3/4"	Metal bowl - Manual drain	**P33F*96ESMN**	48 (102)	17 (250)	213 (8.4)	73 (2.9)	73 (2.9)
3/4"	Metal bowl - Auto drain	**P33F*96ES*N**	48 (102)	17 (250)	207 (8.2)	73 (2.9)	73 (2.9)

† **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 (4.9 psig) pressure drop.

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Specifications

Flow Capacity*	1/2	40 dm³/s (85 scfm)
	3/4	48 dm³/s (102 scfm)
Operating Temperature	Plastic Bowl	-25°C to 52°C (-13°F to 125°F)
	Metal Bowl	-25°C to 65.5°C (-13°F to 150°F)
Max. 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.)
Port Size	BSPP / BSPT / NPT	1/2, 3/4
Weight		0.46 kg (1.01 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.

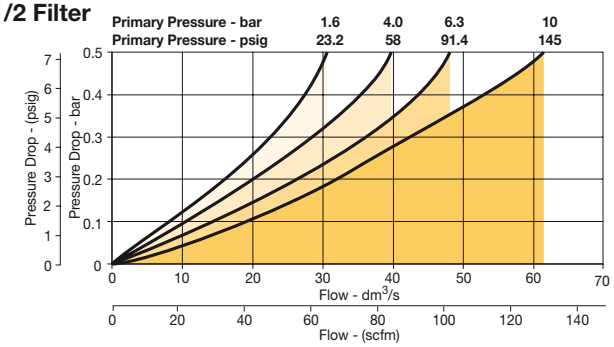
Air quality:
Within ISO 8573-1: 1991 Class 3 (Particulates)
Within ISO 8573-1: 2001 Class 6 (Particulates)

Materials of Construction

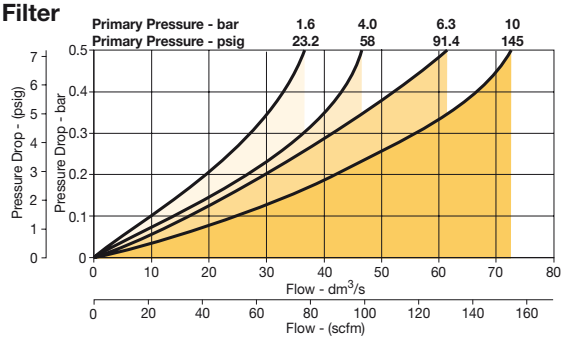
Body		Aluminum
Body Cap		ABS
Bowls	Plastic Bowl	Polycarbonate
	Metal Bowl	Aluminum
Bowl Guard		Nylon
Deflector		Polypropylene
Element Retainer / Baffle		Acetal
Filter Element		Sintered Polyethylene
Seals		Nitrile
Sight Gauge	Metal Bowl	Polycarbonate

Flow Charts

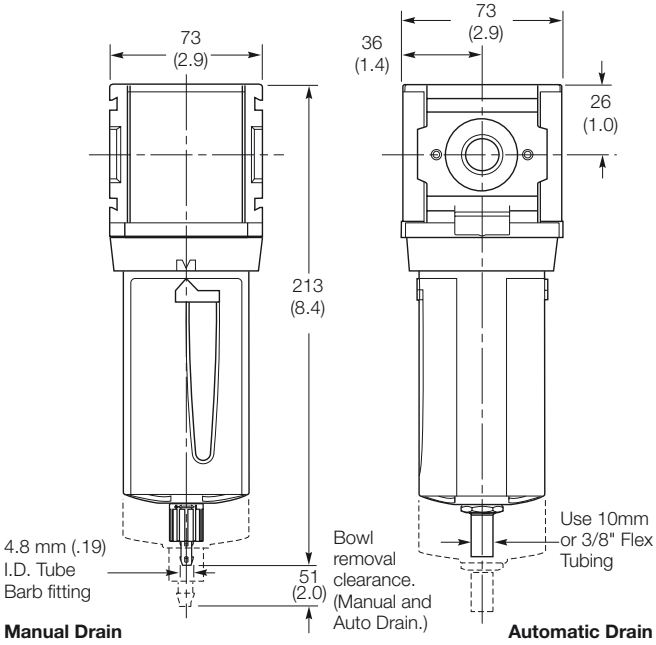
1/2 Filter



3/4 Filter



Dimensions mm (inches)



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**

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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:

P 3 1 F ***** **[ ]** **[ ]** **[ ]** **[ ]** **[ ]** **N**

Engr. level
* Will be entered at factory

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

Port size	
1/4	**2**

Element	
0.01µ Element	**C**
1µ Element	**9**
Adsorber	**A**

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

Drain type	
Pulse drain	**B**
Manual drain	**M**

Mounting	
No bracket	**N**

*** Engineering Level will be entered at factory.**

Port size	Description	Order Code†	Flow‡ dm^3/s (scfm)	Max. bar (psig)	Height mm (inches)	Width mm (inches)	Depth mm (inches)
1/4"	Poly bowl - 0.01 micron - Manual drain	**P31F*92CGMN**	2 (4.2)	10 (150)	116.3 (4.58)	40 (1.58)	42.7 (1.68)
1/4'	Poly bowl - 0.01 micron - Pulse drain	**P31F*92CGBN**	2 (4.2)	10 (150)	116.3 (4.58)	40 (1.58)	42.7 (1.68)
1/4"	Metal bowl - 0.01 micron - Manual drain	**P31F*92CMMN**	2 (4.2)	17 (250)	116.3 (4.58)	40 (1.58)	42.7 (1.68)
1/4'	Metal bowl - 0.01 micron - Pulse drain	**P31F*92CMBN**	2 (4.2)	17 (250)	116.3 (4.58)	40 (1.58)	42.7 (1.68)

† **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.

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Specifications

		dm³/s	SCFM
Flow Capacity			
1.0 Micron Coalescing	Energy Efficient Flow*	3.8	(8)
	Maximum Flow**	6	(13)
0.01 Micron Coalescing	Energy Efficient Flow*	2	(4.2)
	Maximum Flow**	3.8	(8)
Activated Carbon Adsorber	Rated Flow*	6	(13)

Operating Temperature	Plastic Bowl	-10°C to 52°C (14°F to 125°F)
	Metal Bowl	-10°C to 65.5°C (14°F to 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†		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.

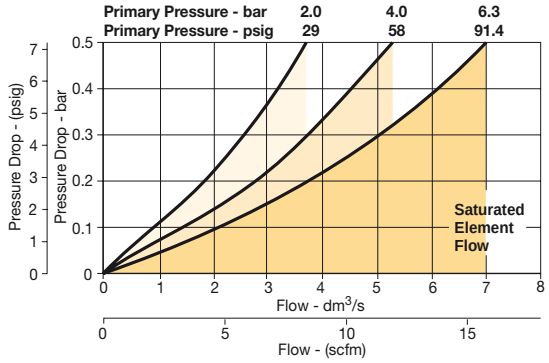
† Useful retention refers to volume below the quiet zone baffle.

Materials of Construction

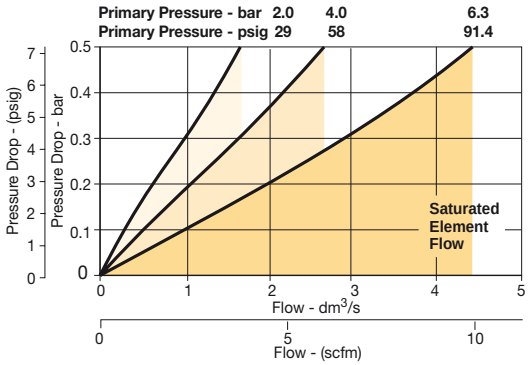
Body		Aluminum
Body Cap		ABS
Bowl	Plastic Bowl	Polycarbonate
	Metal Bowl	Aluminum
Filter Element	1.0 and .01 Micron	Borosilicate Cloth
Adsorber		Activated Carbon
Seals		Nitrile

Flow Charts

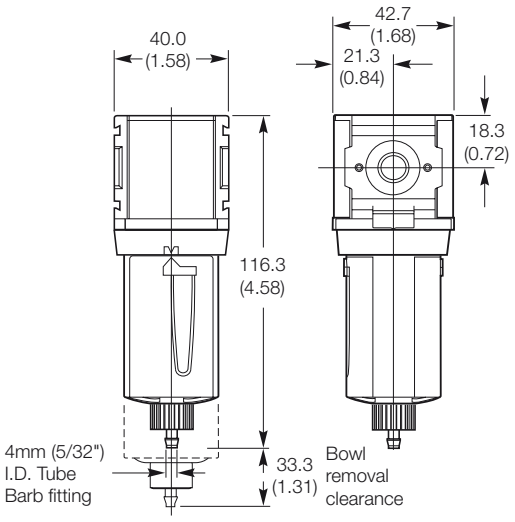
P31 - 1.0 micron flow



P31 - 0.01 micron flow



Dimensions mm (inches)



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**

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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:

P 3 2 F ***** **N**

Engr. level
* Will be entered at factory

Thread type	
BSPP	1
BSPT	2
NPT	9

Port size	
1/4	2
3/8	3
1/2	4

Element	
0.01µ Element	C
0.01µ Element with dpi	D
1µ Element	9
1µ Element with dpi	Q
Adsorber	A

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

Drain type	
Manual drain	M
Auto drain	A

Mounting	
No bracket	N

*** Engineering Level will be entered at factory.**

Port size	Description	Order Code†	Flow‡ dm^3/s (scfm)	Max. bar (psig)	Height mm (inches)	Width mm (inches)	Depth mm (inches)
1/4"	Poly bowl - 0.01 Micron, Manual drain	**P32F*92DGMN**	11 (23)	10 (150)	209 (8.2)	60 (2.36)	60 (2.36)
1/4"	Poly bowl - 0.01 Micron, Auto drain	**P32F*92DGAN**	11 (23)	10 (150)	203 (8.0)	60 (2.36)	60 (2.36)
1/4"	Metal bowl - 0.01 Micron, Manual drain	**P32F*92DSMN**	11 (23)	17 (250)	209 (8.2)	60 (2.36)	60 (2.36)
1/4"	Metal bowl - 0.01 Micron, Auto drain	**P32F*92DSAN**	11 (23)	17 (250)	203 (8.0)	60 (2.36)	60 (2.36)
3/8"	Poly bowl - 0.01 Micron, Manual drain	**P32F*93DGMN**	11 (23)	10 (150)	209 (8.2)	60 (2.36)	60 (2.36)
3/8"	Poly bowl - 0.01 Micron, Auto drain	**P32F*93DGAN**	11 (23)	10 (150)	203 (8.0)	60 (2.36)	60 (2.36)
3/8"	Metal bowl - 0.01 Micron, Manual drain	**P32F*93DSMN**	11 (23)	17 (250)	209 (8.2)	60 (2.36)	60 (2.36)
3/8'	Metal bowl - 0.01 Micron, Auto drain	**P32F*93DSAN**	11 (23)	17 (250)	203 (8.0)	60 (2.36)	60 (2.36)
1/2"	Poly bowl - 0.01 Micron, Manual drain	**P32F*94DGMN**	11 (23)	10 (150)	209 (8.2)	60 (2.36)	60 (2.36)
1/2"	Poly bowl - 0.01 Micron, Auto drain	**P32F*94DGAN**	11 (23)	10 (150)	203 (8.0)	60 (2.36)	60 (2.36)
1/2"	Metal bowl - 0.01 Micron, Manual drain	**P32F*94DSMN**	11 (23)	17 (250)	209 (8.2)	60 (2.36)	60 (2.36)
1/2"	Metal bowl - 0.01 Micron, Auto drain	**P32F*94DSAN**	11 (23)	17 (250)	203 (8.0)	60 (2.36)	60 (2.36)

† **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.

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Specifications

		dm³/s	SCFM
Flow Capacity			
1.0 Micron Coalescing	Energy Efficient Flow*	17	(36)
	Maximum Flow**	27	(57)
0.01 Micron Coalescing	Energy Efficient Flow*	11	(23)
	Maximum Flow**	28	(38)
Activated Carbon Adsorber	Rated Flow*	27	(57)
Operating Temperature	Plastic Bowl	-25°C to 52°C (-13°F to 125°F)	
	Metal Bowl	-25°C to 65.5°C (-13°F to 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†		51 cm³ (1.7 US oz.)	
Port Size	BSPP / BSPT / NPT	1/4, 3/8, 1/2	
Weight		0.32 kg (0.71 lbs)	

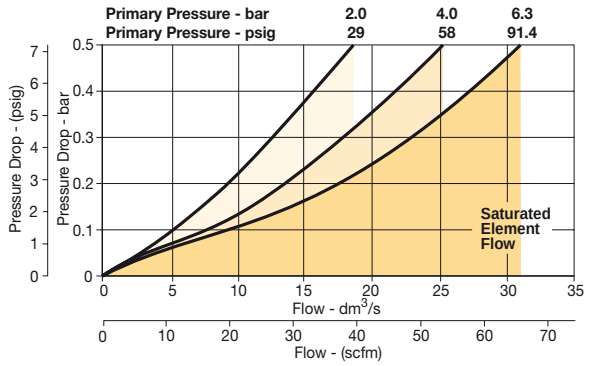
* Inlet pressure 6.3 bar (91.3 psig), Pressure drop 0.2 bar (3 psig), Saturated Element.

** Inlet pressure 6.3 bar (91.3 psig), Pressure drop 0.4 bar (6 psig), Saturated Element.

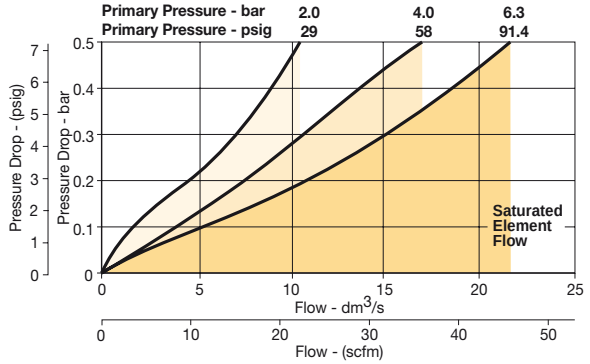
† Useful retention refers to volume below the quiet zone baffle.

Flow Charts

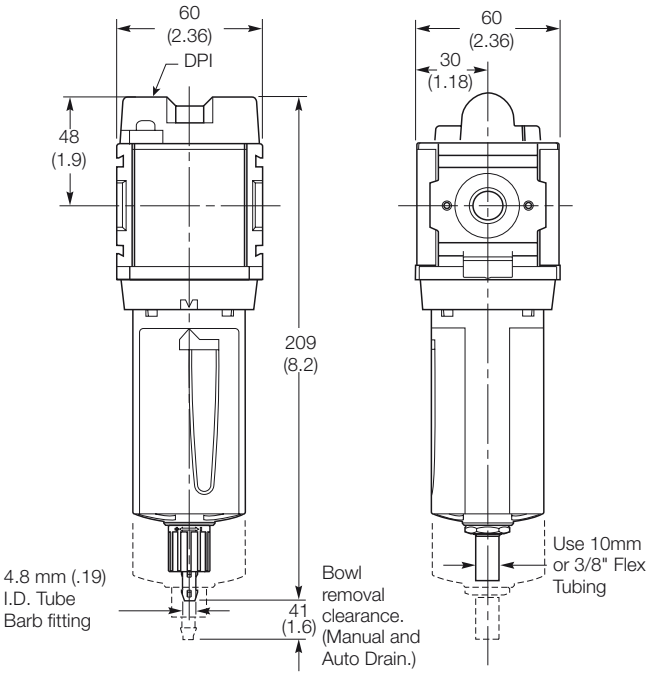
P32 - 1.0 micron flow



P32 - 0.01 micron flow



Dimensions mm (inches)



Manual Drain **Automatic Drain**

Materials of Construction

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

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**

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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:

P 3 3 F ***** ☐ ☐ ☐ ☐ ☐ **N**

Engr. level
* Will be entered at factory

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

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

Element	
0.01µ Element	**C**
0.01µ Element with dpi	**D**
1µ Element	**9**
1µ Element with dpi	**Q**
Adsorber	**A**

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

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

Mounting	
No bracket	**N**

*** Engineering Level will be entered at factory.**

Port size	Description	Order Code†	Flow‡ dm^3/s (scfm)	Max. bar (psig)	Height mm (inches)	Width mm (inches)	Depth mm (inches)
1/2"	Poly bowl - 0.01 Micron, Manual drain	**P33F*94DGMN**	20 (42)	10 (150)	235 (9.3)	73 (2.9)	73 (2.9)
1/2"	Poly bowl - 0.01 Micron, Auto drain	**P33F*94DGAN**	20 (42)	10 (150)	229 (9.0)	73 (2.9)	73 (2.9)
1/2"	Metal bowl - 0.01 Micron, Manual drain	**P33F*94DSMN**	20 (42)	17 (250)	235 (9.3)	73 (2.9)	73 (2.9)
1/2"	Metal bowl - 0.01 Micron, Auto drain	**P33F*94DSAN**	20 (42)	17 (250)	229 (9.0)	73 (2.9)	73 (2.9)
3/4"	Poly bowl - 0.01 Micron, Manual drain	**P33F*96DGMN**	20 (42)	10 (150)	235 (9.3)	73 (2.9)	73 (2.9)
3/4"	Poly bowl - 0.01 Micron, Auto drain	**P33F*96DGAN**	20 (42)	10 (150)	229 (9.0)	73 (2.9)	73 (2.9)
3/4"	Metal bowl - 0.01 Micron, Manual drain	**P33F*96DSMN**	20 (42)	17 (250)	235 (9.3)	73 (2.9)	73 (2.9)
3/4"	Metal bowl - 0.01 Micron, Auto drain	**P33F*96DSAN**	20 (42)	17 (250)	229 (9.0)	73 (2.9)	73 (2.9)

† **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.

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Specifications

		dm³/s	SCFM
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)
Operating Temperature	Plastic Bowl	-25°C to 52°C (-13°F to 125°F)	
	Metal Bowl	-25°C to 65.5°C (-13°F to 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)	

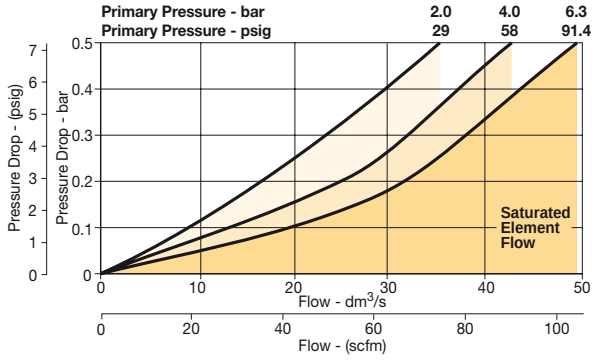
* Inlet pressure 6.3 bar (91.3 psig), Pressure drop 0.2 bar (3 psig), Saturated Element.

** Inlet pressure 6.3 bar (91.3 psig), Pressure drop 0.4 bar (6 psig), Saturated Element.

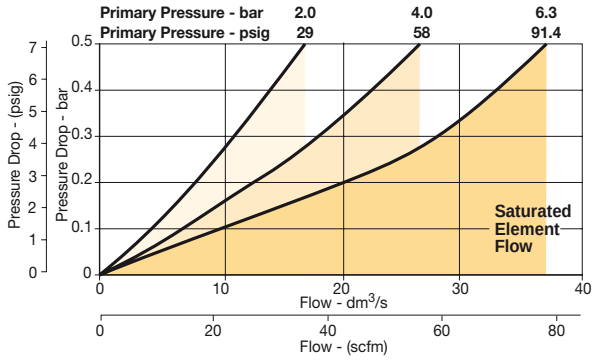
† Useful retention refers to volume below the quiet zone baffle.

Flow Charts

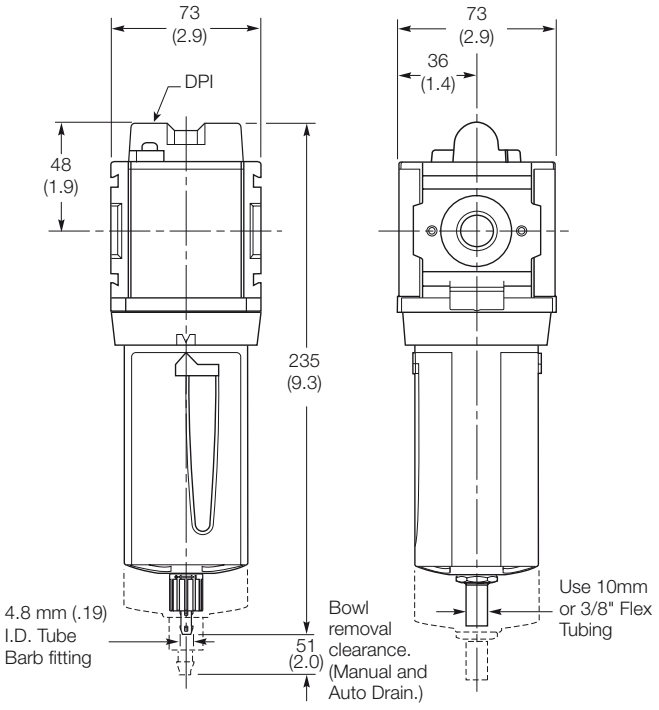
P33 - 1.0 micron flow



P33 - 0.01 micron flow



Dimensions mm (inches)



Manual Drain **Automatic Drain**

Materials of Construction

Body		Aluminum
Body Cap		ABS
Bowls	Plastic Bowl	Polycarbonate
	Metal Bowl	Aluminum
Filter Element	1.0 and .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**

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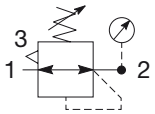
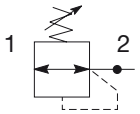
Mini Regulator - P31

Symbols



Self relieving regulator with gauge



Non relieving regulator

- 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:

P 3 1 R [*] [ ] [ ] [ ] [N] [ ] [P]

Engr. level
* Will be entered at factory

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

Port size	
1/4	**2**

Relief	
Relieving	**B**
Non relieving	**N**
Reverse flow / relieving	**R**

Adjustment range	
With square gauge	
psig	**bar**
30* = **1**	2* = **V**
60 = **3**	4 = **S**
125 = **5**	8 = **T**
Without gauge†	
psig	**bar**
30 = **Y**	2 = **Y**
60 = **L**	4 = **L**
125 = **N**	8 = **N**

Mounting	
Plastic panel mount nut	**P**

* Unit comes with 0-4 bar or 0-60 psig gauge respectively.
† Order round gauges separately - see next page.

*** Engineering Level will be entered at factory.**

Port size	Description	Order Code†	Flow‡ dm^3/s (scfm)	Max. bar (psig)	Height mm (inches)	Width mm (inches)	Depth mm (inches)
1/4"	8 bar (125 psig) relieving	**P31R*92BNNP**	30 (64)	20 (300)	100.1 (3.94)	40 (1.58)	40 (1.58)
1/4"	8 bar (125 psig) + gauge	**P31R*92BN5P**	30 (64)	20 (300)	100.1 (3.94)	40 (1.58)	64.3 (2.53)

† **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) psig) set pressure and 1 bar (14.5 psig) pressure drop.

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Specifications

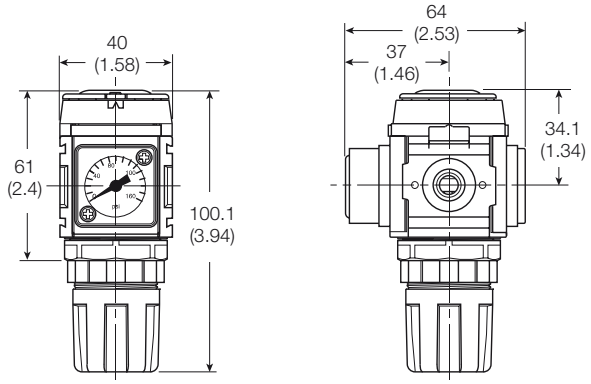
Flow Capacity*	1/4	30 dm³/s (64 scfm)
Operating Temperature†		-20°C to 65.5°C (-4°F to 150°F)
Max. Supply Pressure		20 bar (300 psig)
Adjusting Range Pressure		0-2 bar (30 psig) 0-4 bar (60 psig) 0-8 bar (125 psig)
Port Size	BSPP / BSPT / NPT	1/4
Gauge Port (2 ea.)**	BSPP / BSPT / NPT	1/8
Weight		0.17 kg (0.37 lbs)

* Inlet pressure 10 bar (145 psig). Secondary pressure 6.3 bar (91.3 psig).
** Non-gauge option only.
† Units with square gauges: -15°C to 65.5°C (5°F to 150°F)

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 mm (inches)



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

⚠ WARNING

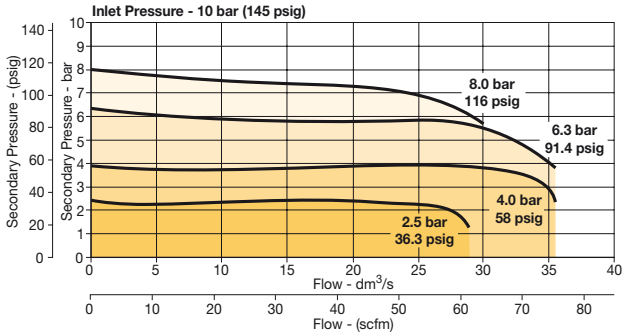
Product rupture can cause serious injury.
Do not connect regulator to bottled gas.
Do not exceed Maximum primary pressure rating.

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



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

0-4 bar	**K4511SCR04B**
0-10 bar	**K4511SCR11B**
0-60 psig	**K4511SCR060**
0-150 psig	**K4511SCR150**

1.00" Round 1/8" center back mount

0-60 psig / 0-4 bar	**K4510N18060**
0-160 psig / 0-11 bar	**K4510N18160**

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

0-30 psig / 0-2 bar	**K4515N18030**
0-60 psig / 0-4 bar	**K4515N18060**
0-160 psig / 0-11 bar	**K4515N18160**

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

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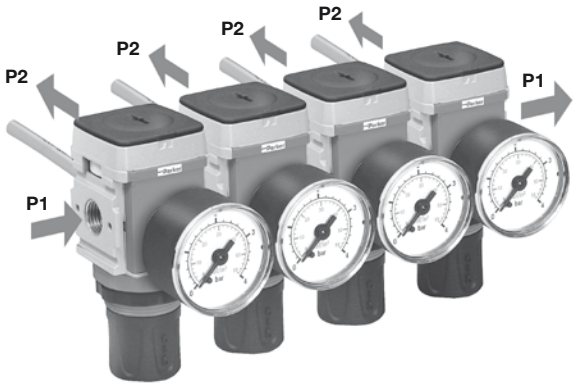
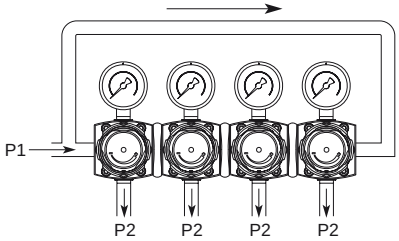
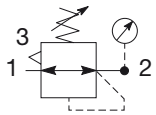
Mini Common - P1 Regulator - P31

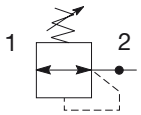




Symbols



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:

P 3 1 H | * | | | | N | | P

Engr. level
* Will be entered at factory

Thread type	
BSPP	1
BSPT	2
NPT	9

Port size	
1/4	2

Relief	
Relieving	B
Non relieving	N

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

Order gauges separately - see next page.

Mounting	
Plastic panel mount nut	P

*** Engineering Level will be entered at factory.**

Port size	Description	Order Code†	Flow‡ dm^3/s (scfm)	Max. bar (psig)	Height mm (inches)	Width mm (inches)	Depth mm (inches)
1/4"	8 bar (125 psig) Relieving	**P31H*92BNNP**	18 (38)	20 (300)	100.1 (3.94)	40 (1.58)	40 (1.58)

† **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) psig) set pressure and 1 bar (14.5 psig) pressure drop.

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Global Air Preparation System

Specifications

Flow Capacity*	1/4	18 dm^3/s (38 scfm)
Operating Temperature		-20°C to 65.5°C (-4°F to 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)

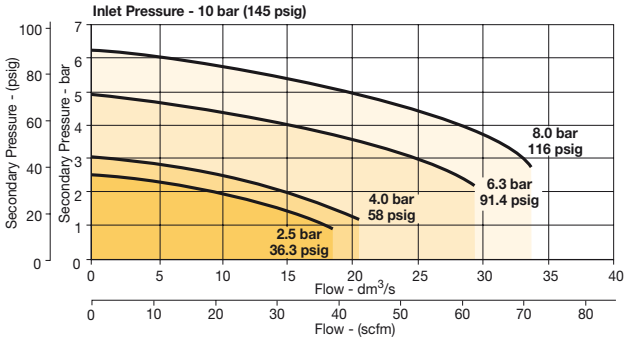
* Inlet pressure 10 bar (145 psig). Secondary pressure 6.3 bar (91.3 psig).

Materials of Construction

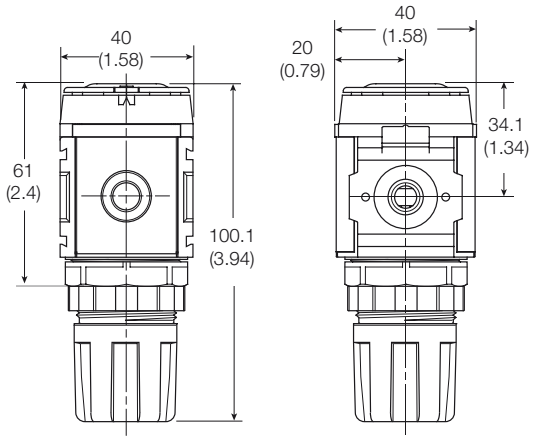
Body	Zinc
Adjustment Knob	Acetal
Body Cap	ABS
Bonnet	33% Glass-filled PBT
Diaphragm Assembly	Brass / Nitrile
Bottom Plug	33% Glass-filled Nylon
Valve Assembly	Brass / Nitrile

Flow Charts

1/4 Common Regulator



Dimensions mm (inches)



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.

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**
T-Bracket with body connector	**P31KA00MT**
Body connector	**P31KA00CB**

Gauges

1.00" Round 1/8" center back mount	
0-60 psig / 0-4 bar	**K4510N18060**
0-160 psig / 0-11 bar	**K4510N18160**

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

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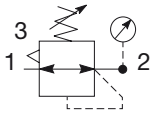
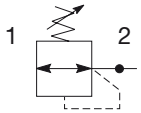
Compact Regulator – P32

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:

P 3 2 R [*] [ ] [ ] [ ] **N** [ ] **P**

Engr. level
* Will be entered at factory

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

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

Relief	
Relieving	**B**
Non relieving	**N**
Reverse flow / relieving	**R**

Adjustment range	
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**

Mounting	
Plastic panel mount nut	**P**

*** Engineering Level will be entered at factory.**

Port size	Description	Order Code†	Flow‡ dm^3/s (scfm)	Max. bar (psig)	Height mm (inches)	Width mm (inches)	Depth mm (inches)
1/4"	8 bar (125 psig) Relieving	**P32R*92BNNP**	41 (81)	20 (300)	136 (5.4)	60 (2.36)	60 (2.36)
1/4"	8 bar (125 psig) Relieving + Gauge	**P32R*92BNGP**	41 (81)	20 (300)	136 (5.4)	60 (2.36)	60 (2.36)
3/8"	8 bar (125 psig) Relieving	**P32R*93BNNP**	65 (138)	20 (300)	136 (5.4)	60 (2.36)	60 (2.36)
3/8"	8 bar (125 psig) Relieving + Gauge	**P32R*93BNGP**	65 (138)	20 (300)	136 (5.4)	60 (2.36)	60 (2.36)
1/2"	8 bar (125 psig) Relieving	**P32R*94BNNP**	67 (142)	20 (300)	136 (5.4)	60 (2.36)	60 (2.36)
1/2"	8 bar (125 psig) Relieving + Gauge	**P32R*94BNGP**	67 (142)	20 (300)	136 (5.4)	60 (2.36)	60 (2.36)

† **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) psig) set pressure and 1 bar (14.5 psig) pressure drop.

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Global Air Preparation System

Specifications

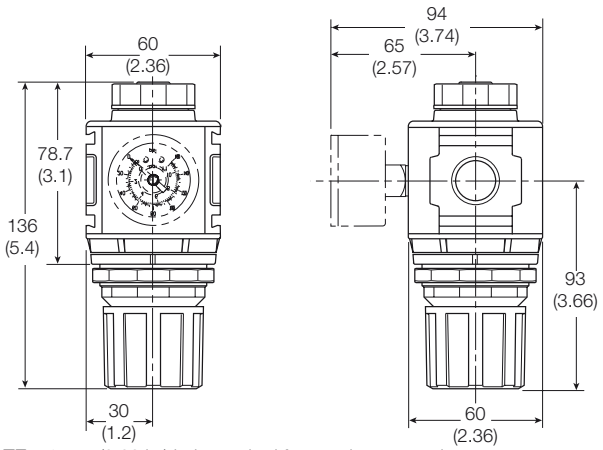
Flow Capacity*	1/4	41 dm^3/s (81 scfm)
	3/8	65 dm^3/s (138 scfm)
	1/2	67 dm^3/s (142 scfm)
Operating Temperature		-25°C to 65.5°C (-13°F to 150°F)
Max. Supply Pressure		20 bar (300 psig)
Adjusting Range Pressure		0-2 bar (30 psig) 0-4 bar (60 psig) 0-8 bar (125 psig) 0-17 bar (250 psig)
Port Size	BSPP / 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 mm (inches)



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

⚠ WARNING

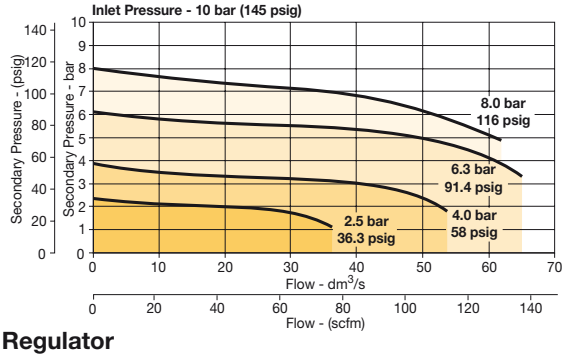
Product rupture can cause serious injury.
Do not connect regulator to bottled gas.
Do not exceed Maximum primary pressure rating.

CAUTION:

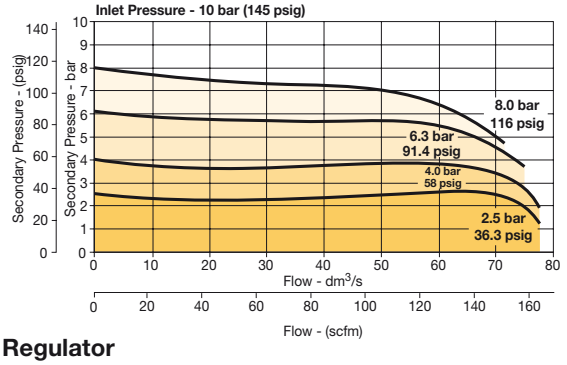
REGULATOR PRESSURE ADJUSTMENT – The working range of knob adjustment is designed to permit outlet pressures within their full range. Pressure adjustment beyond this range is also possible because the knob is not a limiting device. This is a common characteristic of most industrial regulators, and limiting 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.

Flow Charts

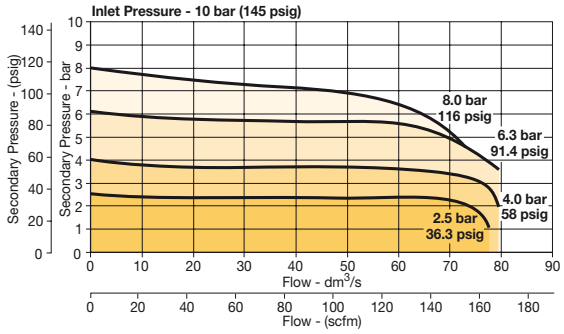
1/4 Regulator



3/8 Regulator



1/2 Regulator



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	
0-30 psig / 0-2 bar / 0-0.2 MPa	**K4520N14030**
0-60 psig / 0-4 bar / 0-0.4 MPa	**K4520N14060**
0-160 psig / 0-11 bar / 0-1.1 MPa	**K4520N14160**
0-300 psig / 0-20 bar / 0-2 MPa	**K4520N14300**

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

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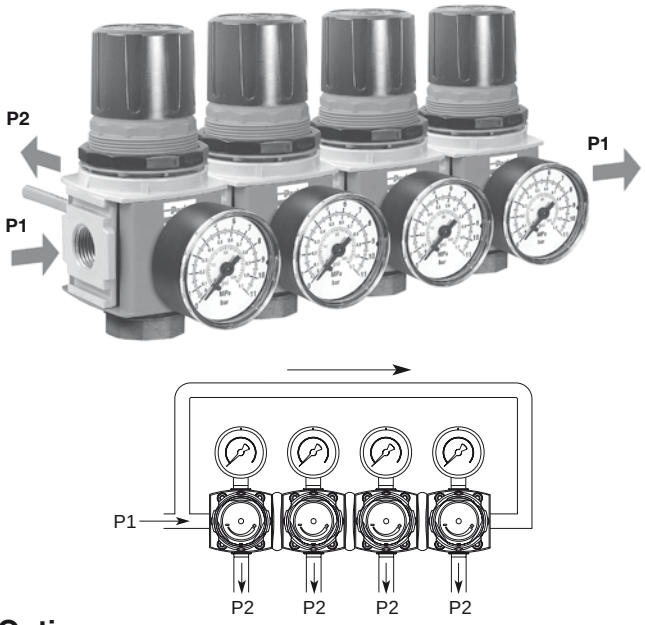
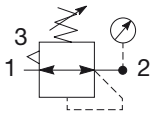
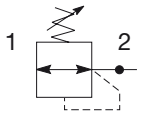
Compact Common P1 Regulator - P32



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:

P 3 2 H | ***** | | | | | **N** | | **P**

Engr. level
* Will be entered at factory

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

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

Relief	
Relieving	**B**
Non relieving	**N**

Adjustment range	
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**

Order gauges separately- see next page.

Mounting	
Plastic panel mount nut	**P**

*** Engineering Level will be entered at factory.**

Port size	Description	Order Code†	Flow‡ dm^3/s (scfm)	Max. bar (psig)	Height mm (inches)	Width mm (inches)	Depth mm (inches)
1/4"	8 bar (125 psig) Relieving	**P32H*92BNNP**	28 (59)	20 (300)	136 (5.4)	60 (2.36)	60 (2.36)
3/8"	8 bar (125 psig) Relieving	**P32H*93BNNP**	28 (59)	20 (300)	136 (5.4)	60 (2.36)	60 (2.36)
1/2"	8 bar (125 psig) Relieving	**P32H*94BNNP**	28 (59)	20 (300)	136 (5.4)	60 (2.36)	60 (2.36)

† **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) psig) set pressure and 1 bar (14.5 psig) pressure drop.

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Specifications

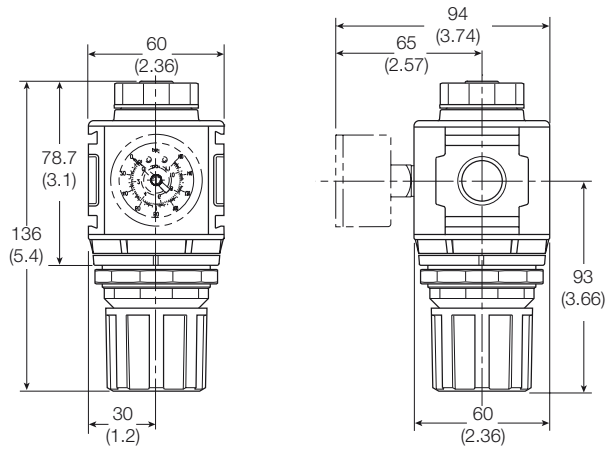
Flow Capacity*	1/4	28 dm³/s (59 scfm)
	3/8	28 dm³/s (59 scfm)
	1/2	28 dm³/s (59 scfm)
Operating Temperature		-25°C to 65.5°C (-13°F to 150°F)
Max. Supply Pressure		20 bar (300 psig)
Adjusting Range Pressure		0-2 bar (30 psig) 0-4 bar (60 psig) 0-8 bar (125 psig) 0-17 bar (250 psig)
Port Size	BSPP / BSPT / 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 Valve	Steel S.S.
Seals		Nitrile
Panel Nut		Acetal

Dimensions mm (inches)



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

⚠ WARNING

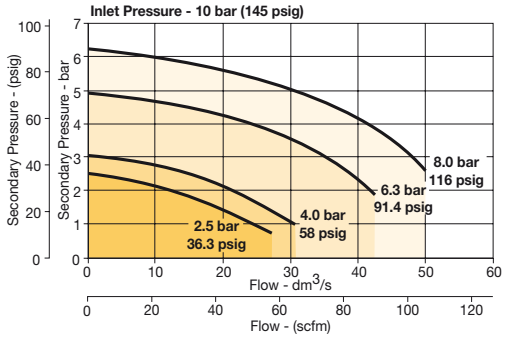
Product rupture can cause serious injury.
Do not connect regulator to bottled gas.
Do not exceed Maximum primary pressure rating.

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.

Flow Charts

P32 Common Port Regulator



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

0-30 psig / 0-2 bar / 0-0.2 MPa	**K4520N14030**
0-60 psig / 0-4 bar / 0-0.4 MPa	**K4520N14060**
0-160 psig / 0-11 bar / 0-1.1 MPa	**K4520N14160**
0-300 psig / 0-20 bar / 0-2 MPa	**K4520N14300**

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

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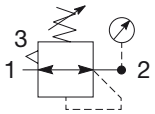
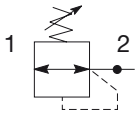
Standard Regulator - P33

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

Options:

P 3 3 R [*] [ ] [ ] [ ] [N] [ ] [P]

Engr. level
* Will be entered at factory

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

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

Relief	
Relieving	**B**
Non relieving	**N**
Reverse flow / relieving	**R**

Adjustment range	
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**

Mounting	
Plastic panel mount nut	**P**

*** Engineering Level will be entered at factory.**

Port size	Description	Order Code†	Flow‡ dm^3/s (scfm)	Max. bar (psig)	Height mm (inches)	Width mm (inches)	Depth mm (inches)
1/2"	8 bar (125 psig) Relieving	**P33R*94BNNP**	100 (212)	20 (300)	149 (5.9)	73 (2.9)	73 (2.9)
1/2"	8 bar (125 psig) Relieving + Gauge	**P33R*94BNGP**	100 (212)	20 (300)	149 (5.9)	73 (2.9)	73 (2.9)
3/4"	8 bar (125 psig) Relieving	**P33R*96BNNP**	100 (212)	20 (300)	149 (5.9)	73 (2.9)	73 (2.9)
3/4"	8 bar (125 psig) Relieving + Gauge	**P33R*96BNGP**	100 (212)	20 (300)	149 (5.9)	73 (2.9)	73 (2.9)

† **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) psig) set pressure and 1 bar (14.5 psig) pressure drop.

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Specifications

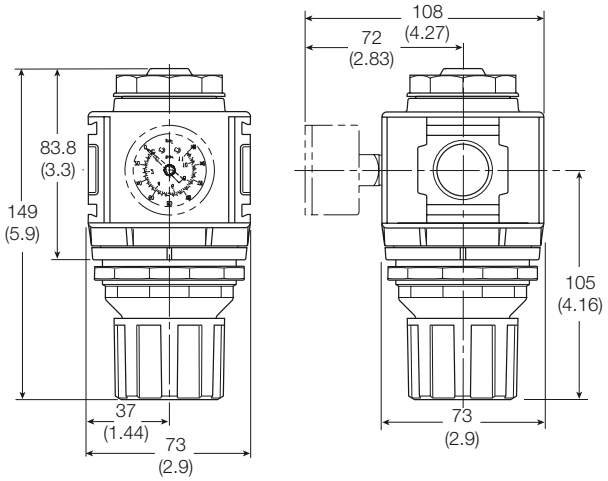
Flow Capacity*	1/2	100 dm³/s (212 scfm)
	3/4	100 dm³/s (212 scfm)
Operating Temperature		-25°C to 65.5°C (-13°F to 150°F)
Max. Supply Pressure		20 bar (300 psig)
Adjusting Range Pressure 0-2 bar (30 psig)		
		0-4 bar (60 psig)
		0-8 bar (125 psig)
		0-17 bar (250 psig)
Port Size	BSPP / BSPT / NPT	1/2, 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	Main Regulating Valve	Steel S.S.
Seals		Nitrile
Panel Nut		Acetal

Dimensions mm (inches)



NOTE: 61 mm (2.40 in.) hole required for panel nut mounting.

⚠ WARNING

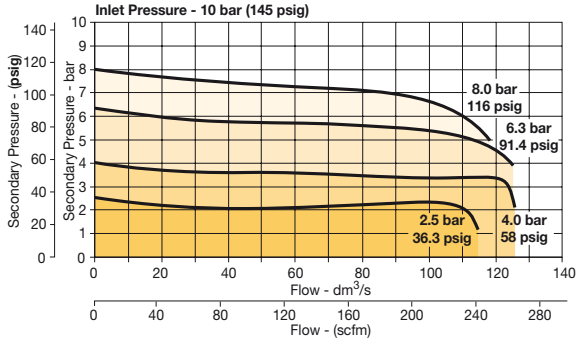
Product rupture can cause serious injury.
Do not connect regulator to bottled gas.
Do not exceed Maximum primary pressure rating.

CAUTION:

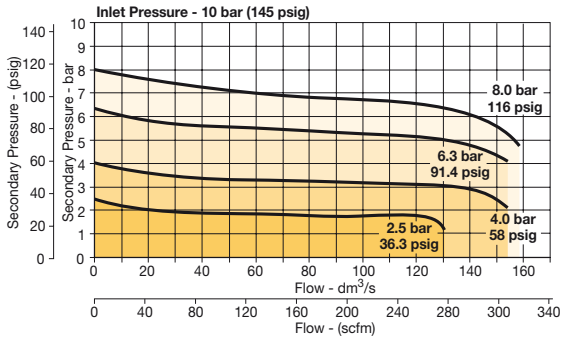
REGULATOR PRESSURE ADJUSTMENT – The working range of knob adjustment is designed to permit outlet pressures within their full range. Pressure adjustment beyond this range is also possible because the knob is not a limiting device. This is a common characteristic of most industrial regulators, and limiting 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

1/2 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

0-30 psig / 0-2 bar / 0-0.2 MPa	**K4520N14030**
0-60 psig / 0-4 bar / 0-0.4 MPa	**K4520N14060**
0-160 psig / 0-11 bar / 0-1.1 MPa	**K4520N14160**
0-300 psig / 0-20 bar / 0-2 MPa	**K4520N14300**

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

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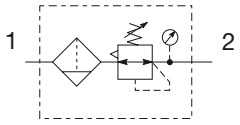
Mini Filter / Regulator - P31

Symbols



- 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:

P 3 1 E * □ □ E □ □ □ N □ P

Engr. level
* Will be entered at factory

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

Port size	
1/4	**2**

Element	
5µ Element	**E**

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

Drain type	
Pulse drain	**B**
Manual drain	**M**

Relief	
Relieving	**B**
Non relieving	**N**

Adjustment range	
With square gauge	
psig	**bar**
30* = **1**	2* = **V**
60 = **3**	4 = **S**
125 = **5**	8 = **T**
Without gauge	
psig	**bar**
30 = **Y**	2 = **Y**
60 = **L**	4 = **L**
125 = **N**	8 = **N**

* Unit comes with 0-4 bar, 0-60 psig gauge respectively

Mounting	
Plastic panel mount nut	**P**

*** Engineering Level will be entered at factory.**

Port size	Description	Order Code†	Flow‡ dm^3/s (scfm)	Max. bar (psig)	Height mm (inches)	Width mm (inches)	Depth mm (inches)
1/4"	8 bar (125 psig) Relieving - Poly bowl - Manual drain	**P31E*92EGMBN5P**	14 (30)	10 (150)	164.1 (6.46)	40 (1.58)	64 (2.53)
1/4"	8 bar (125 psig) Relieving - Poly bowl - Pulse drain	**P31E*92EGBBN5P**	14 (30)	10 (150)	164.1 (6.46)	40 (1.58)	64 (2.53)
1/4"	8 bar (125 psig) Relieving - Metal bowl - Manual drain	**P31E*92EMMBN5P**	14 (30)	17 (250)	164.1 (6.46)	40 (1.58)	64 (2.53)
1/4"	8 bar (125 psig) Relieving - Metal bowl - Pulse drain	**P31E*92EMBBN5P**	14 (30)	17 (250)	164.1 (6.46)	40 (1.58)	64 (2.53)

† **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) psig) set pressure and 1 bar (14.5 psig) pressure drop.

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Global Air Preparation System

Specifications

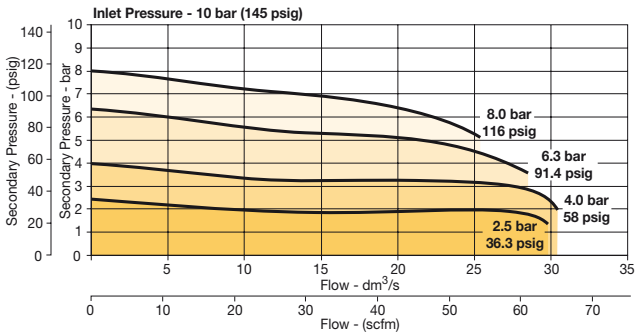
Flow Capacity*	1/4	14 dm^3/s (30.0 scfm)
Operating Temperature†	Plastic Bowl	-10°C to 52°C (14°F to 125°F)
	Metal Bowl	-10°C to 65.5°C (14°F to 150°F)
Max. Supply Pressure	Plastic Bowl	10 bar (150 psig)
	Metal Bowl	17 bar (250 psig)
Standard Filtration		5 Micron
Useful Retention		12 cm^3 (0.4 US oz.)
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		0.19 kg (0.42 lbs)

* Inlet pressure 10 bar (145 psig). Secondary pressure 6.3 bar (91.3 psig).
** Non-gauge option only.
† Units with square gauges: -15°C to 65.5°C (5°F to 150°F)

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

Flow Charts

1/4 Filter/Regulator



Materials of Construction

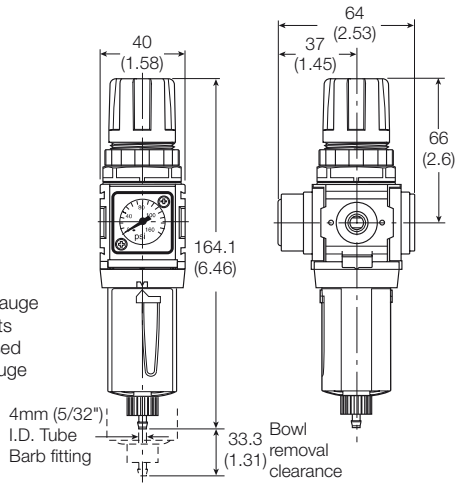
Body		Aluminum
Adjustment Knob		Acetal
Body Cap		ABS
Bonnet		PBT
Bowl	Plastic Bowl	Polycarbonate
	Metal Bowl	Aluminum
Bowl Guard		Nylon
Filter Element		Polyethylene
Seals		Nitrile
Springs		Steel
Valve Assembly		Brass / Nitrile
Diaphragm Assembly		Brass / Nitrile
Panel Nut		Acetal

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

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**
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**

Dimensions mm (inches)



Note:
Flush-mounted gauge kits will not fit units originally purchased with threaded gauge ports.

Gauges

Square flush mount gauge

0-4 bar	**K4511SCR04B**
0-10 bar	**K4511SCR11B**
0-60 psig	**K4511SCR060**
0-150 psig	**K4511SCR150**

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.

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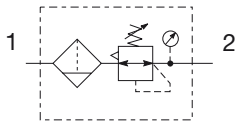
Compact Filter / Regulator - P32

Symbols



- Integral 1/4", 3/8" or 1/2" 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

Options:

P 3 2 E * □ □ E □ □ □ N □ P

Thread type	
BSPP	1
BSPT	2
NPT	9

Port size	
1/4	2
3/8	3
1/2	4

Drain type	
Manual drain	M
Auto drain	A

Mounting	
Plastic panel mount nut	P

Engr. level
* Will be entered at factory

Element	
5µ Element	E

Relief	
Relieving	B
Non relieving	N

Adjustment range	
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*

* Not available with poly bowl with bowl guard.

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

*** Engineering Level will be entered at factory.**

Port size	Description	Order Code†	Flow‡ dm^3/s (scfm)	Max. bar (psig)	Height mm (inches)	Width mm (inches)	Depth mm (inches)
1/4"	8 bar (125 psig) Relieving - Poly bowl - Manual drain	**P32E*92EGMBNGP**	42 (89)	10 (150)	254 (10.0)	60 (2.36)	60 (2.36)
1/4"	8 bar (125 psig) Relieving - Poly bowl - Auto drain	**P32E*92EGABNGP**	42 (89)	10 (150)	248 (9.76)	60 (2.36)	60 (2.36)
1/4"	8 bar (125 psig) Relieving - Metal bowl - Manual drain	**P32E*92ESMBNGP**	42 (89)	17 (250)	245 (9.66)	60 (2.36)	60 (2.36)
1/4"	8 bar (125 psig) Relieving - Metal bowl - Auto drain	**P32E*92ESABNGP**	42 (89)	17 (250)	254 (10.0)	60 (2.36)	95 (3.74)
3/8"	8 bar (125 psig) Relieving - Poly bowl - Manual drain	**P32E*93EGMBNGP**	58 (123)	10 (150)	254 (10.0)	60 (2.36)	60 (2.36)
3/8"	8 bar (125 psig) Relieving - Poly bowl - Auto drain	**P32E*93EGABNGP**	58 (123)	10 (150)	248 (9.76)	60 (2.36)	60 (2.36)
3/8"	8 bar (125 psig) Relieving - Metal bowl - Manual drain	**P32E*93ESMBNGP**	58 (123)	17 (250)	245 (9.66)	60 (2.36)	60 (2.36)
3/8"	8 bar (125 psig) Relieving - Metal bowl - Auto drain	**P32E*93ESABNGP**	58 (123)	17 (250)	254 (10.0)	60 (2.36)	95 (3.74)
1/2"	8 bar (125 psig) Relieving - Poly bowl - Manual drain	**P32E*94EGMBNGP**	64 (136)	10 (150)	245 (9.66)	60 (2.36)	95 (3.74)
1/2"	8 bar (125 psig) Relieving - Poly bowl - Auto drain	**P32E*94EGABNGP**	64 (136)	10 (150)	248 (9.76)	60 (2.36)	95 (3.74)
1/2"	8 bar (125 psig) Relieving - Metal bowl - Manual drain	**P32E*94ESMBNGP**	64 (136)	17 (250)	245 (9.66)	60 (2.36)	60 (2.36)
1/2"	8 bar (125 psig) Relieving - Metal bowl - Auto drain	**P32E*94ESABNGP**	64 (136)	17 (250)	254 (10.0)	60 (2.36)	60 (2.36)

† **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) psig) set pressure and 1 bar (14.5 psig) pressure drop.

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Specifications

Flow Capacity*	1/4	42 dm^3/s (89 scfm)
	3/8	58 dm^3/s (123 scfm)
	1/2	64 dm^3/s (136 scfm)
Operating Temperature	Plastic Bowl	-25°C to 52°C (-13°F to 125°F)
	Metal Bowl	-25°C to 65.5°C (-13°F to 150°F)
Max. Supply Pressure	Plastic Bowl	10 bar (150 psig)
	Metal Bowl	17 bar (250 psig)
Standard Filtration		5 Micron
Useful Retention†		51 cm^3 (1.7 US oz.)
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		0.53 kg (1.17 lbs)

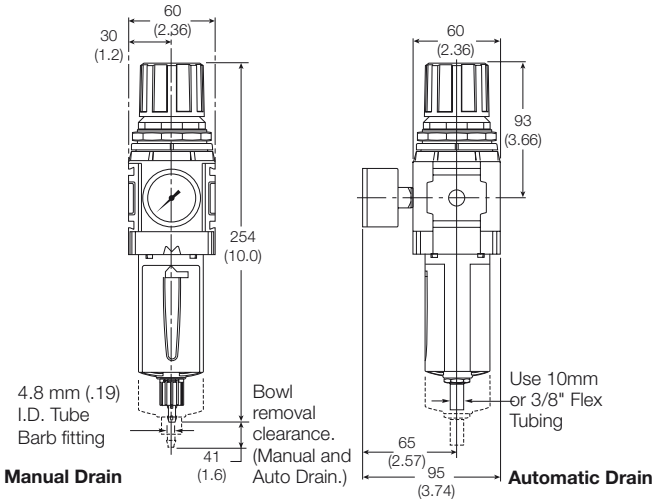
* Inlet pressure 10 bar (145 psig). Secondary pressure 6.3 bar (91.3 psig).
† Useful retention refers to volume below the quiet zone baffle.

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

Materials of Construction

Body		Aluminum
Adjustment Knob		Acetal
Body Cap		ABS
Element Retainer / Baffle		Acetal
Bowl	Plastic Bowl	Polycarbonate
	Metal Bowl	Zinc
Bowl Guard		Nylon
Filter Element		Sintered Polyethylene
Seals		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 mm (inches)

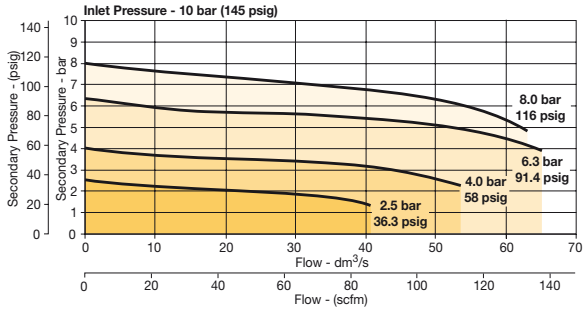


⚠ WARNING

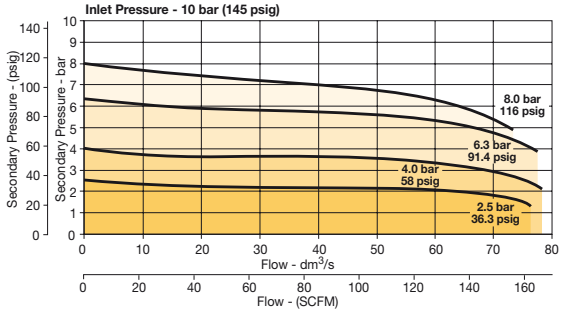
Product rupture can cause serious injury.
Do not connect regulator to bottled gas.
Do not exceed Maximum primary pressure rating.

Flow Charts

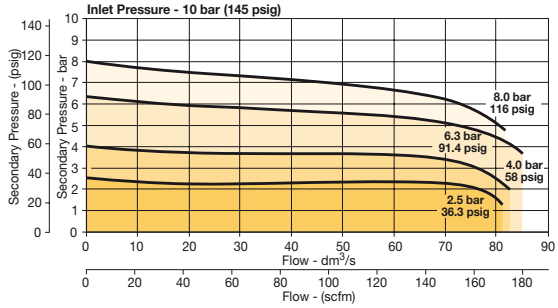
1/4 Filter/Regulator



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	**P32KA00ESE**
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)	**P32KA00MB**
T-Bracket with body connector	**P32KA00MT**
Body connector	**P32KA00CB**

Gauges

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

0-30 psig / 0-2 bar / 0-0.2 MPa	**K4520N14030**
0-60 psig / 0-4 bar / 0-0.4 MPa	**K4520N14060**
0-160 psig / 0-11 bar / 0-1.1 MPa	**K4520N14160**
0-300 psig / 0-20 bar / 0-2 MPa	**K4520N14300**

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

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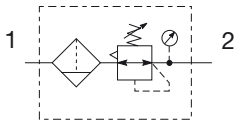
Standard Filter / Regulator - P33

Symbols



- 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

Options:

P 3 3 E [*] [ ] [ ] [E] [ ] [ ] [ ] [N] [ ] [P]

Thread type	
BSPP	1
BSPT	2
NPT	9

Port size	
1/2	4
3/4	6

Drain type	
Manual drain	M
Auto drain	A

Mounting	
Plastic panel mount nut	P

Engr. level
* Will be entered at factory

Element	
5µ Element	E

Relief	
Relieving	B
Non relieving	N

Adjustment range	
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*

* Not available with poly bowl with bowl guard.

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

*** Engineering Level will be entered at factory.**

Port size	Description	Order Code†	Flow‡ dm^3/s (scfm)	Max. bar (psig)	Height mm (inches)	Width mm (inches)	Depth mm (inches)
1/2"	8 bar (125 psig) Relieving - Poly bowl - Manual drain	**P33E*94EGMBNGP**	90 (191)	10 (150)	291 (11.44)	73 (2.9)	73 (2.9)
1/2"	8 bar (125 psig) Relieving - Poly bowl - Auto drain	**P33E*94EGABNGP**	90 (191)	10 (150)	285 (11.22)	73 (2.9)	73 (2.9)
1/2"	8 bar (125 psig) Relieving - Metal bowl - Manual drain	**P33E*94ESMBNGP**	90 (191)	17 (250)	282 (11.0)	73 (2.9)	73 (2.9)
1/2"	8 bar (125 psig) Relieving - Metal bowl - Auto drain	**P33E*94ESABNGP**	90 (191)	17 (250)	291 (11.44)	73 (2.9)	108 (4.27)
3/4"	8 bar (125 psig) Relieving - Poly bowl - Manual drain	**P33E*96EGMBNGP**	98 (208)	10 (150)	282 (11.0)	73 (2.9)	108 (4.27)
3/4"	8 bar (125 psig) Relieving - Poly bowl - Auto drain	**P33E*96EGABNGP**	98 (208)	10 (150)	285 (11.22)	73 (2.9)	108 (4.27)
3/4"	8 bar (125 psig) Relieving - Metal bowl - Manual drain	**P33E*96ESMBNGP**	98 (208)	17 (250)	291 (11.44)	73 (2.9)	73 (2.9)
3/4"	8 bar (125 psig) Relieving - Metal bowl - Auto drain	**P33E*96ESABNGP**	98 (208)	17 (250)	282 (11.0)	73 (2.9)	73 (2.9)

† **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) psig) set pressure and 1 bar (14.5 psig) pressure drop.

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Specifications

Flow Capacity*	1/2	90 dm^3/s (191 scfm)
	3/4	98 dm^3/s (208 scfm)
Operating Temperature	Plastic Bowl	-25°C to 52°C (-13°F to 125°F)
	Metal Bowl	-25°C to 65.5°C (-13°F to 150°F)
Supply Pressure	Plastic Bowl	10 bar (150 psig)
	Metal Bowl	17 bar (250 psig)
Standard Filtration		5 Micron
Useful Retention†		85 cm^3 (2.8 US oz.)
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		0.85 kg (1.87 lbs)

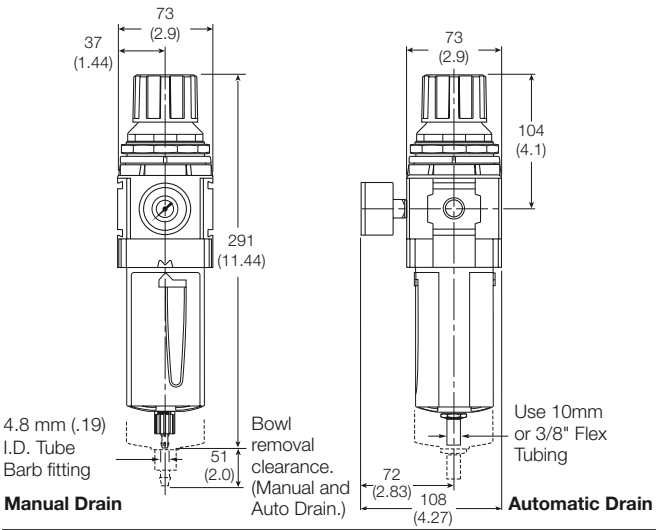
* Inlet pressure 10 bar (145 psig). Secondary pressure 6.3 bar (91.3 psig).
† Useful retention refers to volume below the quiet zone baffle.

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

Materials of Construction

Body		Aluminum
Adjustment Knob		Acetal
Body Cap		ABS
Element Retainer / Baffle		Acetal
Bowls	Plastic Bowl	Polycarbonate
	Metal Bowl	Aluminum
Filter Element		Sintered Polyethylene
Seals		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 mm (inches)

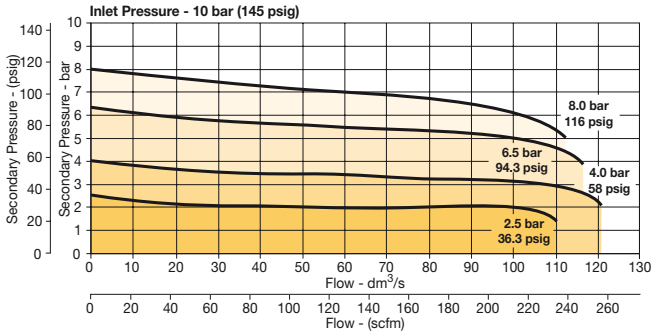


⚠ WARNING

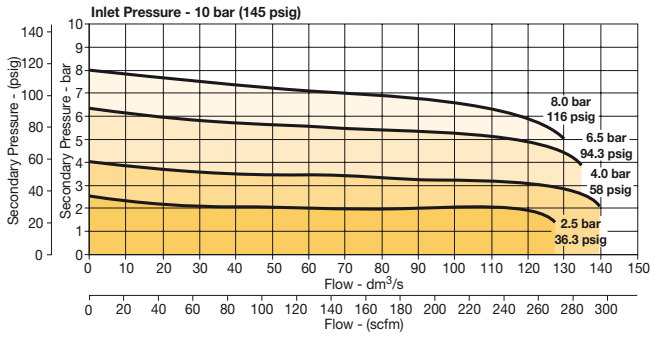
Product rupture can cause serious injury.
Do not connect regulator to bottled gas.
Do not exceed Maximum primary pressure rating.

Flow Charts

1/2 Filter/Regulator



3/4 Filter/Regulator



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

0-30 psig / 0-2 bar / 0-0.2 MPa	**K4520N14030**
0-60 psig / 0-4 bar / 0-0.4 MPa	**K4520N14060**
0-160 psig / 0-11 bar / 0-1.1 MPa	**K4520N14160**
0-300 psig / 0-20 bar / 0-2 MPa	**K4520N14300**

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

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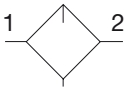
Mini Lubricator - P31

Symbols



Lubricator
with drain

- 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

Options:

P 3 1 L ***** **_** **_** **L** **_** **N** **N**

Engr. level
* Will be entered at factory

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

Port size	
1/4	**2**

Type	
Oil mist standard sight dome	**L**

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

Drain type	
No drain; closed end	**N**

Mounting	
No bracket	**N**

*** Engineering Level will be entered at factory.**

Port size	Description	Order Code†	Flow‡ dm^3/s (scfm)	Max. bar (psig)	Height mm (inches)	Width mm (inches)	Depth mm (inches)
1/4"	Poly bowl - No drain	**P31L*92LGNN**	13 (28)	10 (150)	147.5 (5.80)	40 (1.58)	42.7 (1.68)
1/4"	Metal bowl - No drain	**P31L*92LMNN**	13 (28)	17 (250)	147.5 (5.80)	40 (1.58)	42.7 (1.68)

† **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.

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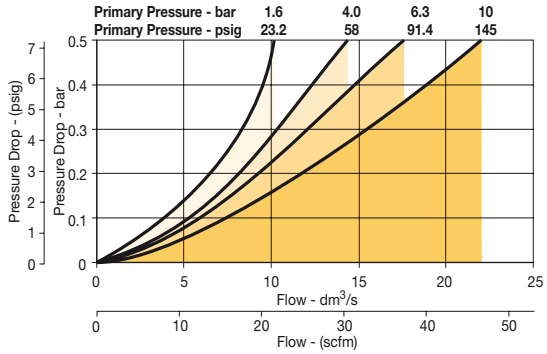
Specifications

Flow Capacity* 1/4		13 dm^3/s (28 scfm)
Operating Temperature	Plastic Bowl	-10°C to 52°C (14°F to 125°F)
	Metal Bowl	-10°C to 65.5°C (14°F to 150°F)
Max. Supply Pressure	Plastic Bowl	10 bar (150 psig)
	Metal Bowl	17 bar (250 psig)
Useful Retention		18 cm^3 (0.6 US oz.)
Port Size	BSPP / BSPT / NPT	1/4
Weight		0.13 kg (0.29 lbs)

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

Flow Charts

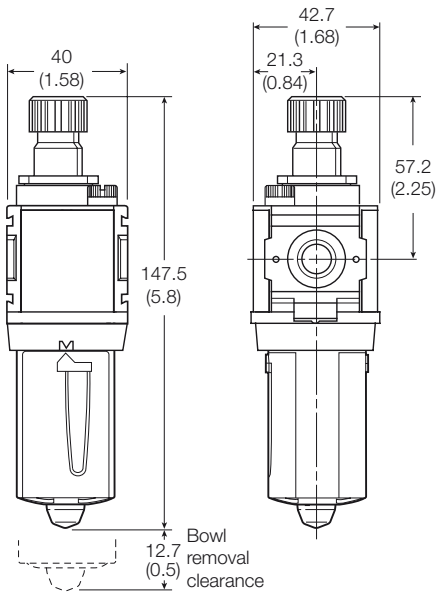
1/4 Lubricator



Materials of Construction

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

Dimensions mm (inches)



Repair and Service Kits

Plastic bowl / Bowl guard no drain	**P31KA00BGN**
Drip control assembly	**P32KA00PG**
Fill plug	**P31KA00PL**
C-Bracket (fits to body)	**P31KA00MW**
T-Bracket with body connector	**P31KA00MT**
Body connector	**P31KA00CB**

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.)

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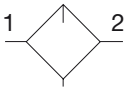
Compact Lubricator - P32

Symbols



Lubricator
with drain

- Integral 1/4", 3/8" or 1/2" 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
- Fill from top under system pressure

Options:

P 3 2 L * [ ] [ ] L [ ] N N

Engr. level
* Will be entered at factory

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

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

Type	
Oil mist standard sight dome	**L**

Bowl type	
Poly bowl with bowl guard	**G**
Metal bowl with sight gauge	**S**

Drain type	
No drain; closed end	**N**

Mounting	
No bracket	**N**

*** Engineering Level will be entered at factory.**

Port size	Description	Order Code†	Flow‡ dm^3/s (scfm)	Max. bar (psig)	Height mm (inches)	Width mm (inches)	Depth mm (inches)
1/4"	Poly bowl - No drain	**P32L*92LGNN**	18 (38)	10 (150)	211 (8.30)	60 (2.36)	60 (2.36)
1/4"	Metal bowl - No drain	**P32L*92LSNN**	18 (38)	17 (250)	211 (8.30)	60 (2.36)	60 (2.36)
3/8"	Poly bowl - No drain	**P32L*93LGNN**	32 (68)	10 (150)	211 (8.30)	60 (2.36)	60 (2.36)
3/8"	Metal bowl - No drain	**P32L*93LSNN**	32 (68)	17 (250)	211 (8.30)	60 (2.36)	60 (2.36)
1/2"	Poly bowl - No drain	**P32L*94LGNN**	47 (100)	10 (150)	211 (8.30)	60 (2.36)	60 (2.36)
1/2"	Metal bowl - No drain	**P32L*94LSNN**	47 (100)	17 (250)	211 (8.30)	60 (2.36)	60 (2.36)

† **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.

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Specifications

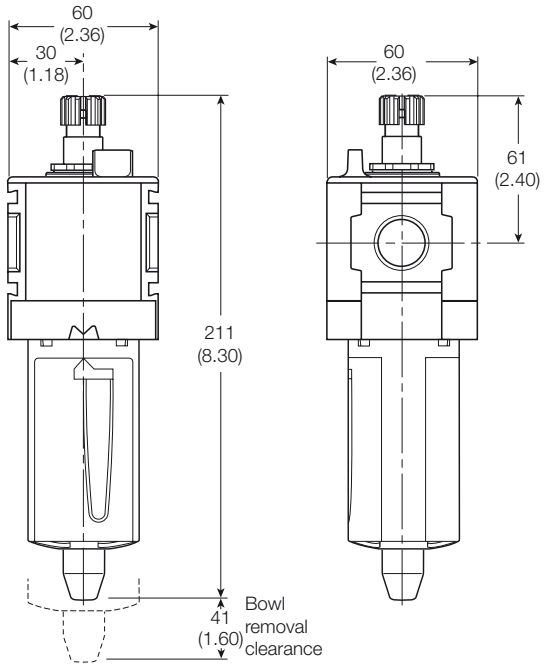
Flow Capacity*	1/4	18 dm^3/s (38 scfm)
	3/8	32 dm^3/s (68 scfm)
	1/2	47 dm^3/s (100 scfm)
Operating Temperature	Plastic Bowl	-10°C to 52°C (14°F to 125°F)
	Metal Bowl	-10°C to 65.5°C (14°F to 150°F)
Max. Supply Pressure	Plastic Bowl	10 bar (150 psig)
	Metal Bowl	17 bar (250 psig)
Useful Retention		121 cm^3 (4.09 US oz.)
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

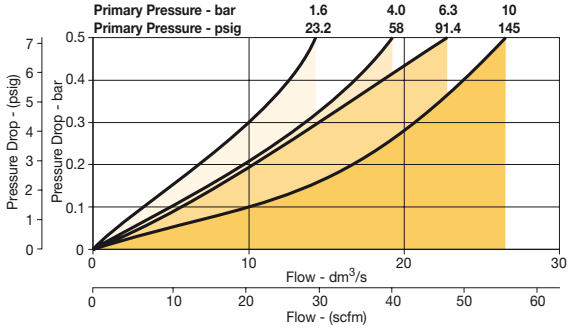
Body		Aluminum
Body Cap		ABS
Bowls	Plastic Bowl	Polycarbonate
	Metal Bowl	Aluminum
Seals		Nitrile
Sight Dome		Polycarbonate
Sight Gauge	Metal Bowl	Polycarbonate
Suggested Lubricant		ISO / ASTM VG32
Pick-up Filter		Sintered Bronze

Dimensions mm (inches)

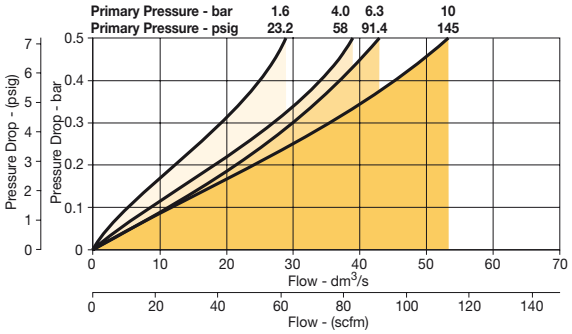


Flow Charts

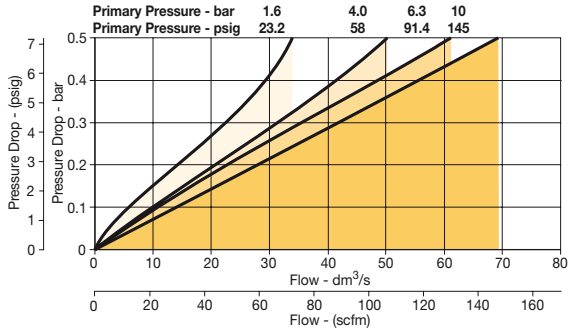
1/4 Lubricator



3/8 Lubricator



1/2 Lubricator



Repair and Service Kits

Plastic bowl / Bowl guard no drain	**P32KA00BGN**
Drip control assembly	**P32KA00PG**
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.)

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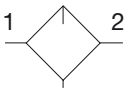
Standard Lubricator - P33

Symbols



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 rachet control for precise oil drip rate adjustment
- Fill from top under system pressure

Options:

P	3	3	L	*			L		N	N

Engr. level
* Will be entered at factory

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

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

Type	
Oil mist standard sight dome	**L**

Bowl type	
Poly bowl with bowl guard	**G**
Metal bowl with sight gauge	**S**

Drain type	
No drain; closed end	**N**

Mounting	
No bracket	**N**

*** Engineering Level will be entered at factory.**

Port size	Description	Order Code†	Flow‡ dm^3/s (scfm)	Max. bar (psig)	Height mm (inches)	Width mm (inches)	Depth mm (inches)
1/2"	Poly bowl - No drain	**P33L*94LGNN**	48 (102)	10 (150)	234 (9.21)	73 (2.9)	73 (2.9)
1/2"	Metal bowl - No drain	**P33L*94LSNN**	48 (102)	17 (250)	234 (9.21)	73 (2.9)	73 (2.9)
3/4"	Poly bowl - No drain	**P33L*96LGNN**	68 (144)	10 (150)	234 (9.21)	73 (2.9)	73 (2.9)
3/4"	Metal bowl - No drain	**P33L*96LSNN**	68 (144)	17 (250)	234 (9.21)	73 (2.9)	73 (2.9)

† **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.

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Specifications

Flow Capacity*	1/2	48 dm³/s (102 scfm)
	3/4	68 dm³/s (144 scfm)
Operating Temperature	Plastic Bowl	-10°C to 52°C (14°F to 125°F)
	Metal Bowl	-10°C to 65.5°C (14°F to 150°F)
Max. Supply Pressure	Plastic Bowl	10 bar (150 psig)
	Metal Bowl	17 bar (250 psig)
Useful Retention		181 cm³ (6.1 US oz.)
Port Size	BSPP / BSPT / NPT	1/2, 3/4
Weight		0.47 kg (1.04 lbs)

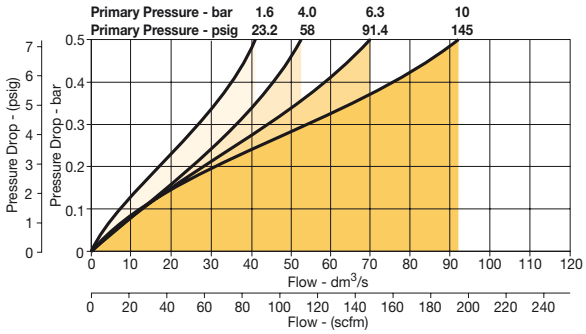
* Inlet pressure 6.3 bar (91.3 psig). Pressure drop 0.34 bar (4.9 psig).

Materials of Construction

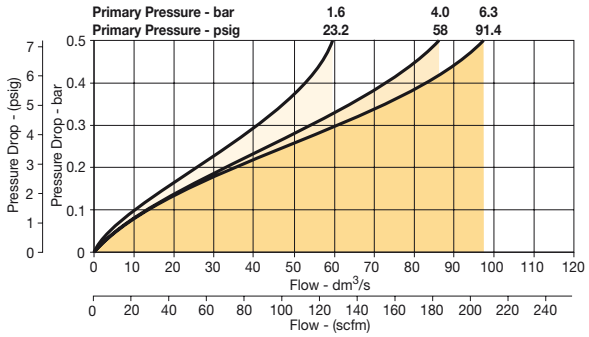
Body		Aluminum
Body Cap		ABS
Bowls	Plastic Bowl	Polycarbonate
	Metal Bowl	Aluminum
Seals		Nitrile
Sight Dome		Polycarbonate
Sight Gauge	Metal Bowl	Polycarbonate
Suggested Lubricant		ISO / ASTM VG32
Pick-up Filter		Sintered Bronze

Flow Charts

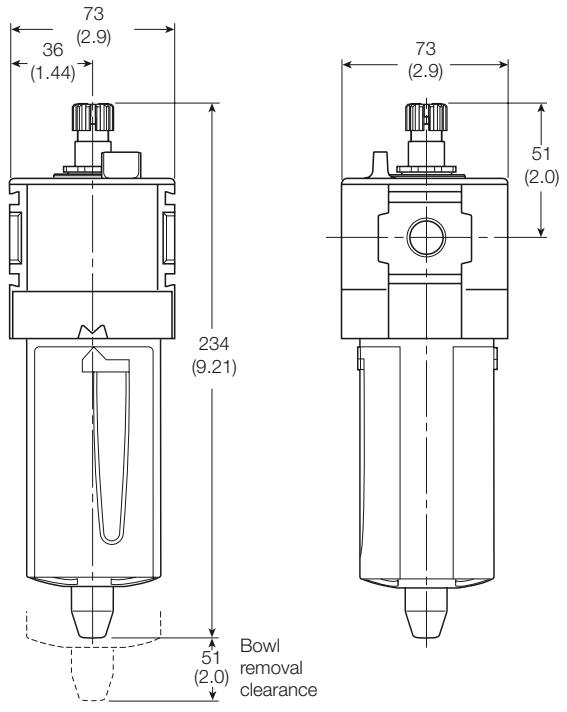
1/2 Lubricator



3/4 Lubricator



Dimensions mm (inches)



Repair and Service Kits

Plastic bowl / Bowl guard no drain	**P33KA00BGN**
Drip control assembly	**P32KA00PG**
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 ..... **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.)

Parker Hannifin Corporation
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Global Air Preparation System

P31P Series
Bottom exhaust

P32P Series
Bottom exhaust

- Very fast response times
- 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 flows to 19 dm^3/s (40 scfm)
- P32P flows to 57 dm^3/s (120 scfm)

Order Key

P 3 [ ] P * 1 [ ] A [ ] 2 [ ] [ ] 1 A

Body size	
Global Mini (1/4")	1
Global Compact (1/2")	2

Thread type	
BSPP	1
BSPT	2
NPT	9

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

Version	
Bottom ported exhaust (NC)	A
Bottom ported forced exhaust (NO)*	E

* When the supply voltage is lost the unit will automatically exhaust the regulated pressure to 0 bar (atmospheric pressure)

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.

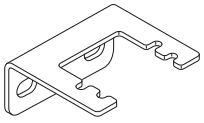
Note: On all analog outputs the F.S. value can be adjusted by means of parameter 8

Input connector	
M12 (4 pin)	1

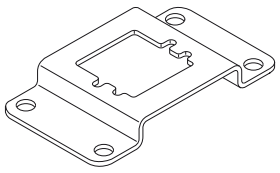
*** Engineering Level will be entered at factory.**

P31P Mounting brackets

Order Code	Description
P3HKA00ML	L-Bracket mounting kit
P3HKA00MC	Foot bracket mounting kit



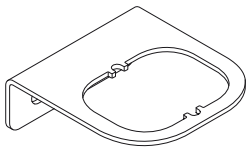
L-Bracket



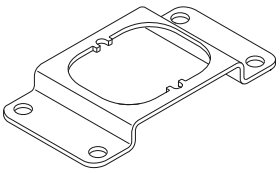
Foot Bracket

P32P Mounting brackets

Order Code	Description
P3KKA00ML	L-Bracket mounting kit
P3KKA00MC	Foot bracket mounting kit



L-Bracket



Foot Bracket

Cables

Order Code	Description
CB-M12-4P-2M	2 mtr. cable with moulded straight M12x1 connector

Note:
These brackets fit both Proportional Regulators and Combined Soft Start & Dump Valves.

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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 to122°F)

Weights:
P31P = 0.291 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

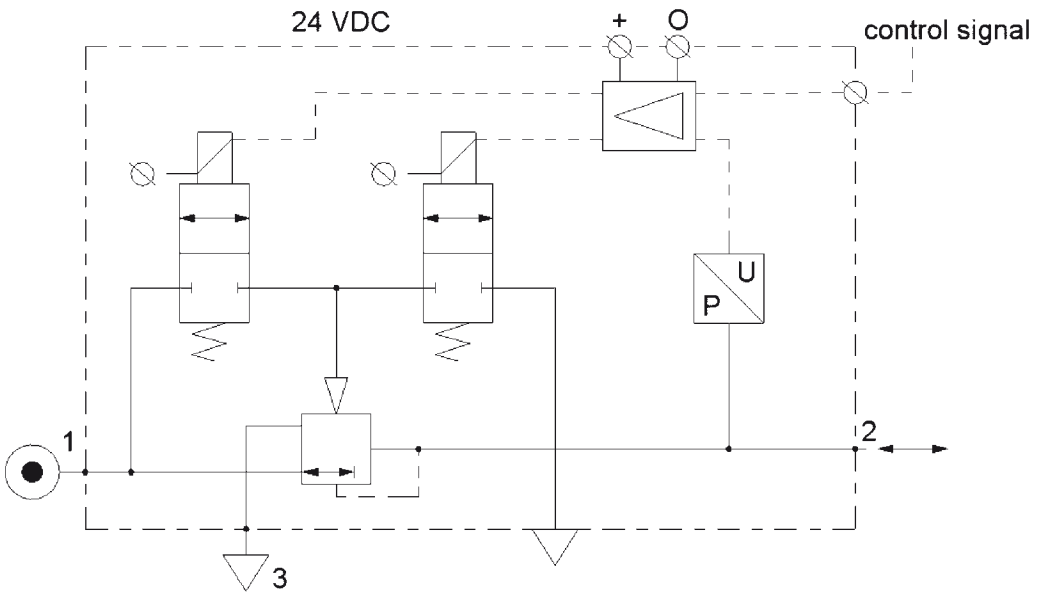
Control signals
The electronic pressure regulator can be externally controlled through an analogue control signal of either
0-10V or 4-20mA. (parameter 4).

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:

	Pin No.	Function	Color
1	24 V	Supply	Brown
2	0 to 10 V	Control Signal Ri = 100k Ω	White
	4 to 20mA	Control Signal Ri = 500 Ω	
3	0 V (GND)	Supply	Blue
4	24 V	Alarm Output Signal	Black

Schematic



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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 reset 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 bar (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).

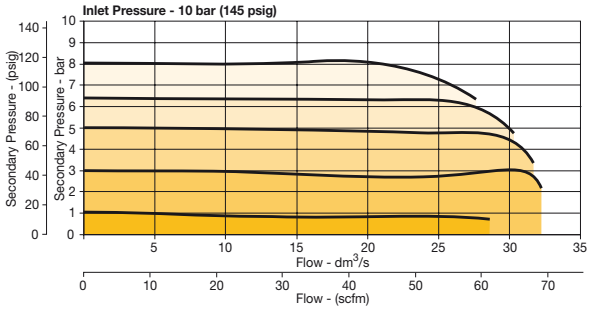
Response time	P31P	P32P
2 to 4 bar	25 msecs	35 msecs
1 to 6 bar	55 msecs	135 msecs
4 to 2 bar	70 msecs	85 msecs
6 to 1 bar	80 msecs	225 msecs

To fill volume of:
100cm^3 - P31P
330cm^3 - P32P
connected to the outlet of the regulator.

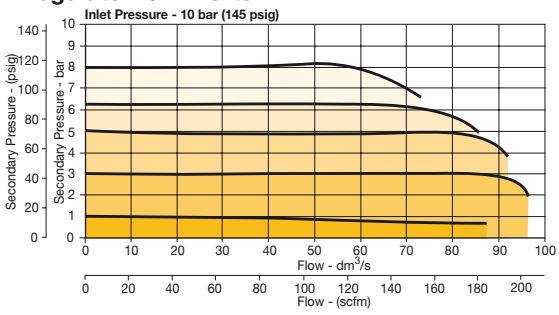
Settings
The regulator is pre-set at the factory. If required, adjustments can be made.

Flow Charts

P31P Regulator 1/4” Ports



P32P Regulator 1/2” Ports



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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.

When the unit is initially powered up allow approximately 10 seconds for the unit to “boot-up” before changing parameter settings.

Only parameter numbers 0, 4, 6, 8, 9, 14, 18, 19, 20, 12, 13 and 21 are accessible to edit. All other parameters are fixed.

Manual mode:

When keys DOWN and UP are pressed during startup, (connecting to the 24V power supply) manual mode is activated. This means that the user is able to in/decrease the output pressure of the regulator, by pressing the UP or DOWN key. During this action the display will blink, indicating that the manual mode is activated. After powering up again, the unit will revert back to normal mode.

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

Step	1	2	3	4	5	
Press	acc 3-6 seconds	▼ or ▲	acc	▼ or ▲	acc	
Until Display Reads	Pxx	P00	000. Flashing Decimal	003. Flashing Decimal	003 Flashing	P01
Description	Accesses changeable parameters.	Accesses parameter no. 0.	Displays current parameter value.	Edits parameter. 3 = standard factory settings. If other than 3, use Up or Down Arrow and accept 3	Accepts and saves new parameter setting.	Sequences to next parameter.

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

Step	1	2	3	4	5	
Press	acc 3-6 seconds	▼ or ▲	acc	▼ or ▲	acc	
Until Display Reads	Pxx	P04	001. Flashing Decimal	000. Flashing Decimal	000 Flashing	P05
Description	Accesses changeable parameters.	Accesses parameter no. 4.	Displays current parameter value. 1 = V 0 = mA	Edits parameter.	Accepts and saves new parameter setting.	Sequences to next parameter.

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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

Step	1	2	3	4	5	
Press	acc 3-6 seconds	▼ or ▲	acc	▼ or ▲	acc	
Until Display Reads	Pxx	P06	001. Flashing Decimal	###. Flashing Decimal (Value 0, 1 or 2)	###. Flashing	P07
Description	Accesses changeable parameters.	Accesses parameter no. 6.	Displays current parameter value. 1 = m factory default for P3H with analog options	Edits parameter. 0 = digital (NPN or PNP) 1 = analog 0..10V 2 = analog 4..20 mA	Accepts and saves new parameter setting.	Sequences to next parameter.

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 to 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

Step	1	2	3	4	5	
Press	acc 3-6 seconds	▼ or ▲	acc	▼ or ▲	acc	
Until Display Reads	Pxx	P08	100. Flashing Decimal (For 2 bar versions value = 92)	###. Flashing Decimal (Value between 0 and 130)	###. Flashing	P09
Description	Accesses changeable parameters.	Accesses parameter no. 8.	Displays current parameter value.	Edits parameter.	Accepts and saves new parameter setting and implements the new analog signal span.	Sequences to next parameter.

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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)

Step	1	2	3	4	5	
Press	acc 3-6 seconds	▼ or ▲	acc	▼ or ▲	acc	
Until Display Reads	Pxx	P09	###. Flashing Decimal	###. Flashing Decimal	### Flashing	P 10
Description	Accesses changeable parameters.	Accesses parameter no. 9.	Displays current digital display	Use up or down arrows and accept to adjust the display value if using an external pressure sensor.	Accepts and saves new parameter setting.	Sequences to next parameter.

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

Step	1	2	3	4	5	
Press	acc 3-6 seconds	▼ or ▲	acc	▼ or ▲	acc	
Until Display Reads	Pxx	P 14	001. Flashing Decimal	000. Flashing Decimal	000 Flashing	P 15
Description	Accesses changeable parameters.	Accesses parameter no. 14.	Displays current parameter value. 1 = psig 0 = bar 2 = MPA	Edits parameter.	Accepts and saves new parameter setting.	Sequences to next parameter.

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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 18 – Set Minimum Preset Pressure

Step	1	2	3	4	5	
Press	acc 3-6 seconds	▼ or ▲	acc	▼ or ▲	acc	
Until Display Reads	Pxx	P 18	000. Flashing Decimal	###. Flashing Decimal (value between 0 and 200)	### Flashing	P 19
Description	Accesses changeable parameters.	Accesses parameter no. 18.	Displays current parameter value. Incremental value is: 2 bar unit: x 2 mbar x % P19 10 bar unit: x 10 mbar x % P19	Edits parameter.	Accepts and saves new parameter setting.	Sequences to next parameter.

Set Pressure Correction

Pressure correction allows the user to set a Maximum pressure as a percentage of secondary pressure F.S.

Example: If F.S. is 10 bar, set parameter 19 to 50 for Maximum preset pressure of 5 bar.

Pressure correction also affects the Minimum preset pressure in parameter 18.

Example: If F.S. is 10 bar and parameter 18 is set to a value of 100 (1 bar), and parameter 19 is set to 50%, then the actual Minimum preset pressure seen is 0.5 bar.

Parameter Number 19 – Set Maximum Preset Pressure

Step	1	2	3	4	5	
Press	acc 3-6 seconds	▼ or ▲	acc	▼ or ▲	acc	
Until Display Reads	Pxx	P 19	100. Flashing Decimal	###. Flashing Decimal (value between 0 and 100)	### Flashing	P20
Description	Accesses changeable parameters.	Accesses parameter no. 19.	Displays current parameter value. Incremental value is: % of F.S.	Edits parameter.	Accepts and saves new parameter setting.	Sequences to next parameter.

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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.

Parameter Number 20 – Set Behavior Control

Step	1	2	3	4	5	
Press	acc 3-6 seconds	▼ or ▲	acc	▼ or ▲	acc	
Until Display Reads	Pxx	P20	003.	###. Flashing Decimal (value between 0 and 5)	### Flashing	P21
Description	Accesses changeable parameters.	Accesses parameter no. 20.	Displays current parameter value.	Edits parameter 0 = custom set* 1 = fastest (narrow proportional band) 2 = fast 3 = normal 4 = slow 5 = slowest (proportional band is broad)	Accepts and saves new parameter setting.	Sequences to next parameter.

* 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).

Parameter Number 12 – Set Proportional Band (P20 Must be Set to 0)

Step	1	2	3	4	5	
Press	acc 3-6 seconds	▼ or ▲	acc	▼ or ▲	acc	
Until Display Reads	Pxx	P 12	100. Flashing Decimal	###. Flashing Decimal (value between 50 and 250)	### Flashing	P 13
Description	Accesses changeable parameters.	Accesses parameter no. 12.	Displays current parameter value. Incremental value is: x 10 mbar	Edits parameter.	Accepts and saves new parameter setting.	Sequences to next parameter.

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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)

Step	1	2	3	4	5	
Press	acc 3-6 seconds	▼ or ▲	acc	▼ or ▲	acc	
Until Display Reads	Pxx	P 13	0 15.	###. Flashing Decimal (value between 4 and 40)	### Flashing	P 14
Description	Accesses changeable parameters.	Accesses parameter no. 13.	Displays current parameter value. Incremental value is x 10 mbar	Edits parameter.	Accepts and saves new parameter setting.	Sequences to next parameter.

Proportional Effect

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

Step	1	2	3	4	5	
Press	acc 3-6 seconds	▼ or ▲	acc	▼ or ▲	acc	
Until Display Reads	Pxx	P21	0 10.	###. Flashing Decimal (value between 5 and 100)	### Flashing	P22
Description	Accesses changeable parameters.	Accesses parameter no. 21.	Displays current parameter value.	Edits parameter. 5 = fastest regulation 100 = slowest regulation.	Accepts and saves new parameter setting.	Sequences to next parameter.

Parameter Number 39 – Displays Current Software Version

Step	1	2	3	
Press	acc 3-6 seconds	▼ or ▲	acc	
Until Display Reads	Pxx	P39	### Flashing Decimal	
Description	Accesses changeable parameters.	Accesses parameter no. 39.	Displays current parameter value. XXX = current software version	

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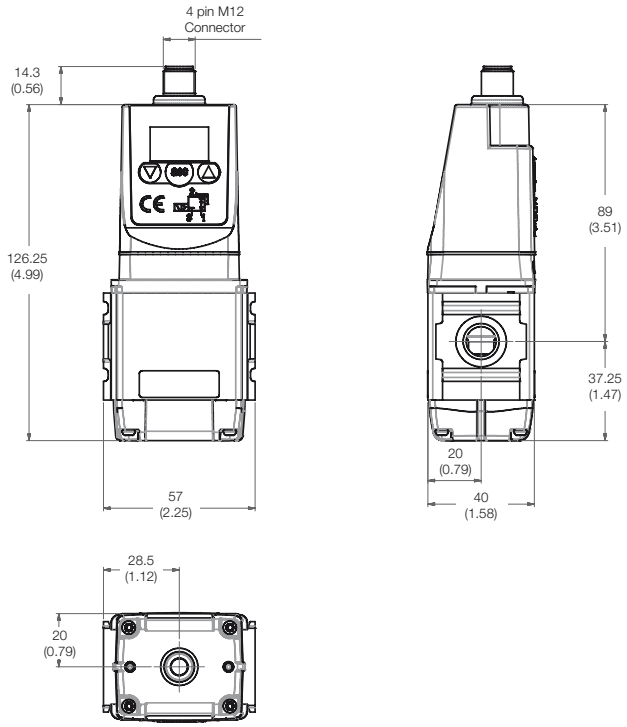
P31P



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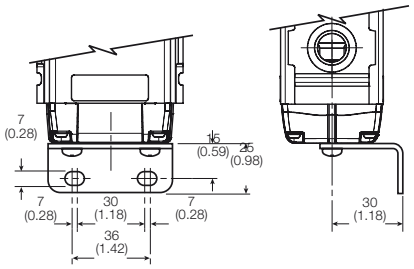

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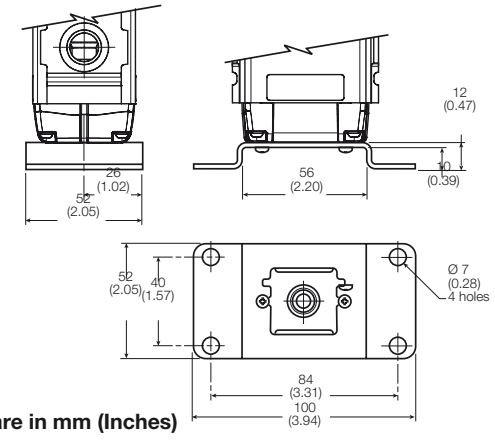
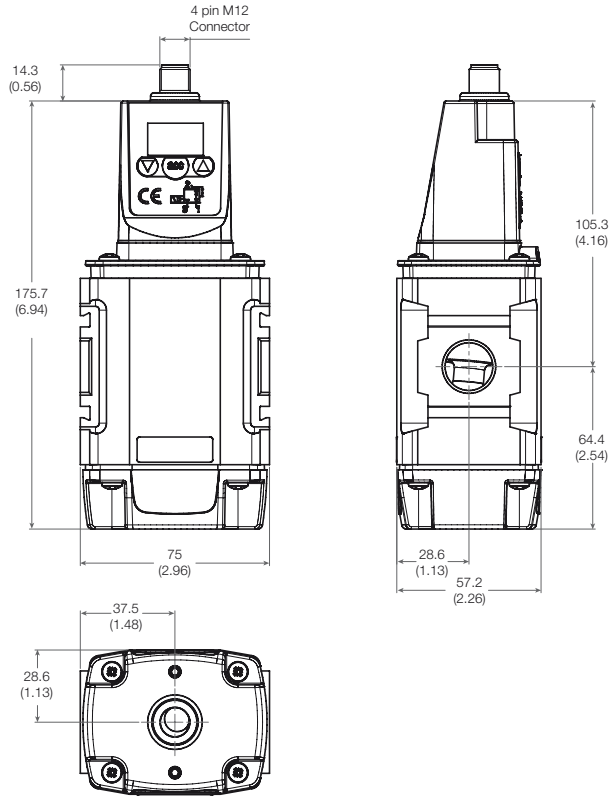


P32P



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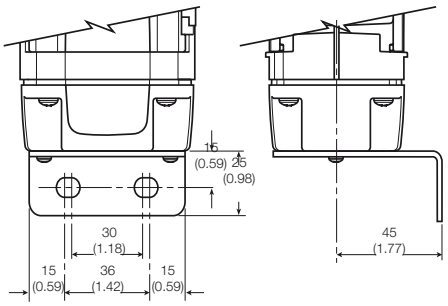

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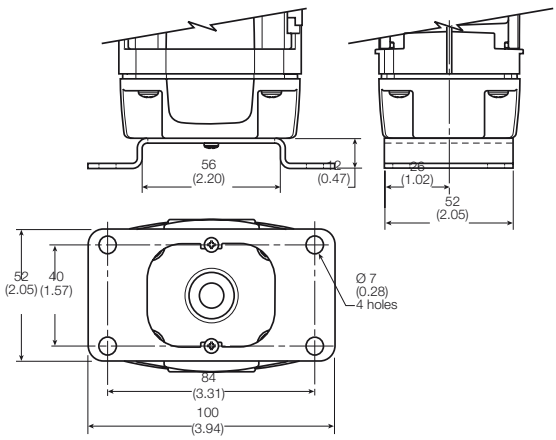

Dimensions are in mm (Inches)

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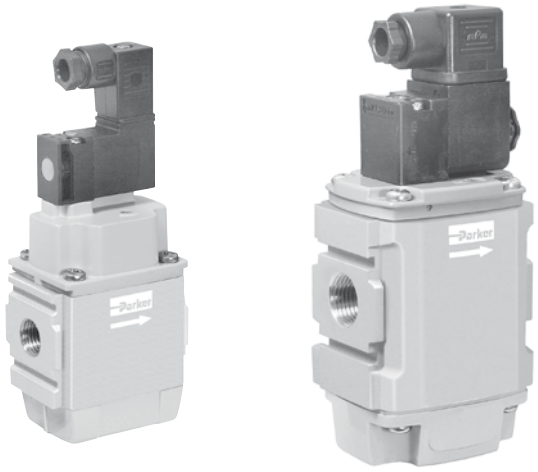
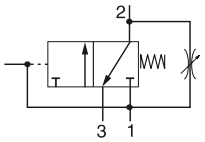
Global Air Preparation System

Combined Soft Start / Dump Valve



Symbols



- 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

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.

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.

Options:

P 3 [ ] T * [ ] [ ] [ ] [ ] N

Body size

Mini (1/4")	1
Compact (1/2")	2

Thread Type

BSPP (G)	1
BSPT	2
NPT	9

Port size

Mini (1/4")	2
Compact (1/2")	4

Pilot type

External Air Pilot	P
Solenoid Pilot	S

Actuator interface

15mm solenoid (P31 only)	G
30mm solenoid	C
Threaded air pilot	P

Solenoid type only

15mm (P31 series only)	C
30mm CNOMO coil (P32 only)	A
30mm CNOMO coil (M12 connection) (P32 only)	D

24VDC non locking manual overide	2CN
120VAC non locking manual overide	3GN
120VAC non locking manual override (P31 series only)	1FN

Note:
P32 unit used for both P32 & P33 series

*** Engineering Level will be entered at factory.**

Compact combined soft start dump valve

Port size	Description	Order Code†	Flow‡ dm^3/s (scfm)	Max. bar (psig)	Height mm (inches)	Width mm (inches)	Depth mm (inches)	Weight
1/4"	120VAC Solenoid & cable plug	**P31T*92SGNC1FN**	17 (36)	10 (150)	115.6 (4.5)	57 (2.2)	40 (1.5)	0.37kg (0.8lbs)
1/4"	24VDC Solenoid & cable plug	**P31T*92SGNC2CN**	17 (36)	10 (150)	166‡ (6.5)	57 (2.2)	40 (1.5)	0.41kg (0.9lbs)
1/4"	External air pilot operated	**P31T*92PPN**	17 (36)	17 (250)	115.6 (4.5)	57 (2.2)	40 (1.5)	0.37kg (0.8lbs)
1/2"	120VAC 30mm coil & cable plug incl.	**P32T*94SCNA3GN**	46 (97)	10 (150)	162.5‡ (6.3)	88 (3.4)	57.2 (2.2)	0.87kg (1.9lbs)
1/2"	24VDC 30mm coil & cable plug incl.	**P32T*94SCNA2CN**	46 (97)	10 (150)	227.5‡ (8.9)	88 (3.4)	57.2 (2.2)	0.91kg (2.0lbs)
1/2"	External air pilot operated	**P32T*94PPN**	46 (97)	17 (250)	162.5‡ (6.3)	75 (2.9)	57.2 (2.2)	0.87kg (1.9lbs)

‡ 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.**

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Global Air Preparation System

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:		-10°C to 50°C (14°F to 122°F)
Temperature Max.* Air Pilot operated:		-20°C to 80°C (-4°F to 176°F)
Air Pilot port:		1/8"
Exhaust port:		**P31T** - 1/4" / **P32T** - 1/2"
Typical flow with 6.3 bar inlet pressure and 1 bar pressure drop:	**P31T** **P32T**	17 dm^3/s (36 scfm) 48 dm^3/s (101 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

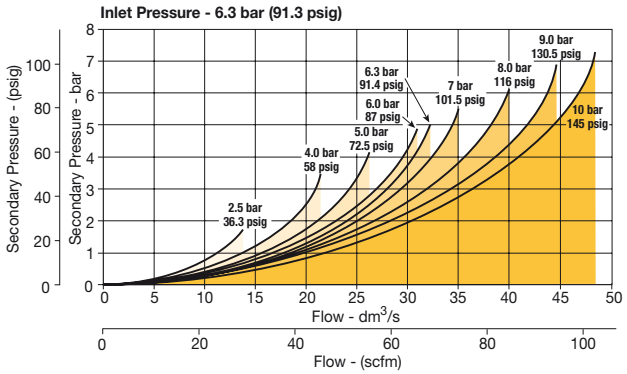
Mounting Brackets

Description	Order code **P31T**
L-Bracket mounting kit	**P3HKA00ML**
Foot bracket mounting kit	**P3HKA00MC**

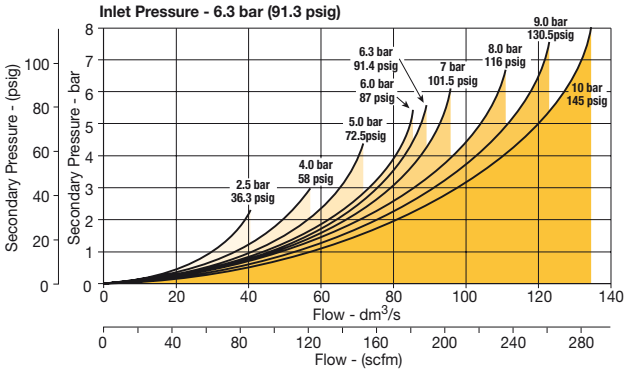
Note:
For solenoid operators and cable plugs (connectors) see pages 68 to 69.

Flow characteristics

1/4 Soft Start & Dump Valve

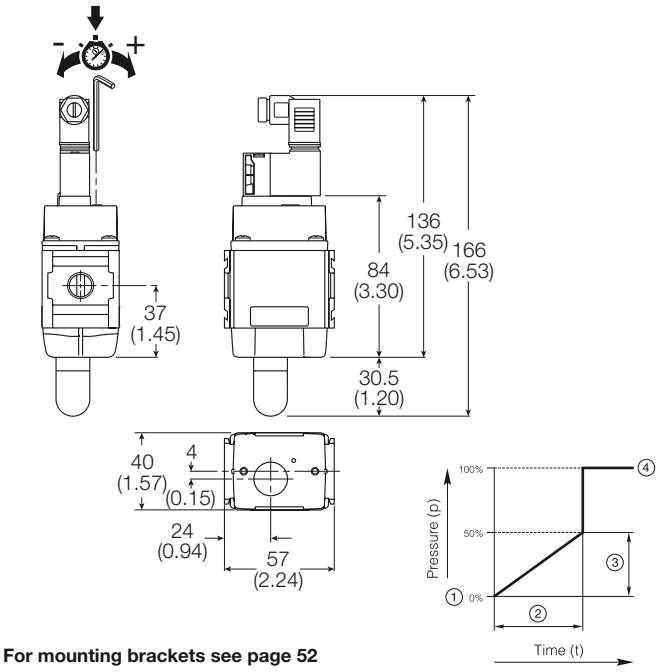


1/2 Soft Start & Dump Valve



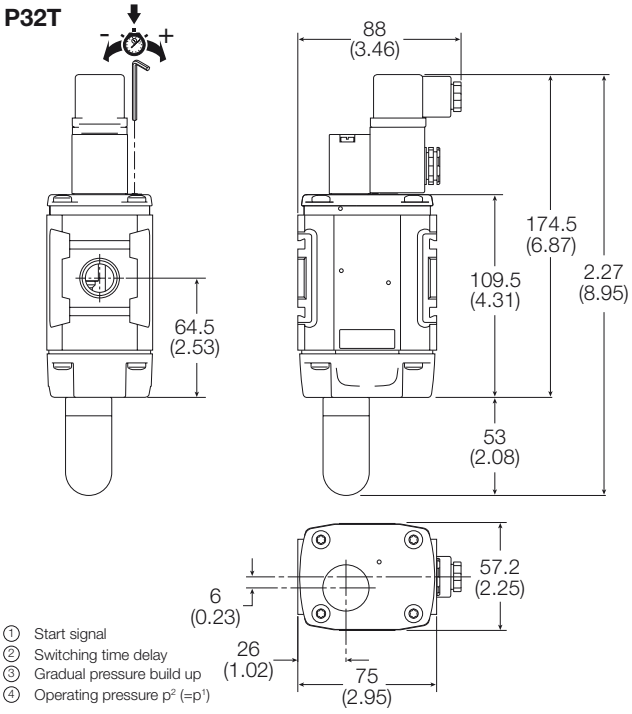
Dimensions mm (inches)

P31T



For mounting brackets see page 52

P32T



① Start signal
② Switching time delay
③ Gradual pressure build up
④ Operating pressure p^2 (=p^1)

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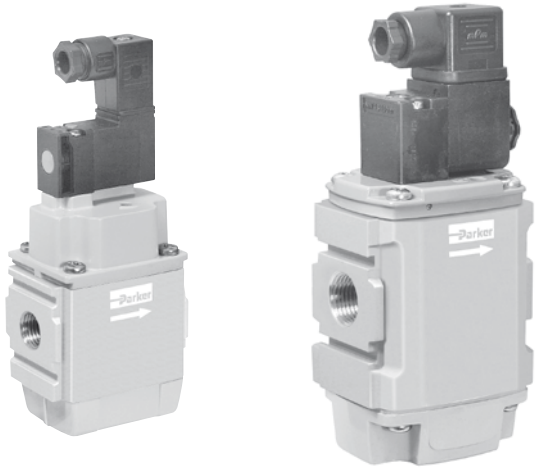
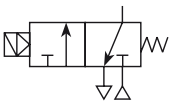
Global Air Preparation System

Dump Valve



Symbols



- 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
- Solenoid or air pilot options
- High flow & exhaust capability
- Silencer included

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

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.

Options:

P 3 [ ] D * [ ] [ ] [ ] [ ] N [ ] — **Solenoid type only** [ ] [ ] [ ] [ ]

Body size	
Mini (1/4")	1
Compact (1/2")	2

Thread Type	
BSPP (G)	1
BSPT	2
NPT	9

Port size	
Mini (1/4")	2
Compact (1/2")	4

Pilot type	
External Air Pilot	P
Solenoid Pilot	S

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

15mm (P31 series only)	C
30mm CNOMO coil (P32 only)	A
30mm CNOMO coil (M12 connection) (P32 only)	D

24VDC non locking manual overide	2CN
120VAC non locking manual overide	3GN
120VAC non locking manual override (P31 series only)	1FN

Note:
P32 unit used for both P32 & P33 series

*** Engineering Level will be entered at factory.**

Remote operated dump valve

Port size	Description	Order Code†	Flow dm^3/s (scfm)	Max. bar (psig)	Height mm (inches)	Width mm (inches)	Depth mm (inches)	Weight
1/4"	120VAC Solenoid & cable plug	**P31D*92SGNC1FN**	17 (36)	10 (150)	115.6 (4.5)	57 (2.2)	40 (1.5)	0.37kg (0.8lbs)
1/4"	24VDC Solenoid & cable plug	**P31D*92SGNC2CN**	17 (36)	10 (150)	166‡ (6.5)	57 (2.2)	40 (1.5)	0.41kg (0.9lbs)
1/4"	External air pilot operated	**P31D*92PPN**	17 (36)	17 (250)	115.6 (4.5)	57 (2.2)	40 (1.5)	0.37kg (0.8lbs)
1/2"	120VAC 30mm coil & cable plug incl.	**P32D*94SCNA3GN**	51 (108)	10 (150)	162.5‡ (6.3)	75 (2.9)	57.2 (2.2)	0.69kg (1.5lbs)
1/2"	24VDC 30mm coil & cable plug incl.	**P32D*94SCNA2CN**	51 (108)	10 (150)	227.5‡ (8.9)	75 (2.9)	57.2 (2.2)	0.91kg (2.0lbs)
1/2"	External air pilot operated	**P32D*94PPN**	51 (108)	17 (250)	162.5‡ (6.3)	75 (2.9)	57.2 (2.2)	0.87kg (1.9lbs)

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

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Global Air Preparation System

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:		-10°C to 50°C (14°F to 122°F)
Temperature Max.* Air Pilot operated:		-20°C to 80°C (-4°F to 176°F)
Air Pilot port:		1/8"
Exhaust port:		**P31D** - 1/4" / **P32D** - 1/2"
Typical flow with 6.3 bar inlet pressure and 1 bar pressure drop:	**P31D** **P32D**	17 dm^3/s (36 scfm) 51 dm^3/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

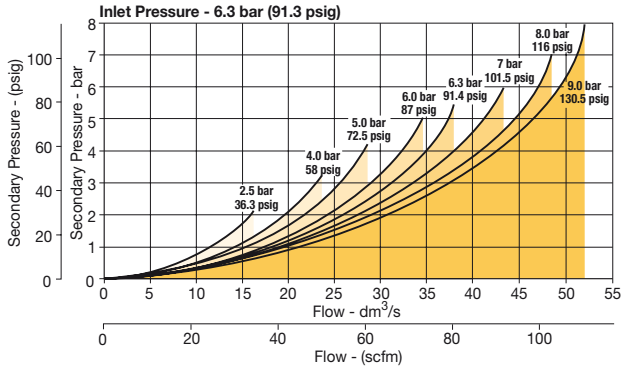
Mounting Brackets

Description	Order code **P31D**
L-Bracket mounting kit	**P3HKA00ML**
Foot bracket mounting kit	**P3HKA00MC**

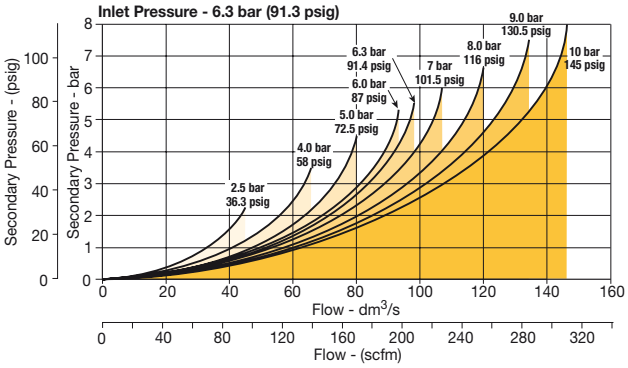
Note:
For solenoid operators and cable plugs (connectors) see pages 68 to 69.

Flow characteristics

1/4 Remote Dump Valve

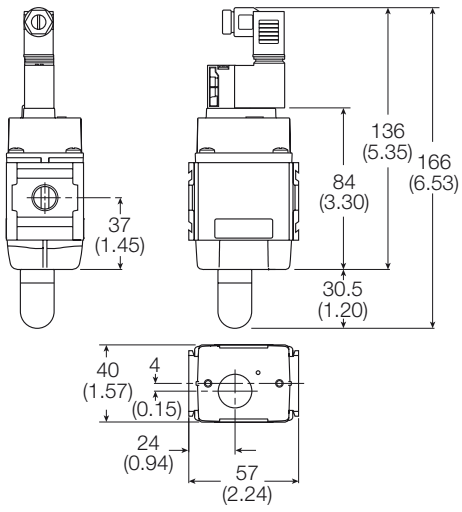


1/2 Remote Dump Valve

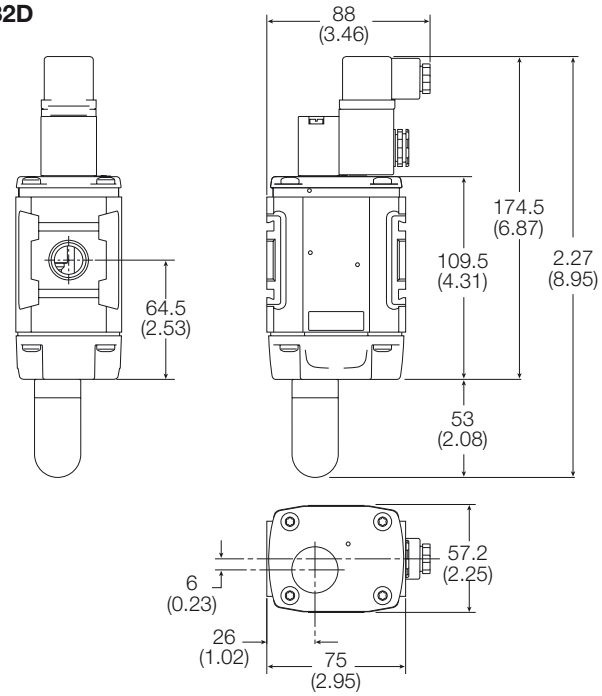


Dimensions mm (inches)

P31D



P32D



For mounting brackets see page 52

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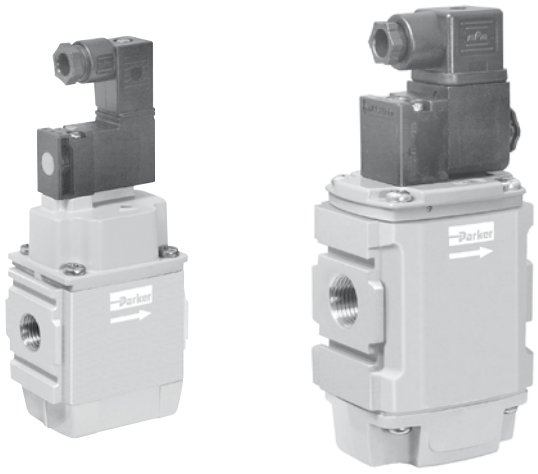
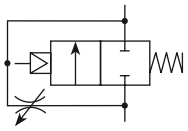
Global Air Preparation System

Soft Start Valve



Symbols



- Modular design with 1/4" or 1/2" integral ports (NPT, BSPP & BSPT)
- The 2-way, 2-position function provides for the safe introduction of pressurel
- Adjustable slow start
- Solenoid or air pilot options
- High flow

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:

P 3 [ ] S * [ ] [ ] [ ] [ ] N

Body size

Mini (1/4")	**1**
Compact (1/2")	**2**

Thread Type

BSPP (G)	**1**
BSPT	**2**
NPT	**9**

Port size

Mini (1/4")	**2**
Compact (1/2")	**4**

Pilot type

External Air Pilot	**P**
Solenoid Pilot	**S**
Internal Air Pilot	**Y**

Actuator interface

Internal Pilot	**0**
15mm solenoid (P31 only)	**G**
30mm solenoid	**C**
Threaded air pilot	**P**

Solenoid type only

15mm (P31 series only)	**C**
30mm CNOMO coil (P32 only)	**A**
30mm CNOMO coil (M12 connection) (P32 only)	**D**

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

Note:
P32 unit used for both P32 & P33 series

*** Engineering Level will be entered at factory.**

Soft start valve

Port size	Description	Order Code†	Flow dm^3/s (scfm)	Max. bar (psig)	Height mm (inches)	Width mm (inches)	Depth mm (inches)	Weight
1/4"	120VAC Solenoid & cable plug	**P31S*92SGNC1FN**	17 (36)	10 (150)	115.6 (4.5)	57 (2.2)	40 (1.5)	0.37kg (0.8lbs)
1/4"	24VDC Solenoid & cable plug	**P31S*92SGNC2CN**	17 (36)	10 (150)	166.0 (6.5)	57 (2.2)	40 (1.5)	0.41kg (0.9lbs)
1/4"	Internal air pilot operated	**P31S*92Y0N**	17 (36)	17 (250)	115.6 (4.5)	57 (2.2)	40 (1.5)	0.37kg (0.8lbs)
1/4"	External air pilot (1/8" threaded)	**P31S*92PPN**	17 (36)	17 (250)	115.6 (4.5)	57 (2.2)	40 (1.5)	0.37kg (0.8lbs)
1/2"	120VAC 30mm coil & cable plug incl.	**P32S*94SCNA3GN**	48 (101)	10 (150)	162.5 (6.3)	88 (3.4)	57.2 (2.28)	0.87kg (1.5lbs)
1/2"	24VDC 30mm coil & cable plug	**P32S*94SCNA2CN**	48 (101)	10 (150)	227.5 (8.9)	88 (3.4)	57.2 (2.28)	0.90kg (2.0lbs)
1/2"	Internal air pilot operated	**P32S*94Y0N**	48 (101)	17 (250)	162.5 (6.3)	75 (2.9)	57.2 (2.28)	0.90kg (2.0lbs)
1/2"	External air pilot (1/8 threaded)	**P32S*94PPN**	48 (101)	17 (250)	162.5 (6.3)	75 (2.9)	57.2 (2.28)	0.87kg (1.5lbs)

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

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Global Air Preparation System

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:		-10°C to 50°C (14°F to 122°F)
Temperature Max.* Air Pilot operated:		-20°C to 80°C (-4°F to 176°F)
Air Pilot port:		1/8"
Typical flow with 6.3bar inlet pressure and 1 bar pressure drop:	**P31S**	17 dm^3/s (36 scfm)
	P32S	48 dm^3/s (101 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

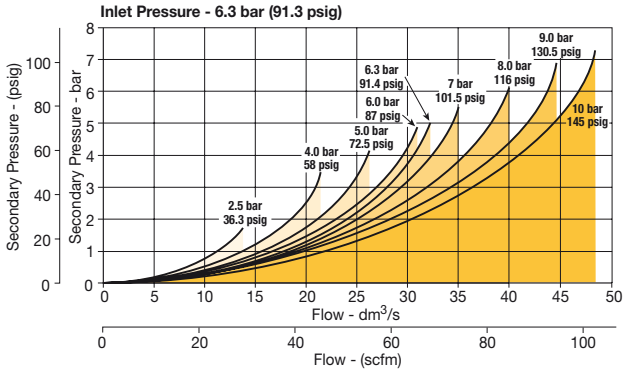
Mounting Brackets

Description	Order code **P31S**
L-Bracket mounting kit	**P3HKA00ML**
Foot bracket mounting kit	**P3HKA00MC**

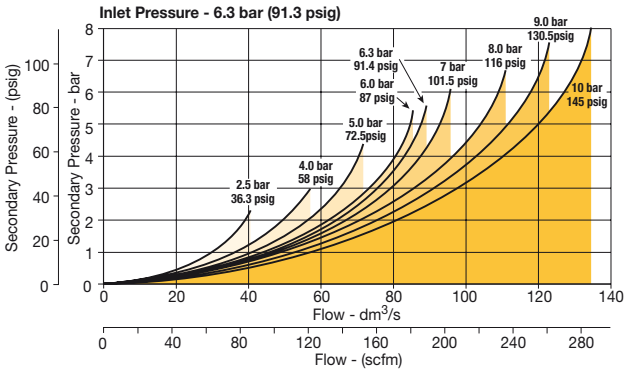
Note:
For solenoid operators and cable plugs (connectors) see pages 68 to 69.

Flow characteristics

1/4 Soft Start Valve

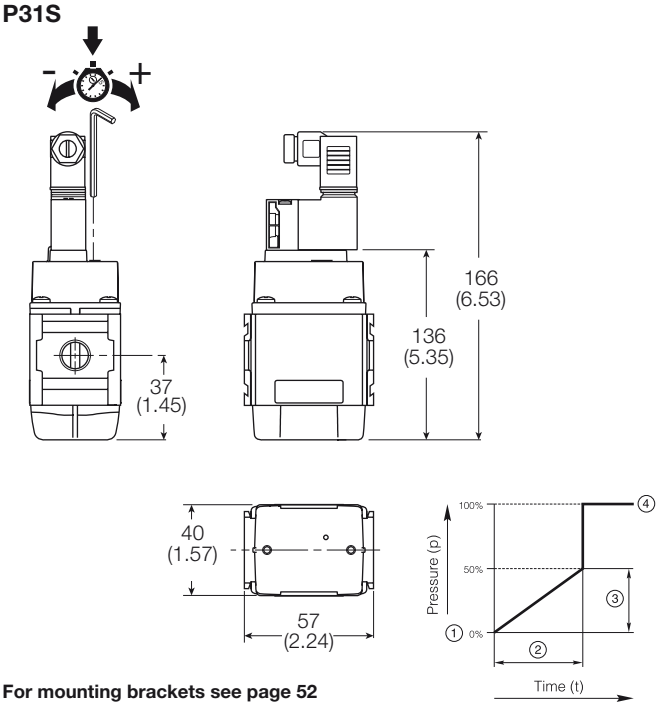


1/2 Soft Start Valve

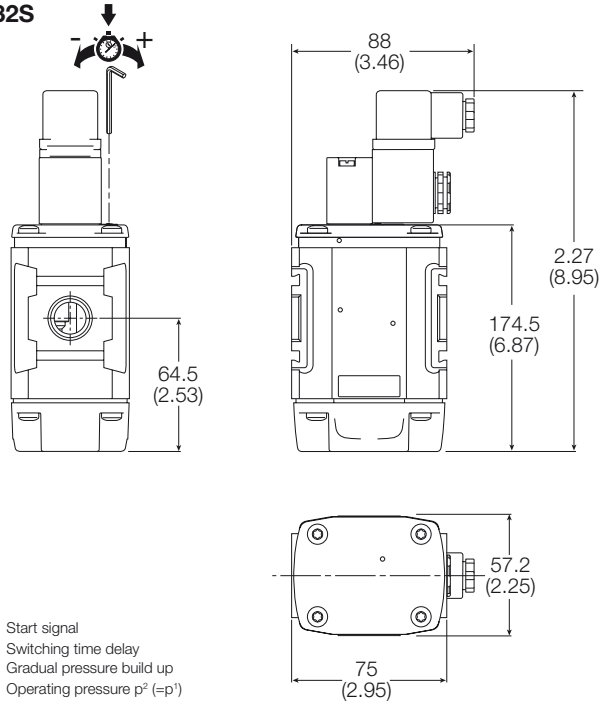


Dimensions mm (inches)

P31S



P32S



For mounting brackets see page 52

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Solenoid Operator - CNOMO

Technical data - Solenoid operators, coil combinations

	NC Normal Operator with 15mm standard coil	**NC Normal Operator** with 22 x 30 standard coil	**NC Normal Operator** with 30 x 30 standard coil
Working pressure	0 to10 bar	0 to 10 bar	0 to10 bar
Ambient temperature	-15°C to 60°C *	-10°C to 60°C *	-10°C to 60°C *
Power (DC)	1.2W	4.8W	2.7W
Power (AC)	1.6VA	8.5VA	4.9VA
Voltage tolerance	+10%/-15%	+/-10%	+/-10%
Duty cycle	100%	100%	100%
Insulation class	F	F	F
Electric connection	ISO 15217	B Industrial	DIN 43650A
Protection	IP65	IP65	IP65
Approval	UL/CSA		UL/CSA
Working media	All neutral media such as compressed air and inert gases.		

* limited to 50°C if use with 100% duty cycle

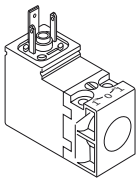
Transients

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	
Encapsualtion material:	Thermoplastic as standard Duroplast for M12 connection

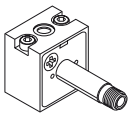
P31 Series only - Solenoid coils 15mm NC



Voltage	Order code Override, blue, non locking flush	Weight (Kg)
24VDC	**PS2982B49P**	0.038
115VAC 50Hz / 120VAC 60Hz	**PS2982B53P**	0.038

Spare solenoid operators

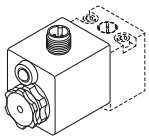
Base Solenoid pilot operator CNOMO NC



Description	Order code Non-lock manual override	Weight (Kg)
Standard Duty	**P2FP23N4B**	0.065
No Override	**P2FP23N4A**	0.065

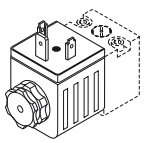
Note: Solenoid pilot operators are fitted to the Global range. Order the above part numbers for spares. The operators are supplied with mounting screws and interface 'O' rings.
Coils and connectors must be ordered separately.

Solenoid coils with M12 connection



Voltage	Order code	Weight (Kg)
Direct current		
24VDC	**P2FC6449**	0.065

Solenoid coils with Din A or Industrial B connection



Voltage	22mm x 30mm Order code B Industrial Standard	Weight (Kg)	30mm x 30mm Order code DIN 43650A Standard	Weight (Kg)
Direct current				
24VDC	**P2FCB449**	0.093	**P2FCA449**	0.105
Alternative current				
110V 50Hz, 120V 60Hz	**P2FCB453**	0.093	**P2FCA453**	0.105

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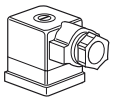
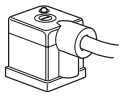
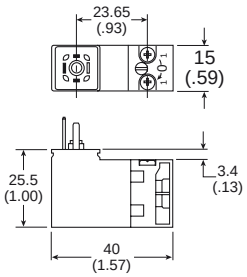
Solenoid connectors / Cable plugs EN175301-803

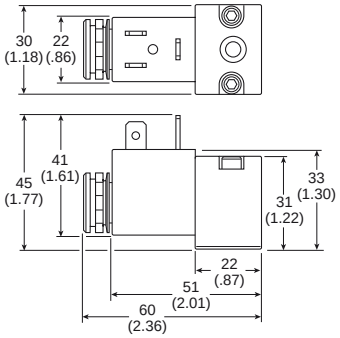
	Description	Order code 15mm Form C ISO15217	Order code 22mm Form B Industrial	Order code 30mm Form A DIN 43650A
With standard screw 	Standard IP65 without flying lead	**PS2932BP**	**PS2429BP**	**PS2028BP**
	With LED and protection 24VAC/DC	**PS294679BP**	**PS243079BP**	**PS203279BP**
	With LED and protection 110VAC	**PS294683BP**	**PS243083BP**	**PS203283BP**
With cable 	Standard with 2m cable IP65	**PS2932JBP**	**PS2429JBP**	**PS2028JCP**
	24VAC/DC, 2m cable LED and protection IP65	**PS2946J79BP**	**PS2430J79BP**	**PS2032J79CP**
	110VAC/DC, 2m cable LED and protection IP65	**PS2946J83BP**	**PS2430J83BP**	**PS2032J83CP**

Solenoid coil Dimensions mm (inches)

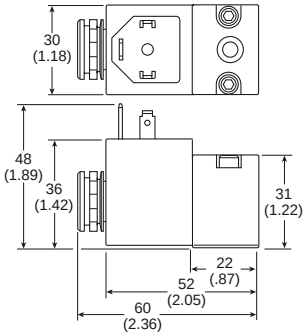
15mm



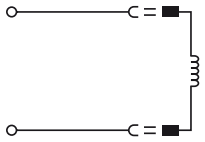
22 x 30mm

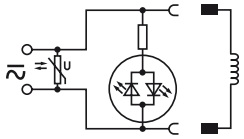


30 x 30mm



Electrical schematics



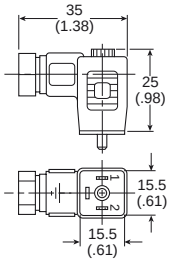


PS2028BP	**PS243079BP**	**PS203279BP**
PS2028JCP	**PS2430J79BP**	**PS2032J79CP**
PS2429BP	**PS243083BP**	**PS203283BP**
PS2429JBP	**PS2430J83BP**	**PS2032J83CP**
PS2932BP	**PS294679BP**	**PS294683BP**
PS2932JBP	**PS2946J79BP**	**PS2946J83BP**

Cable plug Dimensions mm (inches)

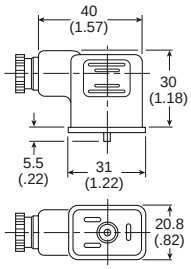
15mm ISO 15217 Cable plugs

PS2932BP
PS294679BP



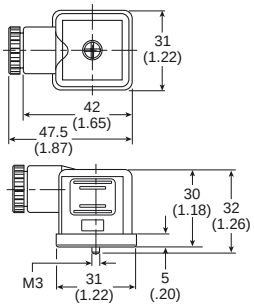
22mm Form B Industrial Cable plugs

PS2429BP



30mm DIN 43650A Cable plugs

PS2028BP



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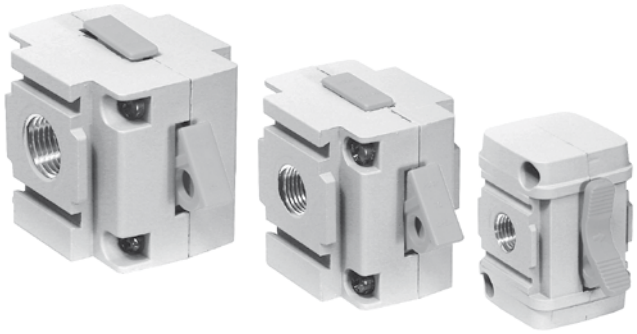
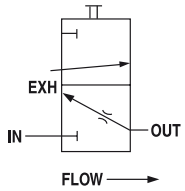
Safety Lockout Valves





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

Model type	Port size	Thread type	Flow dm^3/s (scfm)	Safety Lockout Valve Flow from **left to right**	Safety Lockout Valve Flow from **right to left**
P31	1/4"	NPT	47.2 (100)	**P31V*92LSAN**	**—**
P32	1/4"	NPT	66.5 (141)	**P32V*92LSAN**	**P32V*92LSBN**
	3/8"	NPT	101.9 (216)	**P32V*93LSAN**	**P32V*93LSBN**
	1/2"	NPT	128.4 (272)	**P32V*94LSAN**	**P32V*94LSBN**
P33	1/2"	NPT	136.9 (290)	**P33V*94LSAN**	**P33V*94LSBN**
	3/4"	NPT	141.6 (300)	**P33V*96LSAN**	**P33V*96LSBN**

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

*** Engineering Level will be entered at factory.**

Materials of Construction

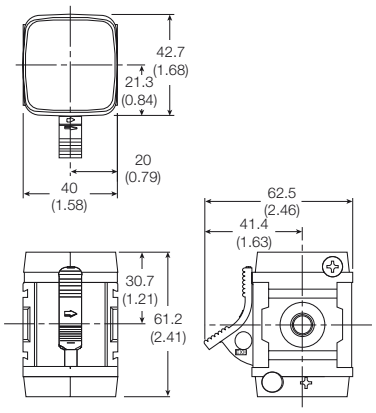
Body	Zinc
Blade	Acetal
Seals	Nitrile

Specifications

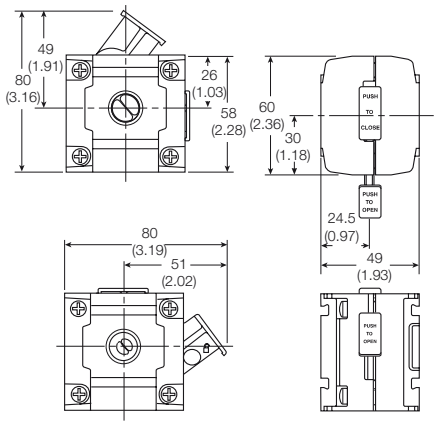
Operating temperature	**P31:**	-10°C to 65.5°C (14°F to 150°F)
	P32/P33:	-25°C to 65.5°C (-13°F to 150°F)
Max. supply pressure		10 bar (150 psig)
Port size	BSPP / BSPT / NPT	1/4, 3/8, 1/2, 3/4
Weight	**P31:**	0.30 kg (0.66 lbs)
	P32:	0.34 kg (0.74 lbs)
	P33:	0.41 kg (0.90 lbs)

Dimensions mm (inches)

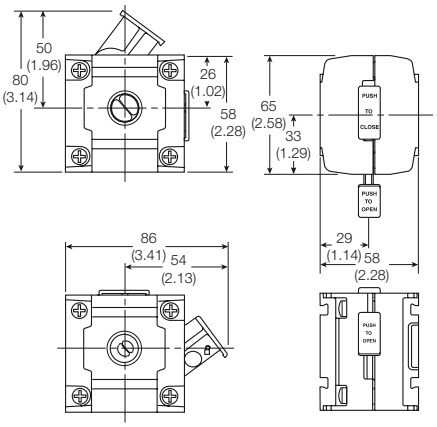
P31



P32



P33



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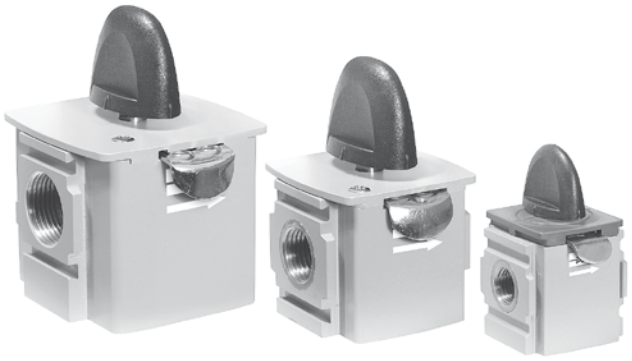
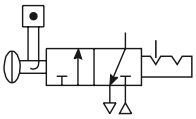
Modular Ball Valves





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

Model type	Port size	Exhaust port	Thread type	Flow dm^3/s (scfm)	Modular ball valve flow from left to right
P31	1/4"	1/4"	NPT	20 (42.4)	**P31V*92LBNN**
P32	3/8"	1/4"	NPT	90 (190.7)	**P32V*93LBNN**
	1/2"	1/4"	NPT	122 (258.5)	**P32V*94LBNN**
P33	1/2"	1/2"	NPT	265 (561.5)	**P33V*94LBNN**
	3/4"	1/2"	NPT	320 (678)	**P33V*96LBNN**

*** Engineering Level will be entered at factory.**

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

Specifications

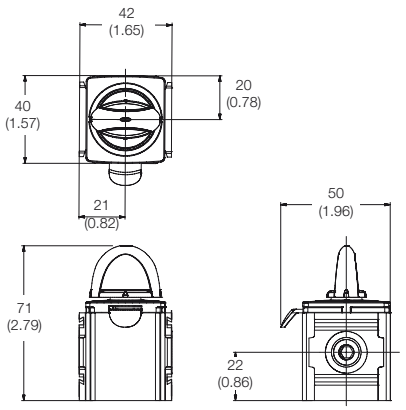
Operating temperature		-20°C to 80°C (-4°F to 176°F)
Max. supply pressure		17 bar (250 psig)
Port size	BSPP / BSPT / NPT	1/4, 3/8, 1/2, 3/4
Weight	**P31:**	0.19 kg (0.41 lbs)
	P32:	0.47 kg (1.00 lbs)
	P33:	0.80 kg (1.70 lbs)

Materials of Construction

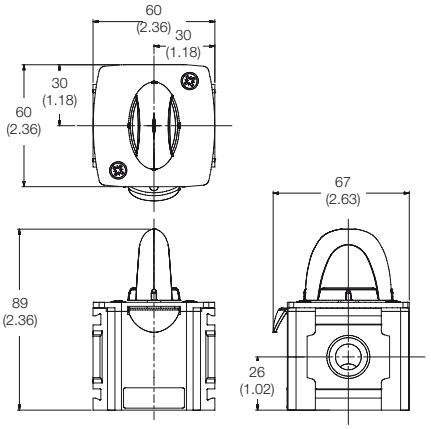
Body		Aluminum
Seals		PTFE
Ball	**P31**	Brass
	P32 / **P33**	Chrome plated brass

Dimensions mm (inches)

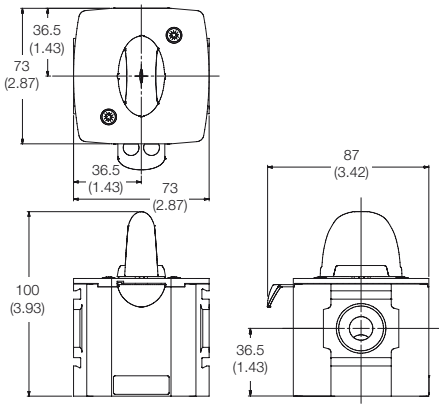
P31



P32



P33



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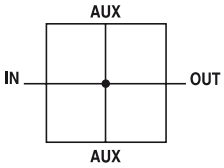
Manifold Blocks



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

Model type	In / Out port size	Auxiliary port size top	Auxilliary port size bottom	Thread type	Order Code
P31	1/4"	1/4"	1/4"	NPT	**P31M*92022N**
P32	1/2"	1/4"	1/2"	NPT	**P32M*94024N**
P33	3/4"	1/4"	1/2"	NPT	**P33M*96024N**

*** Engineering Level will be entered at factory.**

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

Specifications

Operating temperature		-40°C to 65.5°C (-40°F to 150°F)
Max. supply pressure		20.7 bar (300 psig)
Weight	**P31:**	0.19 kg (0.26 lbs)
	P33:	0.34 kg (0.42 lbs)

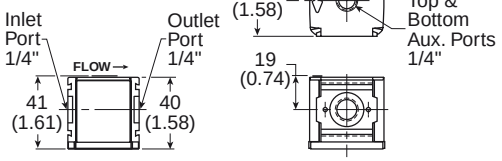
Materials of Construction

Body	Aluminum

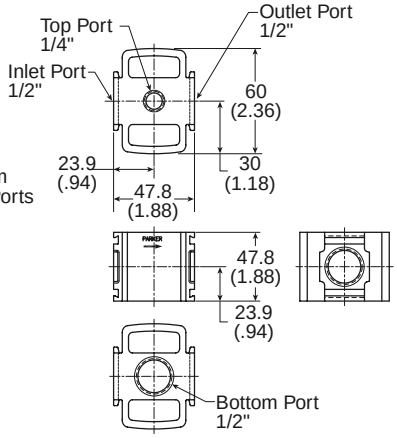
Note:
P33 unit used for both P32 & P33 series

Dimensions mm (inches)

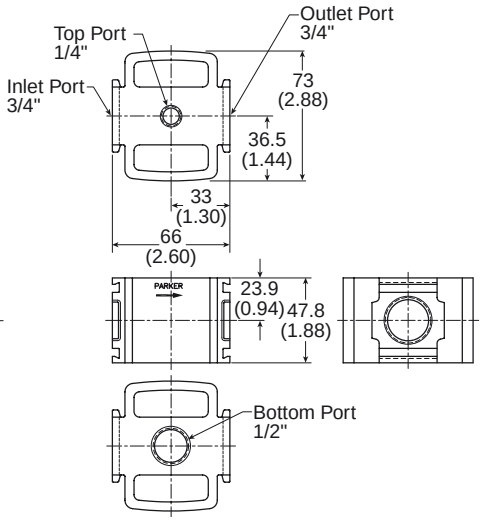
P31



P32



P33



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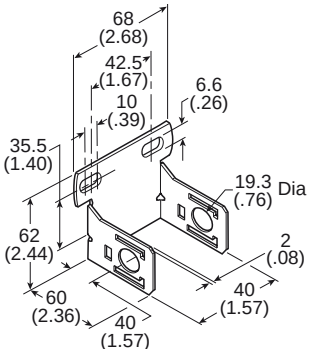
Accessories - P31 Series

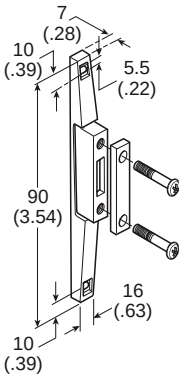
C-Bracket
(Fits to filter and lubricator body)

P31KA00MW



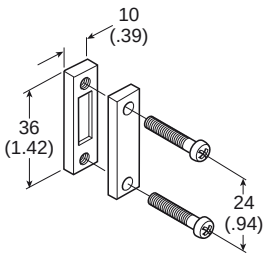
T-Bracket w/ Body Connector
(O-ring not shown)

P31KA00MT



Body Connector
(O-ring not shown)

P31KA00CB



Port Block Kit
(O-ring not shown)

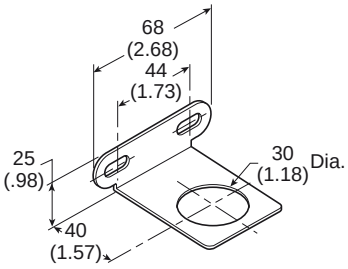
1/8 NPT **P31KA91CP**	1/8 BSPT **P31KA21CP**
1/4 NPT **P31KA92CP**	1/4 BSPT **P31KA22CP**
3/8 NPT **P31KA93CP**	3/8 BSPT **P31KA23CP**
1/8 BSPP **P31KA11CP**	
1/4 BSPP **P31KA12CP**	
3/8 BSPP **P31KA13CP**	

Port Block Kit w/ T-Bracket
(O-ring not shown)

1/8 NPT **P31KA91CN**	1/8 BSPT **P31KA21CN**
1/4 NPT **P31KA92CN**	1/4 BSPT **P31KA22CN**
3/8 NPT **P31KA93CN**	3/8 BSPT **P31KA23CN**
1/8 BSPP **P31KA11CN**	
1/4 BSPP **P31KA12CN**	
3/8 BSPP **P31KA13CN**	

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

P31KA00MR



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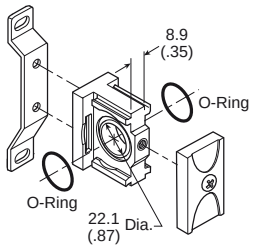
Accessories - P32 Series

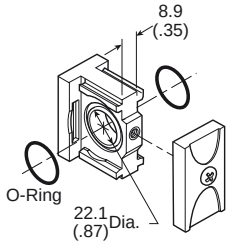
T-Bracket w/ Body Connector

P32KA00MT



Body Connector

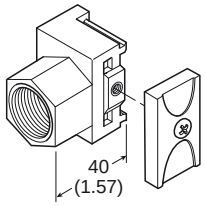
P32KA00CB



Port Block Kit

1/4 NPT..... **P32KA92CP**
3/8 NPT..... **P32KA93CP**
1/2 NPT..... **P32KA94CP**
3/4 NPT..... **P32KA96CP**
1/4 BSPP **P32KA12CP**
3/8 BSPP **P32KA13CP**
1/2 BSPP **P32KA14CP**
3/4 BSPP **P32KA16CP**

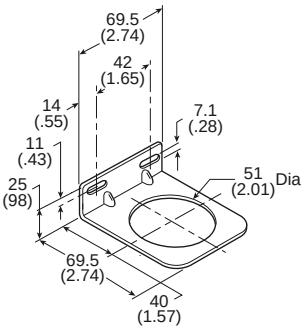
1/4 BSPT **P32KA22CP**
3/8 BSPT **P32KA23CP**
1/2 BSPT **P32KA24CP**
3/4 BSPT **P32KA26CP**



Angle Bracket

(Fits to regulator and filter/regulator bonnet)

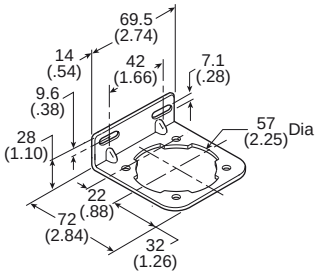
P32KA00MR



L-Bracket

(Fits to filter and lubricator body)

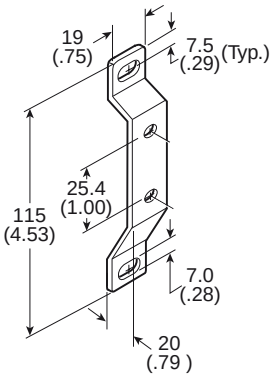
P32KA00ML



T-Bracket

(fits to body connector or port block)

P32KA00MB



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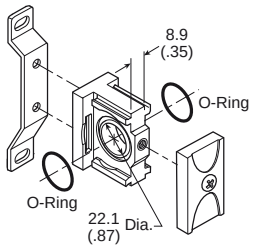
Accessories - P33 Series

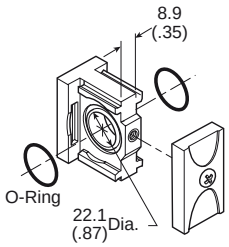
T-Bracket w/ Body Connector

P32KA00MT



Body Connector

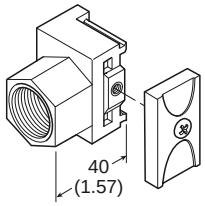
P32KA00CB



Port Block Kit

1/4 NPT..... **P32KA92CP**
3/8 NPT..... **P32KA93CP**
1/2 NPT..... **P32KA94CP**
3/4 NPT..... **P32KA96CP**
1/4 BSPP **P32KA12CP**
3/8 BSPP **P32KA13CP**
1/2 BSPP **P32KA14CP**
3/4 BSPP **P32KA16CP**

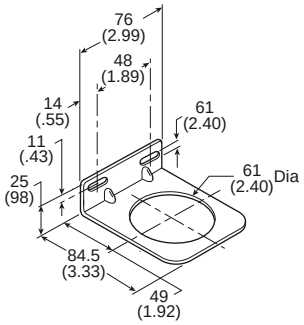
1/4 BSPT **P32KA22CP**
3/8 BSPT **P32KA23CP**
1/2 BSPT **P32KA24CP**
3/4 BSPT **P32KA26CP**



Angle Bracket

(Fits to regulator and filter/regulator bonnet)

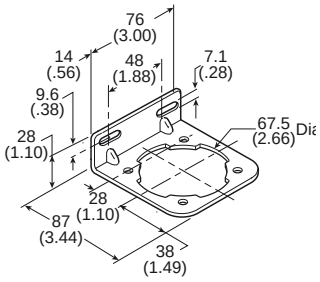
P33KA00MR



L-Bracket

(Fits to filter and lubricator body)

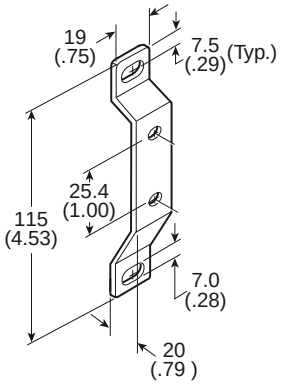
P33KA00ML



T-Bracket

(fits to body connector or port block)

P32KA00MB



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Kits

Series	Description	Order Code	
P31 P32 P33	Panel Mount Nut (Plastic)	**P31KA00MP** **P32KA00MP** **P33KA00MP**	
P31 P32 P33	Panel Mount Nut (Aluminum)	**P31KA00MM** **P32KA00MM** **P33KA00MM**	
P31 P32 P33	5µ Element Kit	**P31KA00ESE** **P32KA00ESE** **P33KA00ESE**	
P31 P32 P33	1µ Element Kit	**P31KA00ES9** **P32KA00ES9** **P33KA00ES9**	
P31 P32 P33	0.01µ Element Kit	**P31KA00ESC** **P32KA00ESC** **P33KA00ESC**	
P31 P32 P33	Adsorber Element Kit	**P31KA00ESA** **P32KA00ESA** **P33KA00ESA**	
P32 / P33	Auto Drain Kit	**P32KA00DA**	
P32 / P33	Differential Pressure Indicator Kit	**P32KA00RQ**	
P31 P32 / P33	Fill Plug Kit	**P31KA00PL** **P32KA00PL**	
P31 / P32 / P33	Drip Control Assembly Kit	**P32KA00PG**	

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Kits

Series	Description	Order Code	
P31 P32 P33	Plastic Bowl w/ Bowl Guard & Manual Drain	**P31KA00BGM** **P32KA00BGM** **P33KA00BGM**	
P31	Plastic Bowl w/ Bowl Guard & Pulse Drain	**P31KA00BGB**	
P32 P33	Plastic Bowl w/ Bowl Guard & Auto Drain	**P32KA00BGA** **P33KA00BGA**	
P31 P32 P33	Metal Bowl w/o Sight Gauge & Manual Drain	**P31KA00BMM** **P32KA00BMM** **P33KA00BMM**	
P31	Metal Bowl w/o Sight Gauge & Pulse Drain	**P31KA00BMB**	
P32 P33	Metal Bowl w/o Sight Gauge & Auto Drain	**P32KA00BMA** **P33KA00BMA**	
P32 P33	Metal Bowl w/ Sight Gauge & Manual Drain	**P32KA00BSM** **P33KA00BSM**	
P32 P33	Metal Bowl w/ Sight Gauge & Auto Drain	**P32KA00BSA** **P33KA00BSA**	
P31 P32 P33	Lubricator - Plastic Bowl w/ Bowl Guard No Drain	**P31KA00BGN** **P32KA00BGN** **P33KA00BGN**	
P31 P32 P33	Lubricator - Metal Bowl w/o Sight Gauge No Drain	**P31KA00BMN** **P32KA00BMN** **P33KA00BMN**	
P32 P33	Lubricator - Metal Bowl w/ Sight Gauge No Drain	**P32KA00BSN** **P33KA00BSN**	

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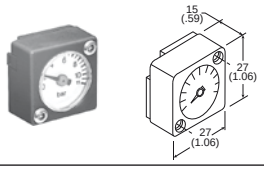
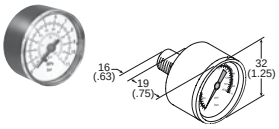
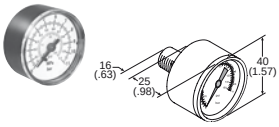
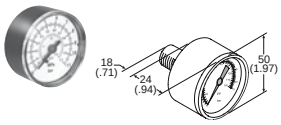
Kits

Series	Description	Connection		Order Code	
P31 P32 P33	Regulator - Relieving Repair Kit			**P31KA00RB** **P32KA00RB** **P33KA00RB**	
P31 P32 P33	Regulator - Non Relieving Repair Kit			**P31KA00RC** **P32KA00RC** **P33KA00RC**	
P31 P32 P33	Regulator - Main Adjusting Spring 0-2 bar (0-30 psig) Kit			**P31KA00PR** **P32KA00PR** **P33KA00PR**	
P31 P32 P33	Regulator - Main Adjusting Spring 0-4.1 bar (0-60 psig) Kit			**P31KA00PS** **P32KA00PS** **P33KA00PS**	
P31 P32 P33	Regulator - Main Adjusting Spring 0-8.6 bar (0-125 psig) Kit			**P31KA00PT** **P32KA00PT** **P33KA00PT**	
P32 P33	Regulator - Main Adjusting Spring 0-17 bar (0-250 psig) Kit			**P32KA00PV** **P33KA00PV**	
P31	Square Flush Mounting Gauge Kit	0-4 bar 0-10 bar 0-60 psig 0-150 psig		**K4511SCR04B** **K4511SCR11B** **K4511SCR060** **K4511SCR150**	
P31	1" Round Gauge	0-60 psig / 0-4.1 bar 0-160 psig / 0-10 bar	1/8" 1/8"	**K4510N18060** **K4510N18160**	
P31	40mm Round Gauge	0-30 psig / 0-2 bar 0-60 psig / 0-4.1 bar 0-160 psig / 0-10 bar	1/8" 1/8" 1/8"	**K4515N18030** **K4515N18060** **K4515N18160**	
P32 / P33	50mm Round Gauge	0-30 psig / 0-2 bar 0-60 psig / 0-4.1 bar 0-160 psig / 0-10 bar 0-300 psig / 0-20 bar	1/4" 1/4" 1/4" 1/4"	**K4520N14030** **K4520N14060** **K4520N14160** **K4520N14300**	
P31 P32 / P33	Body Connector O-ring (Spares kit) (Pack of 4)			**P31KA02CY** **P32KA04CY**	

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Notes

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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.

1.3 Relevant International Standards: For a good guide to the application of a broad spectrum of pneumatic fluid power devices see: ISO 4414:1998, Pneumatic Fluid Power – General Rules Relating to Systems. See www.iso.org for ordering information.

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.

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2.7. Chemical Compatibility: For more information on plastic component chemical compatibility see Pneumatic Division technical bulletins Tec-3, Tec-4, and Tec-5

2.8. Product Rupture: Product rupture can cause death, serious personal injury, and property damage.
- Do not connect pressure regulators or other Pneumatic Division products to bottled gas cylinders.
- Do not exceed the Maximum primary pressure rating of any pressure regulator or any system component.
- Consult product labeling or product literature for pressure rating limitations.

3. PRODUCT ASSEMBLY AND INSTALLATION INSTRUCTIONS

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

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

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

4. VALVE AND FRL MAINTENANCE AND REPLACEMENT INSTRUCTIONS

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

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

4.3. Lockout / Tagout Procedures: Be sure to follow all required lockout and tagout procedures when servicing equipment. For more information see: OSHA Standard – 29 CFR, Part 1910.147, Appendix A, The Control of Hazardous Energy – (Lockout / Tagout)

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

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

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

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

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

4.8. Servicing or Replacing of any Worn or Damaged Parts: To avoid unpredictable system behavior that can cause death, personal injury and property damage:
- Follow all government, state and local safety and servicing practices prior to service including but not limited to all OSHA Lockout Tagout procedures (OSHA Standard – 29 CFR, Part 1910.147, Appendix A, The Control of Hazardous Energy – Lockout / Tagout).
- Disconnect electrical supply (when necessary) before installation, servicing, or conversion.
- Disconnect air supply and depressurize all air lines connected to system and Pneumatic Division products before installation, service, or conversion.
- Installation, servicing, and / or conversion of these products must be performed by knowledgeable personnel who understand how pneumatic products are to be applied.
- After installation, servicing, or conversions air and electrical supplies (when necessary) should be connected and the product tested for proper function and leakage. If audible leakage is present, or if the product does not operate properly, do not put product or system into use.
- Warnings and specifications on the product should not be covered or painted over. If masking is not possible, contact your local representative for replacement labels.

4.9. Putting Serviced System Back into Operation: Follow the guidelines above and all relevant Installation and Maintenance Instructions supplied with the valve FRL or vacuum component to insure proper function of the system.

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1. Terms and Conditions. Seller's willingness to offer Products, or accept an order for Products, to or from Buyer is expressly conditioned on Buyer's assent to these Terms and Conditions and to the terms and conditions found on-line at www.parker.com/saleterms/. Seller objects to any contrary or additional term or condition of Buyer's order or any other docum ent issued by Buyer.

2. Price Adjustments; Payments. Prices stated on the reverse side or preceding pages of this document are valid for 30 days. After 30 days, Seller may change prices to reflect any increase in its costs resulting from state, federal or local legislation, price increases from its suppliers, or any change in the rate, charge, or classification of any carrier. The prices stated on the reverse or preceding pages of this document do not include any sales, use, or other taxes unless so stated specifically. Unless otherwise specified by Seller, all prices are F.O.B. Seller's facility, and payment is due 30 days from the date of invoice. After 30 days, Buyer shall pay interest on any unpaid invoices at the rate of 1.5% per month or the maximum allowable rate under applicable law.

3. Delivery Dates; Title and Risk; Shipment. All delivery dates are approximate and Seller shall not be responsible for any damages resulting from any delay. Regardless of the manner of shipment, title to any products and risk of loss or damage shall pass to Buyer upon tender to the carrier at Seller's facility (i.e., when it's on the truck, it's yours). Unless otherwise stated, Seller may exercise its judgment in choosing the carrier and means of delivery. No deferment of shipment at Buyers' request beyond the respective dates indicated will be made except on terms that will indemnify, defend and hold Seller harmless against all loss and additional expense. Buyer shall be responsible for any additional shipping charges incurred by Seller due to Buyer's changes in shipping, product specifications or in accordance with Section 13, herein.

4. Warranty. Seller warrants that the Products sold hereunder shall be free from defects in material or workmanship for a period of twelve months from the date of delivery to Buyer or 2,000 hours of normal use, whichever occurs first. This warranty is made only to Buyer and does not extend to anyone to whom Products are sold after purchased from Seller. The prices charged for Seller's products are based upon the exclusive limited warranty stated above, and upon the following disclaimer: **DISCLAIMER OF WARRANTY: THIS WARRANTY COMPRISES THE SOLE AND ENTIRE WARRANTY PERTAINING TO PRODUCTS PROVIDED HEREUNDER. SELLER DISCLAIMS ALL OTHER WARRANTIES, EXPRESS AND IMPLIED, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.**

5. Claims; Commencement of Actions. Buyer shall promptly inspect all Products upon delivery. No claims for shortages will be allowed unless reported to the Seller within 10 days of delivery. No other claims against Seller will be allowed unless asserted in writing within 60 days after delivery or, in the case of an alleged breach of warranty, within 30 days after the date within the warranty period on which the defect is or should have been discovered by Buyer. Any action based upon breach of this agreement or upon any other claim arising out of this sale (other than an action by Seller for any amount due to Seller from Buyer) must be commenced within thirteen months from the date of tender of delivery by Seller or, for a cause of action based upon an alleged breach of warranty, within thirteen months from the date within the warranty period on which the defect is or should have been discovered by Buyer.

6. LIMITATION OF LIABILITY. UPON NOTIFICATION, SELLER WILL, AT ITS OPTION, REPAIR OR REPLACE A DEFECTIVE PRODUCT, OR REFUND THE PURCHASE PRICE. **IN NO EVENT SHALL SELLER BE LIABLE TO BUYER FOR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF, OR AS THE RESULT OF, THE SALE, DELIVERY, NON-DELIVERY, SERVICING, USE OR LOSS OF USE OF THE PRODUCTS OR ANY PART THEREOF, OR FOR ANY CHARGES OR EXPENSES OF ANY NATURE INCURRED WITHOUT SELLER'S WRITTEN CONSENT, EVEN IF SELLER HAS BEEN NEGLIGENT, WHETHER IN CONTRACT, TORT OR OTHER LEGAL THEORY. IN NO EVENT SHALL SELLER'S LIABILITY UNDER ANY CLAIM MADE BY BUYER EXCEED THE PURCHASE PRICE OF THE PRODUCTS.**

7. Contingencies. Seller shall not be liable for any default or delay in performance if caused by circumstances beyond the reasonable control of Seller.

8. User Responsibility. The user, through its own analysis and testing, is solely responsible for making the final selection of the system and Product and assuring that all performance, endurance, maintenance, safety and warning requirements of the application are met. The user must analyze all aspects of the application and follow applicable industry standards and Product information. If Seller provides Product or system options, the user is responsible for determining that such data and specifications are suitable and sufficient for all applications and reasonably foreseeable uses of the Products or systems.

9. Loss to 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 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.

10. Special Tooling. A tooling charge may be imposed for any special tooling, including without limitation, dies, fixtures, molds and patterns, acquired to manufacture Products. Such special tooling shall be and remain Seller's property notwithstanding payment of any charges by Buyer. In no event will Buyer acquire any interest in apparatus belonging to Seller which is utilized in the manufacture of the Products, even if such apparatus has been specially converted or adapted for such manufacture and notwithstanding any charges paid by Buyer. Unless otherwise agreed, Seller shall have the right to alter, discard or otherwise dispose of any special tooling or other property in its sole discretion at any time.

11. Buyer's Obligation; Rights of Seller. To secure payment of all sums due or otherwise, Seller shall retain a security interest in the goods delivered and this agreement shall be deemed a Security Agreement under the Uniform Commercial Code. Buyer authorizes Seller as its attorney to execute and file on Buyer's behalf all documents Seller deems necessary to perfect its security interest. Seller shall have a security interest in, and lien upon, any property of Buyer in Seller's possession as security for the payment of any amounts owed to Seller by Buyer.

12. Improper use and Indemnity. Buyer shall indemnify, defend, and hold Seller harmless from any claim, liability, damages, lawsuits, and costs (including attorney fees), whether for personal injury, property damage, patent, trademark or copyright infringement or any other claim, brought by or incurred by Buyer, Buyer's employees, or any other person, arising out of: (a) improper selection, improper application or other misuse of Products purchased by Buyer from Seller; (b) any act or omission, negligent or otherwise, of Buyer; (c) Seller's use of patterns, plans, drawings, or specifications furnished by Buyer to manufacture Product; or (d) Buyer's failure to comply with these terms and conditions. Seller shall not indemnify Buyer under any circumstance except as otherwise provided.

13. Cancellations and Changes. Orders shall not be subject to cancellation or change by Buyer for any reason, except with Seller's written consent and upon terms that will indemnify, defend and hold Seller harmless against all direct, incidental and consequential loss or damage. Seller may change product features, specifications, designs and availability with notice to Buyer.

14. Limitation on Assignment. Buyer may not assign its rights or obligations under this agreement without the prior written consent of Seller.

15. Entire Agreement. This agreement contains the entire agreement between the Buyer and Seller and constitutes the final, complete and exclusive expression of the terms of the agreement. All prior or contemporaneous written or oral agreements or negotiations with respect to the subject matter are herein merged.

16. Waiver and Severability. Failure to enforce any provision of this agreement will not waive that provision nor will any such failure prejudice Seller's right to enforce that provision in the future. Invalidation of any provision of this agreement by legislation or other rule of law shall not invalidate any other provision herein. The remaining provisions of this agreement will remain in full force and effect.

17. Termination. This agreement may be terminated by Seller for any reason and at any time by giving Buyer thirty (30) days written notice of termination. In addition, Seller may by written notice immediately terminate this agreement for the following: (a) Buyer commits a breach of any provision of this agreement (b) the appointment of a trustee, receiver or custodian for all or any part of Buyer's property (b) the filing of a petition for relief in bankruptcy of the other Party on its own behalf, or by a third party (c) an assignment for the benefit of creditors, or (d) the dissolution or liquidation of the Buyer.

18. Governing Law. This agreement and the sale and delivery of all Products hereunder shall be deemed to have taken place in and shall be governed and construed in accordance with the laws of the State of Ohio, as applicable to contracts executed and wholly performed therein and without regard to conflicts of laws principles. Buyer irrevocably agrees and consents to the exclusive jurisdiction and venue of the courts of Cuyahoga County, Ohio with respect to any dispute, controversy or claim arising out of or relating to this agreement. Disputes between the parties shall not be settled by arbitration unless, after a dispute has arisen, both parties expressly agree in writing to arbitrate the dispute.

19. Indemnity for Infringement of Intellectual Property Rights. Seller shall have no liability for infringement of any patents, trademarks, copyrights, trade dress, trade secrets or similar rights except as provided in this Section. Seller will defend and indemnify Buyer against allegations of infringement of U.S. patents, U.S. trademarks, copyrights, trade dress and trade secrets ("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 a Product sold pursuant to this Agreement infringes the Intellectual Property Rights of a third party. Seller's obligation to defend and indemnify Buyer is contingent on 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 a Product 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 the Product, replace or modify the Product so as to make it noninfringing, or offer to accept return of the Product 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 Products 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 Product sold hereunder. The foregoing provisions of this Section shall constitute Seller's sole and exclusive liability and Buyer's sole and exclusive remedy for infringement of Intellectual Property Rights.

20. Taxes. Unless otherwise indicated, 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 Products.

21. Equal Opportunity Clause. For the performance of government contracts and where dollar value of the Products exceed $10,000, the equal employment opportunity clauses in Executive Order 11246, VEVRAA, and 41 C.F.R. §§ 60-1.4(a), 60-741.5(a), and 60-250.4, are hereby incorporated.

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Catalog 0750-2 US. November, 2010

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