

Global FRL and P3Y Series

Air Preparation Products

Catalog 0760P-1



ENGINEERING YOUR SUCCESS.

⚠ 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.

Offer of Sale

The items described in this document are hereby offered for sale by Parker Hannifin Corporation, its subsidiaries or its authorized distributors. This offer and its acceptance are governed by the provisions stated on the separate page of this document entitled "Offer of Sale".



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DECLARATION OF COMPLIANCE (ROHS)

European Directive 2011/65/EU – RoHS (Restriction of certain Hazardous Substances in electrical and electronic equipment), restricts the use of the 6 substances in the manufacture of specified electrical equipment.

Lead: Product containing lead and its compound (except for applications of lead as an alloying element by weight in steel up to 0.35%, in aluminium 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 volume

Cadmium: The concentration level must not exceed 0.01% by volume

Hexavalent Chromiou:

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 Esters (PBDE):

The concentration level must not exceed 0.1% by weight. This substance is not known to be in any of our products.



Global Air Preparation products supplied by Parker Hannifin have been designed and manufactured in accordance with "sound engineering practice", as defined by Article 3 of Pressure Equipment Directive 97/23/EC.



Global Air Preparation product range is in compliance with REACH to ensure continued compliance additions to the list of SVHC (Substance of Very High Concern) are reviewed periodically.

Global Air Preparation product range has been third party Shock & Vibration tested independently in accordance to EN 61373 : 1999, Category 2



Following Ignition Hazard Assessments performed on the non-electrical Global Air Preparation products they are in accordance with the requirements of EN 13463-1:2009, it was considered that the equipment does not contain its own source of ignition, and therefore is not within the scope of directive 94/9/EC.

The products can be used in a Group II Category 2 environment assuming that the ATEX Directive and the following conditions are complied with:

- Installation and maintenance of the product must be undertaken by qualified personnel.
- Do not mount the products in an area where impact may occur.
- Filters must be used to limit the introduction of particles and to capture particles generated in service.
- Supply air quality must be within ISO 8573-1:2010 Class 1.4.2.
- Maximum working temperature to be as stated on product label.
- WARNING – pulsating pressure and/or a closed circuit can generate heat.
- Deposits of dust on the product must not exceed 5mm thickness.
Refer to technical file for surface areas of plastics. The unit must be earthed via the compressed air supply line.
- The unit must not come into contact with liquid solvents, acids or alkalis
Refer to technical file for chemicals known to be incompatible. Product cleaning must be undertaken using a method complying with the specifications of the ATEX zone, preferably by using mild soap and water or antistatic products.
- Regulators, Filter Regulators:
Do not use Regulators or Filter Regulators within systems that can create vibration within the Regulator / Filter Regulator unit.
- Solenoid Operated Valves:
Are suitable for use in an ATEX environment, (Group II Category 2) providing ATEX approved solenoids are fitted.
- Technical file available on request.



Global Air Preparation product range has been designed and tested in accordance with ISO flow testing, envelope integrity, and catalog data presented.

- Filters – ISO 5782-1 & ISO 5782-2: 1997
- Regulators- ISO 6953-1 & ISO 6953-2: 2000
- Lubricators- ISO 6301-1 & ISO 6301-2: 2009



For inventory, lead times, and kit lookup, visit www.pdnplu.com



Parker's Modular Air Preparation System

Global. Modular.

*Performance you need,
wherever you need it.*



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

Parker's comprehensive Air Preparation System is available in four body sizes with different thread types to accommodate your requirements.

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

www.parker.com



Global 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

- 5 μ particulate, 1.0 μ and 0.01 μ 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
- Ball style lockout / shutoff valve
- Repair kits, gauges, etc.



P3Y Comprehensive Offering



P3Y Series
3/4" and 1"
90mm body width



Filters

- 5 μ particulate, 1.0 μ and 0.01 μ coalescing, and adsorber available as standard
- Polypropylene bowl with metal screw in bowl guard

Regulators

- Available as a stand alone high flow unit with a rolling diaphragm to extend life
- Optional key lock

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

Accessories

- Solenoid operated soft start, quick dump, and soft start/quick dump valves
- Manifold blocks
- Ball style lockout / shutoff valve
- Repair kits, gauges, etc.

Air Preparation

P31 Mini Series



40mm body width

1/4" Ported

Flows up to:	scfm	(dm ³ /s, ANR)
Filter	25	(12)
Coalescer	7.5	(3.6)
Regulator	68	(32)
Filter/Regulator	74	(35)
Lubricator	52	(25)

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:	scfm	(dm ³ /s, ANR)
Filter	82	(39)
Coalescer	36	(17)
Regulator	165	(78)
Filter/Regulator	164	(77)
Lubricator	90	(42)

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:	scfm	(dm ³ /s, ANR)
Filter	102	(48)
Coalescer	42	(20)
Regulator	233	(110)
Filter/Regulator	235	(109)
Lubricator	150	(71)

Features:

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

P3Y Large Series



90mm body width

3/4" and 1" Ported

Flows up to:	scfm	(dm ³ /s, ANR)
Filter	170	(80)
Coalescer	307	(150)
Regulator	550	(260)
Filter/Regulator	465	(220)
Lubricator	390	(184)

Features:

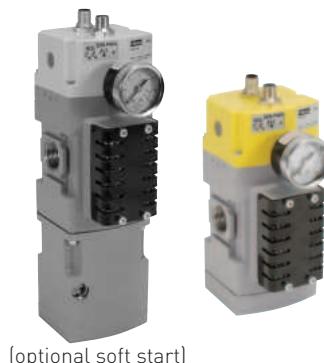
- OSHA Compliant shut-off valves
- Soft-Start & Quick Dump valves
- Electronic Proportional Regulator



Complete Pneumatic System

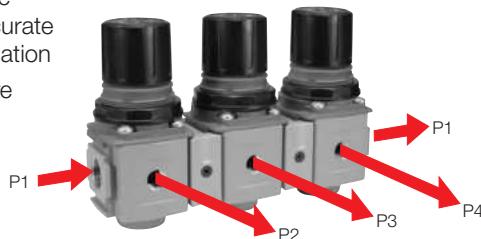
Safety Exhaust Valve

- External monitoring provides a cost and space saving advantage
- Solid state pressure sensors provide accurate, fast fault detection
- Quick visual LED indicators on the front of the valve
- Safety exhaust outlet is no-maintenance and non-clog by design
- Suitable for stand alone use or modular mounting to P32 or P33 FRL assembly



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
- Multiple spring ranges available



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



Semi Precision Regulator and Filter/Regulator

- Available in P32 compact series
- Fine adjustment sensitivity
- Good repeatability and minimal pressure drop
- Good flow capacity
- Light gray knob for easy identification



Optional Tamperproof Kits

- One facilitates the permanent tamperproofing of the Regulator and Filter/Regulator units
- Hinged black part clamps over control knob and is locked in place after sliding yellow cover over it
- Other allows for removable lockout/tagout tamperproofing
 - Four pad lock location holes tagout
 - Hinged locking clamp secures over existing knob via yellow cover which is slid over into place



Additional Options P32 Only

(Consult factory for availability)

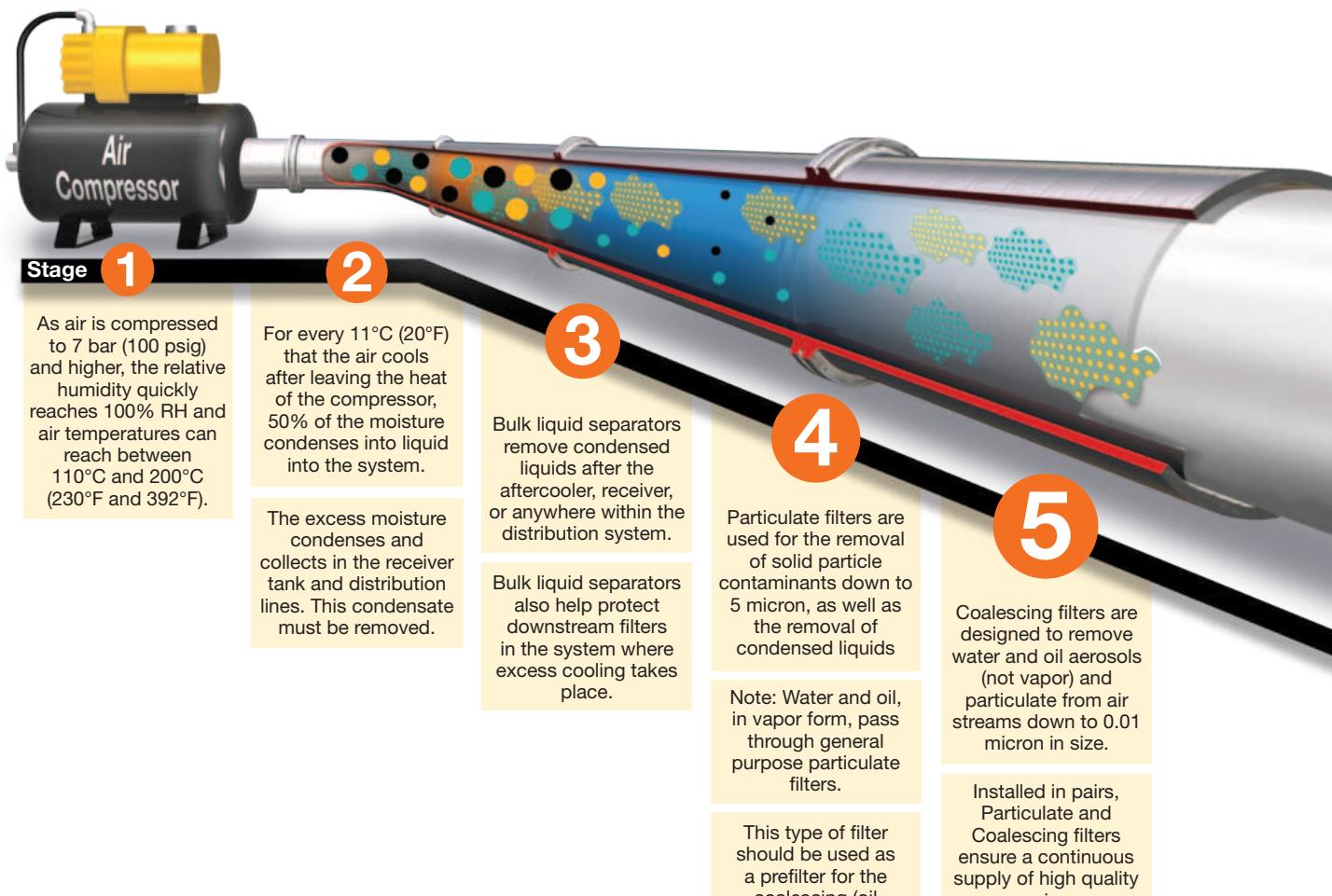
- T-Handle
- Preset and Tamperproof
- Preset
- Pressure Limiter



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 Air Preparation



Key

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



For inventory, lead times, and kit lookup, visit www.pdnplu.com

						
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 93°C (200°F) releases 95% of its moisture into the piping system when it cools to 38°C (100°F)	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 4°C (40°F) (refrigeration) or -40°C (-40°F) (desiccant).	Removal of odors and trace vapors for critical applications.
Parker Global Air Preparation Solution	Customer supplied	P3TF Bulk Liquid Separator	P31, P32, P33, P3Y Particulate Filter	P31, P32, P33, P3Y Coalescing Filter	Refrigeration Dryer, TW Regenerative Desiccant Dryer	P31, P32, P33, P3Y Activated Carbon (Adsorber) Filter

Clean Dry Air

6

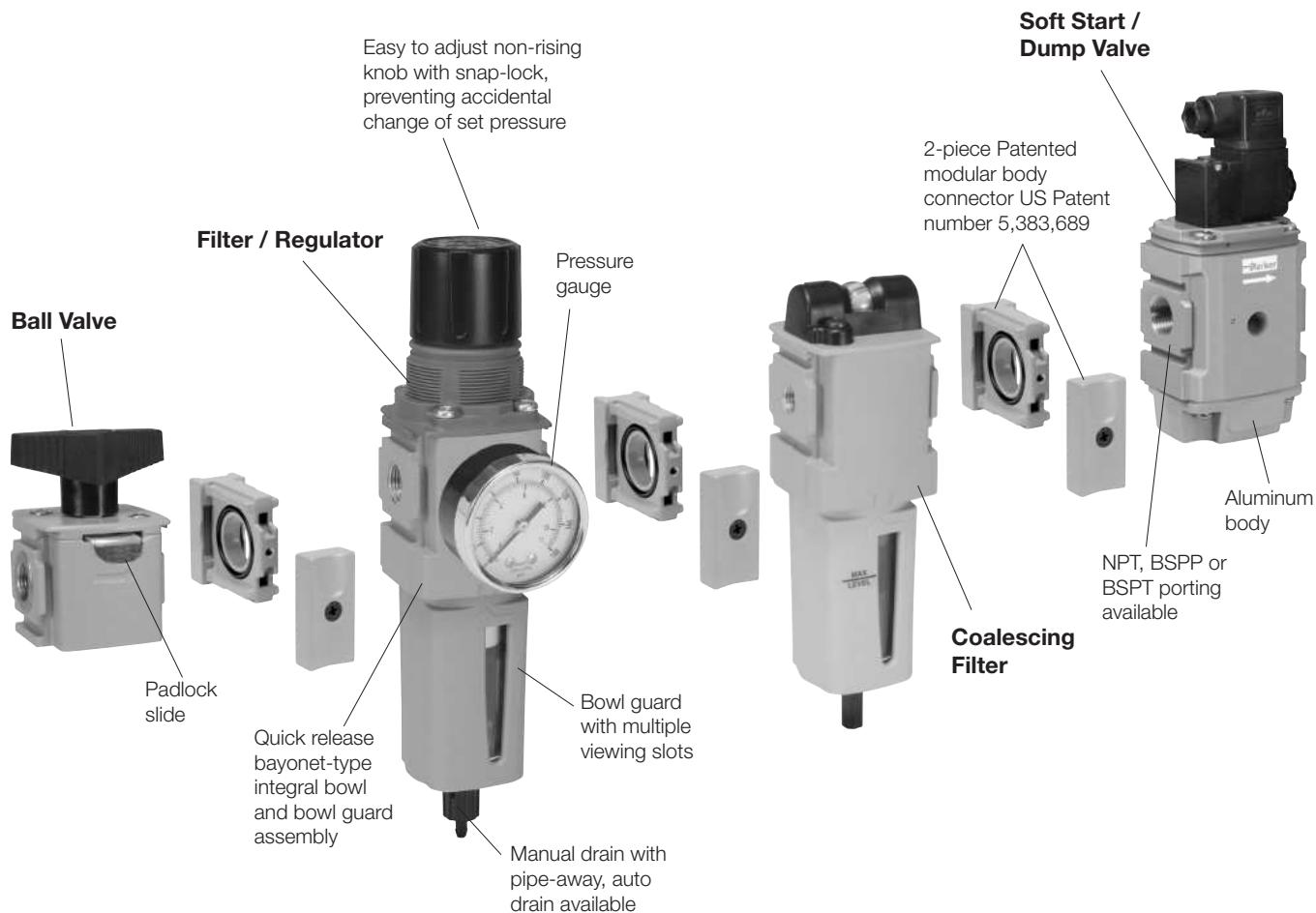
Refrigeration and desiccant dryers lower the air's dew point by removing water vapor, providing appropriately dry air for the downstream application.

7

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

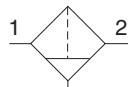


A completely modular air preparation system

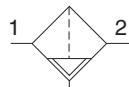


P31 Particulate Filter – Mini

- 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



Manual drain



Pulse drain

Port Size	Description [‡]	Part Number
1/4"	Poly Bowl, Manual Drain	P31FB92EGMN
1/4"	Poly Bowl, Pulse Drain	P31FB92EGBN
1/4"	Metal Bowl, Manual Drain	P31FB92EMMN
1/4"	Metal Bowl, Pulse Drain	P31FB92EMBN

[‡] For polycarbonate bowl, see caution in Engineering Section A.

Operating Information

Supply pressure (max):

Plastic bowl	150 psig (10 bar)
Metal bowl	250 psig (17 bar)

Operating temperature:

Plastic bowl	14°F to 125°F (-10°C to 52°C)
Metal bowl	14°F to 150°F (-10°C to 65.5°C)

Standard filtration:

5 micron

Flow capacity*:

25 scfm (12 dm³/s, ANR)

Useful retention[†]:

0.4 US oz. (12 cm³)

Weight:

0.24 lb (0.11 kg)

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

[†] 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)

Ordering Information:

P31FB	9	2	E	G	M	N
Basic Series Global Modular Mini Particulate Filter						
P31FB						
Thread Type						
BSPP 1						
BSPT 2						
NPT 9						
Port Size						
1/4 2						
Element						
5μ Element E						
Mounting						
N No Bracket						
Drain Type						
M Manual Drain						
B Pulse Drain						
X Flex Drain						
Bowl Type						
G Poly Bowl with Bowl Guard						
M Metal Bowl without Sight Gauge						

Most popular.



For inventory, lead times, and kit lookup, visit www.pdnplu.com

Material Specifications

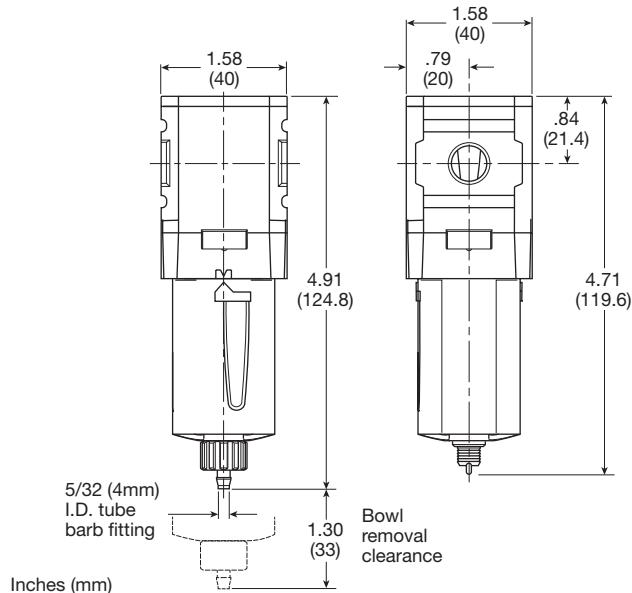
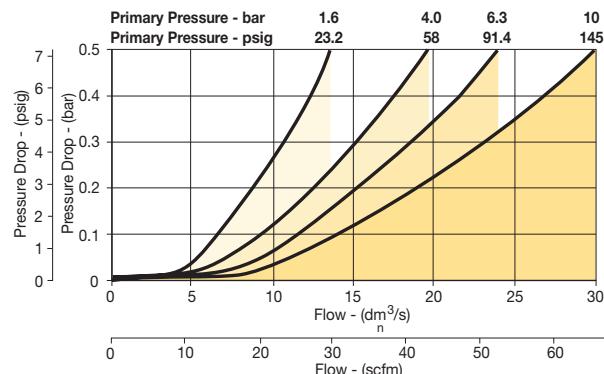
Body	Aluminum
Body cap	ABS
Plastic bowl	Polycarbonate
Metal bowl	Aluminum
Bowl guard	Nylon
Element retainer	Acetal
Baffle	Acetal
Filter element	Sintered polyethylene
Seals	Nitrile

Repair and Service Kits

Plastic bowl / bowl guard, manual drain	P31KB00BGM
Metal bowl / w/o sight gauge, manual drain	P31KB00BMM
Plastic bowl / bowl guard, pulse drain	P31KB00BGB
Metal bowl / w/o sight gauge, pulse drain	P31KB00BMB
5 μ particle filter element	P31KA00ESE
C-bracket (fits to body)	P31KA00MW
T-bracket with body connector	P31KA00MT
Body connector	P31KA00CB

Flow Charts

P31FB 1/4" Filter



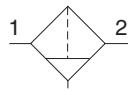
Manual Drain

Pulse Drain

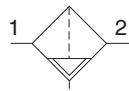


P32 Particulate Filter – Compact

- 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



Manual drain



Auto drain



Port Size	Description [‡]	Part Number
1/4"	Poly Bowl, Manual Drain	P32FB92EGMN
1/4"	Poly Bowl, Auto Drain	P32FB92EGAN
1/4"	Metal Bowl, Manual Drain	P32FB92ESMN
1/4"	Metal Bowl, Auto Drain	P32FB92ESAN
3/8"	Poly Bowl, Manual Drain	P32FB93EGMN
3/8"	Poly Bowl, Auto Drain	P32FB93EGAN
3/8"	Metal Bowl, Manual Drain	P32FB93ESMN
3/8"	Metal Bowl, Auto Drain	P32FB93ESAN
1/2"	Poly Bowl, Manual Drain	P32FB94EGMN
1/2"	Poly Bowl, Auto Drain	P32FB94EGAN
1/2"	Metal Bowl, Manual Drain	P32FB94ESMN
1/2"	Metal Bowl, Auto Drain	P32FB94ESAN

[‡] For polycarbonate bowl, see caution in Engineering Section A.

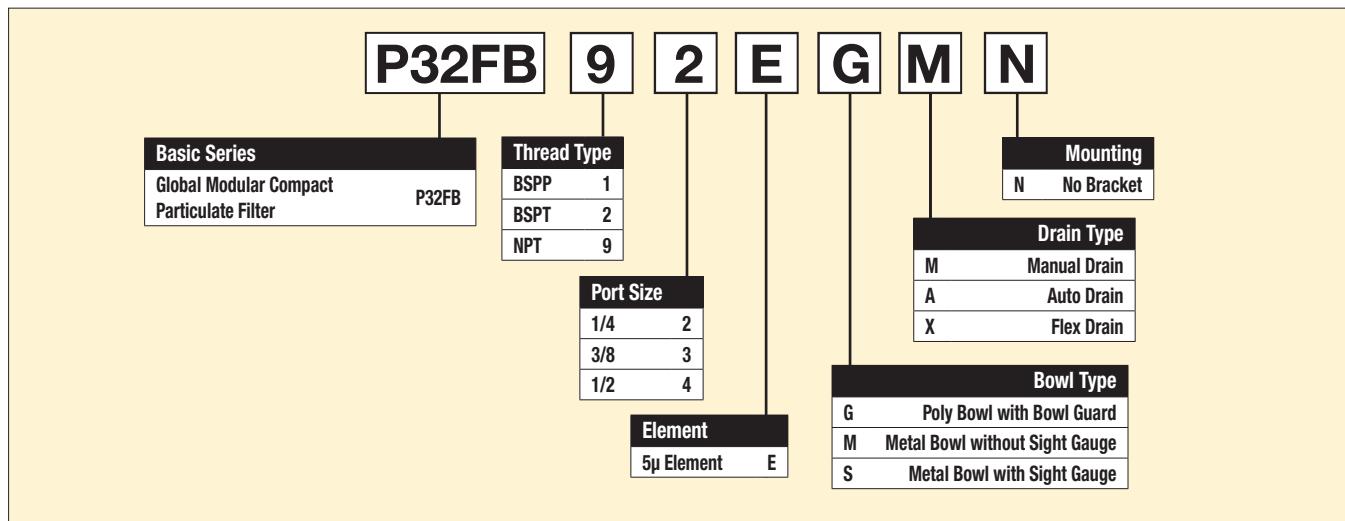
Operating Information

Supply pressure (max):	150 psig (10 bar)
Plastic bowl	250 psig (17 bar)
Metal bowl	
Operating temperature:	
Plastic bowl	-13°F to 125°F (-25°C to 52°C)
Metal bowl	-13°F to 150°F (-25°C to 65.5°C)
Standard filtration:	5 micron
Flow capacity*:	
1/4	50 scfm (24 dm ³ /s, ANR)
3/8	78 scfm (37 dm ³ /s, ANR)
1/2	82 scfm (39 dm ³ /s, ANR)
Useful retention [†] :	1.7 US oz. (51 cm ³)
Weight:	0.62 lb (0.28 kg)

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

Ordering Information:



Most popular.



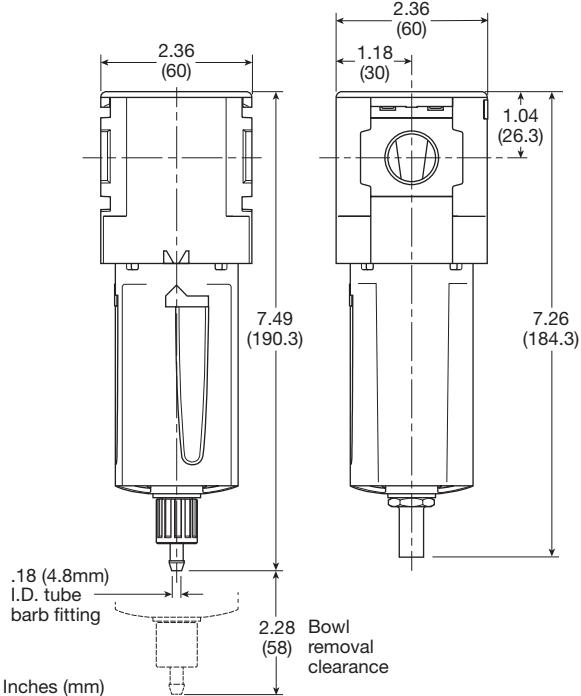
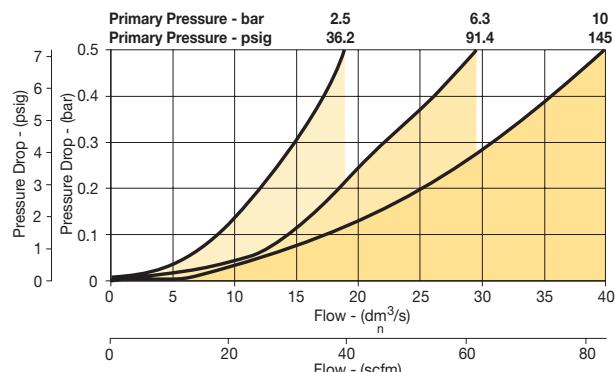
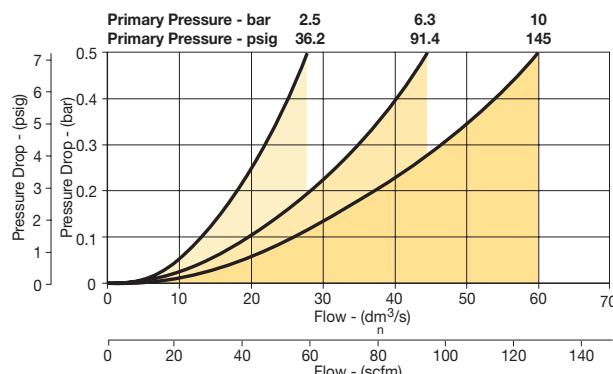
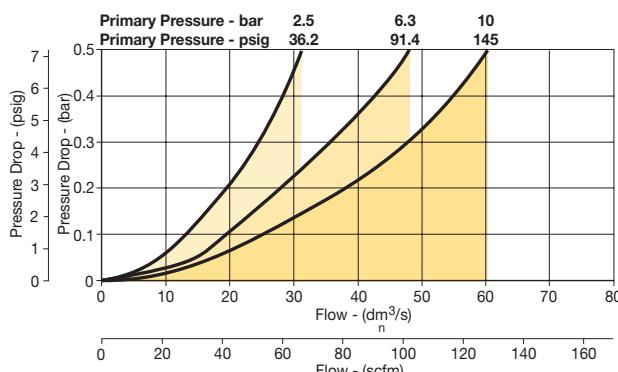
For inventory, lead times, and kit lookup, visit www.pdnplu.com

Compact Particulate Filters**Material Specifications**

Body	Aluminum
Body cap	ABS
Plastic bowl	Polycarbonate
Metal bowl	Aluminum
Bowl guard	Nylon
Deflector	Polypropylene
Element retainer / Baffle	Acetal
Filter element	Sintered polyethylene
Seals	Nitrile
Sight gauge	Nylon

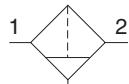
Repair and Service Kits

Plastic bowl / bowl guard, manual drain	P32KB00BGM
Metal bowl / sight gauge, manual drain	P32KB00BSM
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

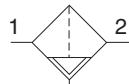
**Air Preparation Products****Air Preparation****Flow Charts****P32FB 1/4" Filter****P32FB 3/8" Filter****P32FB 1/2" Filter**

P33 Particulate Filter – Standard

- 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



Manual drain



Auto drain



Port Size	Description [‡]	Part Number
1/2"	Poly Bowl, Manual Drain	P33FA94EGMN
1/2"	Poly Bowl, Auto Drain	P33FA94EGAN
1/2"	Metal Bowl, Manual Drain	P33FA94ESMN
1/2"	Metal Bowl, Auto Drain	P33FA94ESAN
3/4"	Poly Bowl, Manual Drain	P33FA96EGMN
3/4"	Poly Bowl, Auto Drain	P33FA96EGAN
3/4"	Metal Bowl, Manual Drain	P33FA96ESMN
3/4"	Metal Bowl, Auto Drain	P33FA96ESAN

[‡] For polycarbonate bowl, see caution in Engineering Section A.

Operating Information

Supply pressure (max):	150 psig (10 bar)
Plastic bowl	250 psig (17 bar)
Metal bowl	
Operating temperature:	
Plastic bowl	-13°F to 125°F (-25°C to 52°C)
Metal bowl	-13°F to 150°F (-25°C to 65.5°C)
Standard filtration:	5 micron
Flow capacity*:	1/2 85 scfm (40 dm ³ /s, ANR) 3/4 102 scfm (48 dm ³ /s, ANR)
Useful retention [†] :	2.8 US oz. (85 cm ³)
Weight:	1.01 lb (0.46 kg)

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

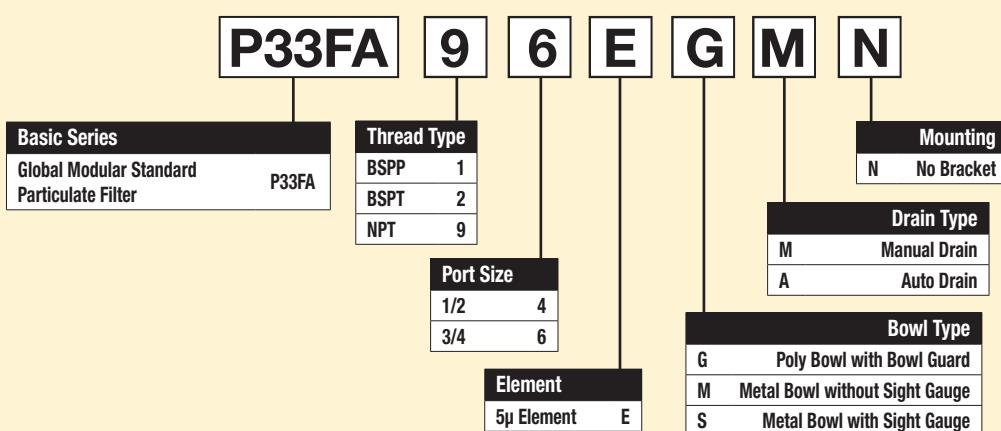
[†] Useful retention refers to volume below the quiet zone baffle.

Air quality:

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

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

Ordering Information:



Most popular.



For inventory, lead times, and kit lookup, visit www.pdnplu.com

Material Specifications

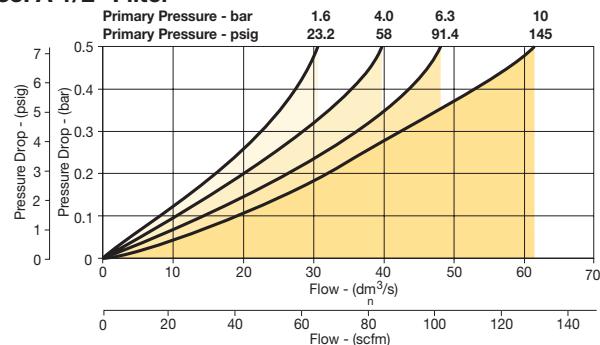
Body	Aluminum
Body cap	ABS
Plastic bowl	Polycarbonate
Metal bowl	Aluminum
Bowl guard	Nylon
Deflector	Polypropylene
Element retainer / Baffle	Acetal
Filter element	Sintered polyethylene
Seals	Nitrile
Sight gauge	Nylon

Repair and Service Kits

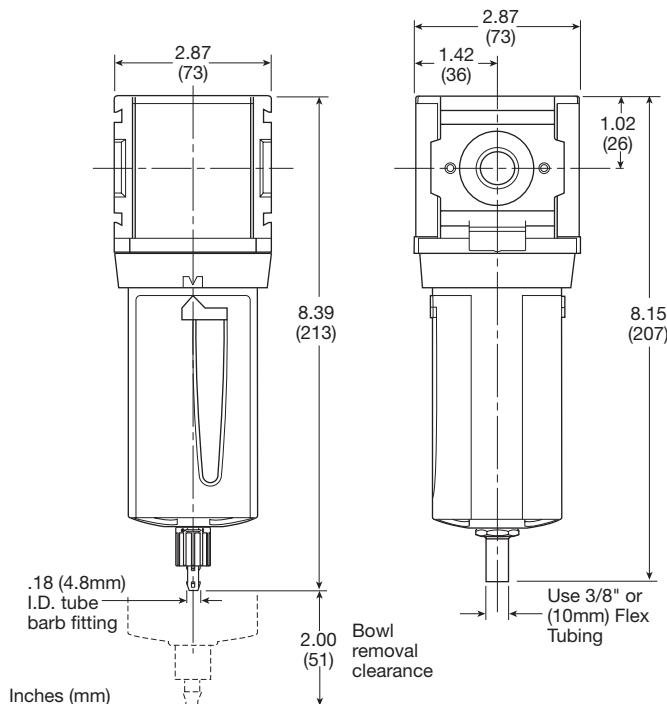
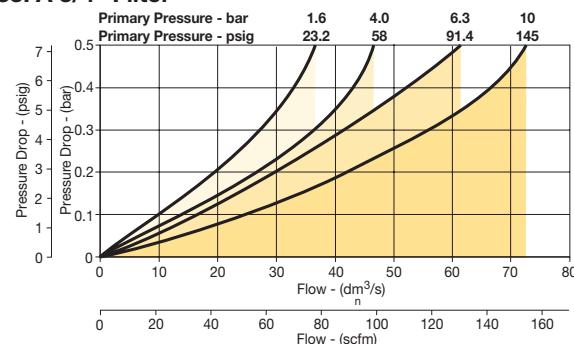
Plastic bowl / bowl guard, manual drain	P33KA00BGM
Metal bowl / sight gauge, manual drain	P33KA00BSM
Auto drain	P32KA00DA
5 μ particle filter element	P33KA00ESE
L-bracket (fits to body)	P33KA00ML
T-bracket (fits to body connector)	P32KA00MB
T-bracket with body connector	P33KA00MT
Body connector	P32KA00CB

Flow Charts

P33FA 1/2" Filter



P33FA 3/4" Filter



Manual Drain

Automatic Drain

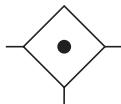


P31 Coalescing and Adsorber Filters – Mini

- 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
- Differential Pressure Indicator (DPI) standard on coalescing filters
- Positive bayonet latch to ensure correct and 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.



Port Size	Description [‡]	Element	Part Number
1/4"	Poly Bowl, Manual Drain	0.01 micron	P31FB92DGMN
1/4"	Poly Bowl, Pulse Drain	0.01 micron	P31FB92DGBN
1/4"	Metal Bowl, Manual Drain	0.01 micron	P31FB92DMMN
1/4"	Metal Bowl, Pulse Drain	0.01 micron	P31FB92DMBN

[‡] For polycarbonate bowl, see caution in Engineering Section A.



Operating Information

Supply pressure (max):

150 psig (10 bar)
150 psig (10 bar)
250 psig (17 bar)

Operating temperature:

14°F to 125°F (-10°C to 52°C)
14°F to 150°F (-10°C to 65.5°C)

Standard filtration:

1.0 and 0.01 micron

Adsorber

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

Flow capacity*:

12 scfm (5.5 dm³/s, ANR)
7.5 scfm (3.6 dm³/s, ANR)
12.7 scfm (6 dm³/s, ANR)

Useful retention[†]:

0.4 US oz. (12 cm³)

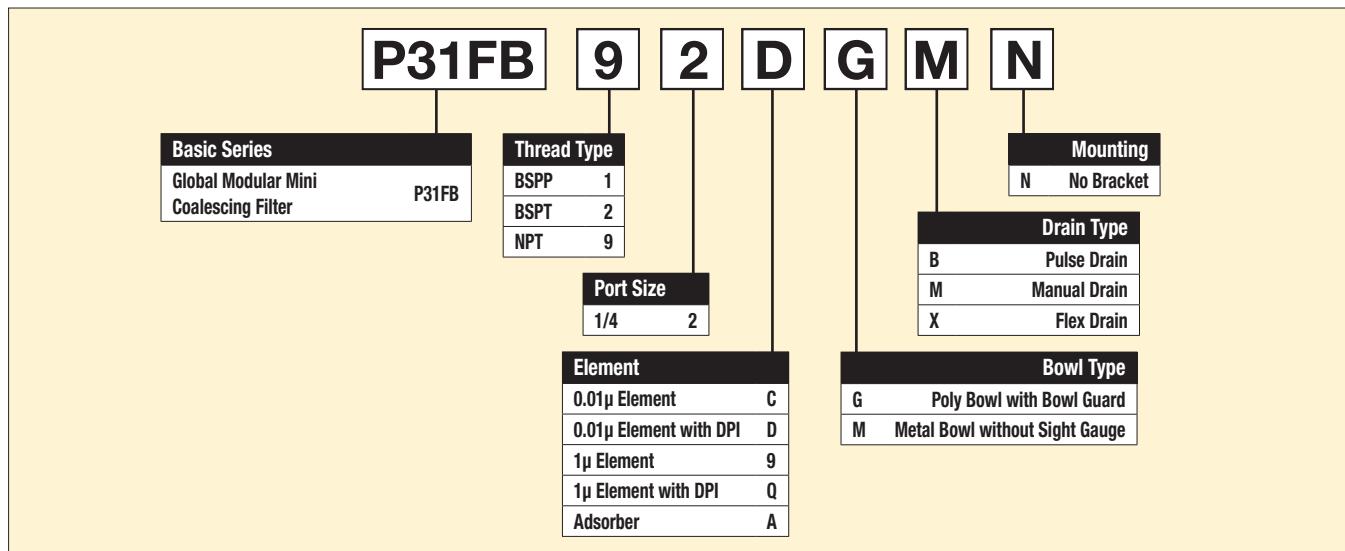
Weight:

0.24 lb (0.11 kg)

* Inlet pressure 91.3 psig (6.3 bar). Pressure drop 3 psig (0.2 bar), saturated element.

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

Ordering Information:



Most popular.



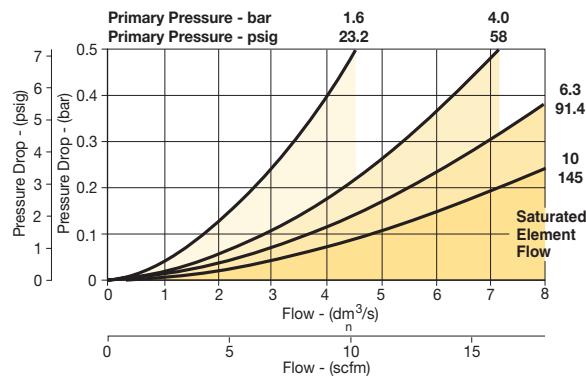
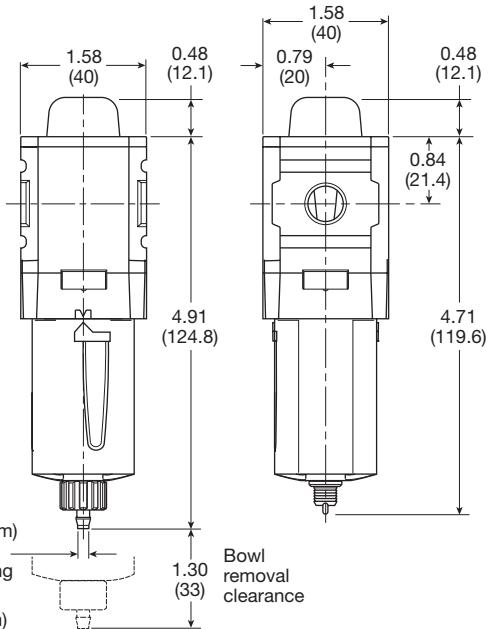
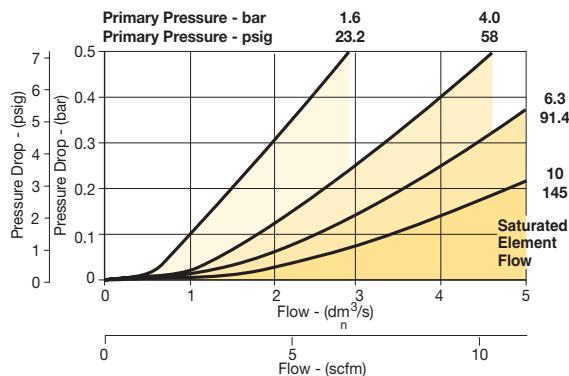
For inventory, lead times, and kit lookup, visit www.pdnplu.com

Mini Coalescing and Adsorber Filters**Material Specifications**

Body	Aluminum
Body cap	ABS
Plastic bowl	Polycarbonate
Metal bowl	Aluminum
Filter element	Borosilicate cloth
Adsorber element	Activated carbon
Seals	Nitrile

Repair and Service Kits

Plastic bowl / bowl guard, manual drain	P31KB00BGM
Metal bowl / w/o sight gauge, manual drain	P31KB00BMM
Plastic bowl / bowl guard, pulse drain	P31KB00BGB
Metal bowl / w/o sight gauge, pulse drain	P31KB00BMB
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
Differential pressure indicator (replacement)	P31KB00RQ

Air Preparation Products**Air Preparation****Flow Charts****P31FB - 1.0 micron flow****P31FB - 0.01 micron flow**

Manual Drain

Pulse Drain



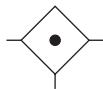
For inventory, lead times, and kit lookup, visit www.pdnplu.com

P32 Coalescing and Adsorber Filters – Compact

- 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.



Port Size	Description [‡]	Element	Part Number
1/4"	Poly Bowl, Manual Drain	0.01 micron	P32FB92DGMN
1/4"	Poly Bowl, Auto Drain	0.01 micron	P32FB92DGAN
1/4"	Metal Bowl, Manual Drain	0.01 micron	P32FB92DSMN
1/4"	Metal Bowl, Auto Drain	0.01 micron	P32FB92DSAN
3/8"	Poly Bowl, Manual Drain	0.01 micron	P32FB93DGMN
3/8"	Poly Bowl, Auto Drain	0.01 micron	P32FB93DGAN
3/8"	Metal Bowl, Manual Drain	0.01 micron	P32FB93DSMN
3/8"	Metal Bowl, Auto Drain	0.01 micron	P32FB93DSAN
1/2"	Poly Bowl, Manual Drain	0.01 micron	P32FB94DGMN
1/2"	Poly Bowl, Auto Drain	0.01 micron	P32FB94DGAN
1/2"	Metal Bowl, Manual Drain	0.01 micron	P32FB94DSMN
1/2"	Metal Bowl, Auto Drain	0.01 micron	P32FB94DSAN

[‡] For polycarbonate bowl, see caution in Engineering Section A.

Operating Information

Supply pressure (max):	
Poly bowl	150 psig (10 bar)
Metal bowl w/ DPI	150 psig (10 bar)
Metal bowl w/o DPI	250 psig (17 bar)
Operating temperature:	
Plastic bowl	-13°F to 125°F (-25°C to 52°C)
Metal bowl	-13°F to 150°F (-25°C to 65.5°C)
Standard filtration:	1.0 and 0.01 micron
Adsorber	Max. oil carryover (ppm w/w) 0.003 @ 70°F (21°C)
Flow capacity*:	
1.0 micron coalescing	53 scfm (25 dm ³ /s, ANR)
0.01 micron coalescing	36 scfm (17 dm ³ /s, ANR)
Activated carbon adsorber	85 scfm (40 dm ³ /s, ANR)
Useful retention [†] :	1.7 US oz. (51 cm ³)
Weight:	0.71 lb (0.32 kg)

* Inlet pressure 91.3 psig (6.3 bar). Pressure drop 3 psig (0.2 bar), saturated element.

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

Ordering Information:

P32FB	9	2	D	G	M	N	
Basic Series Global Modular Compact Coalescing Filter							
P32FB							
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						
Mounting							
N No Bracket							
Drain Type							
M Manual Drain							
A Auto Drain							
X Flex Drain							
Bowl Type							
G Poly Bowl with Bowl Guard							
M Metal Bowl without Sight Gauge							
S Metal Bowl with Sight Gauge							

Most popular.



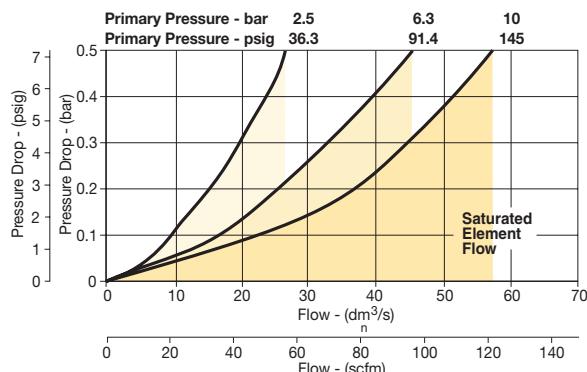
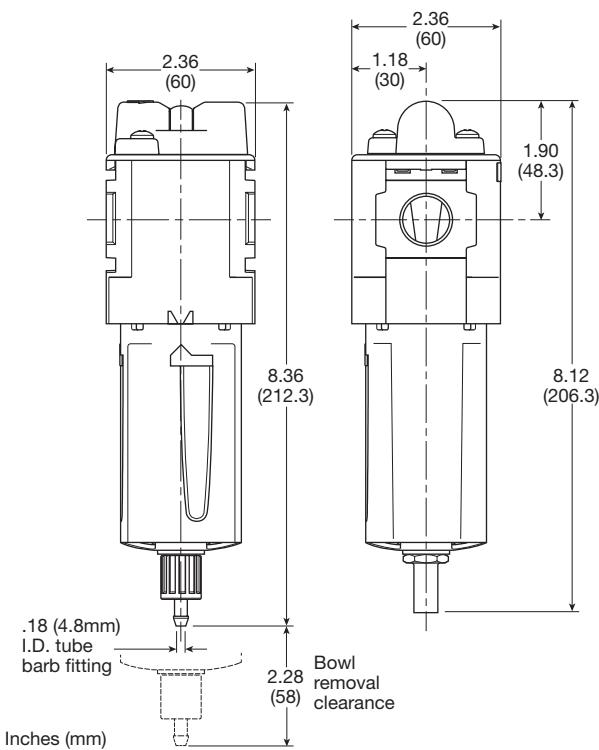
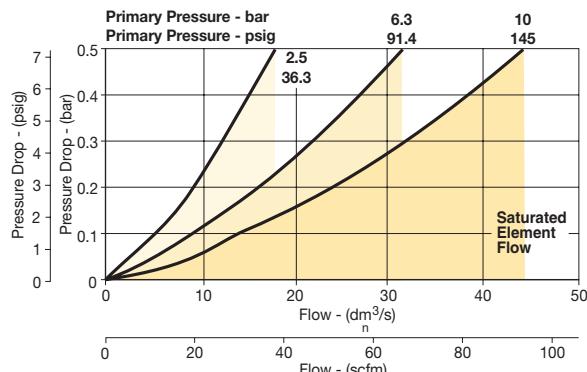
For inventory, lead times, and kit lookup, visit www.pdnplu.com

Compact Coalescing and Adsorber Filters**Material Specifications**

Body	Aluminum
Body cap	ABS
Plastic bowl	Polycarbonate
Metal bowl	Aluminum
Filter element	Borosilicate cloth
Adsorber	Activated carbon
Seals	Nitrile
Sight gauge	Nylon

Repair and Service Kits

Plastic bowl / bowl guard, manual drain	P32KB00BGM
Metal bowl / sight gauge, manual drain	P32KB00BSM
Auto drain	P32KA00DA
1 μ coalescing filter element	P32KA00ES9
0.01 μ 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

Air Preparation Products**Air Preparation****Flow Charts****P32FB - 1.0 micron flow****P32FB - 0.01 micron flow****Manual Drain****Automatic Drain**

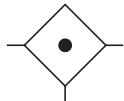
For inventory, lead times, and kit lookup, visit www.pdnplu.com

P33 Coalescing and Adsorber Filters – Standard

- 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.



Port Size	Description [‡]	Element	Part Number
1/2"	Poly Bowl, Manual Drain	0.01 micron	P33FA94DGMN
1/2"	Poly Bowl, Auto Drain	0.01 micron	P33FA94DGAN
1/2"	Metal Bowl, Manual Drain	0.01 micron	P33FA94DSMN
1/2"	Metal Bowl, Auto Drain	0.01 micron	P33FA94DSAN
3/4"	Poly Bowl, Manual Drain	0.01 micron	P33FA96DGMN
3/4"	Poly Bowl, Auto Drain	0.01 micron	P33FA96DGAN
3/4"	Metal Bowl, Manual Drain	0.01 micron	P33FA96DSMN
3/4"	Metal Bowl, Auto Drain	0.01 micron	P33FA96DSAN

[‡] For polycarbonate bowl, see caution in Engineering Section A.



Operating Information

Supply pressure (max):	150 psig (10 bar)
Poly bowl	150 psig (10 bar)
Metal bowl w/ DPI	250 psig (17 bar)
Operating temperature:	
Plastic bowl	-13°F to 125°F (-25°C to 52°C)
Metal bowl	-13°F to 150°F (-25°C to 65.6°C)
Standard filtration:	1.0 and 0.01 micron
Adsorber	Max. oil carryover (ppm w/w) 0.003 @ 70°F (21°C)
Flow capacity*:	
1.0 micron coalescing	68 scfm (32 dm ³ /s, ANR)
0.01 micron coalescing	42 scfm (20 dm ³ /s, ANR)
Activated carbon adsorber	72 scfm (34 dm ³ /s, ANR)
Useful retention [†] :	2.8 US oz. (85 cm ³)
Weight:	1.10 lb (0.50 kg)

* Inlet pressure 91.3 psig (6.3 bar). Pressure drop 3 psig (0.2 bar), saturated element.

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

Ordering Information:

P33FA	9	6	D	G	M	N
Basic Series Global Modular Standard Coalescing Filter						Mounting
P33FA						N No Bracket
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						
G Poly Bowl with Bowl Guard						
M Metal Bowl without Sight Gauge						
S Metal Bowl with Sight Gauge						

Most popular.



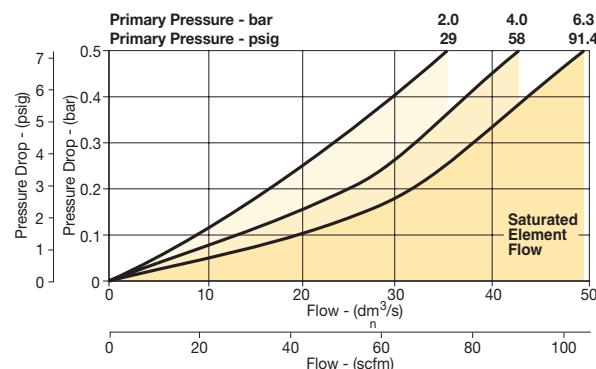
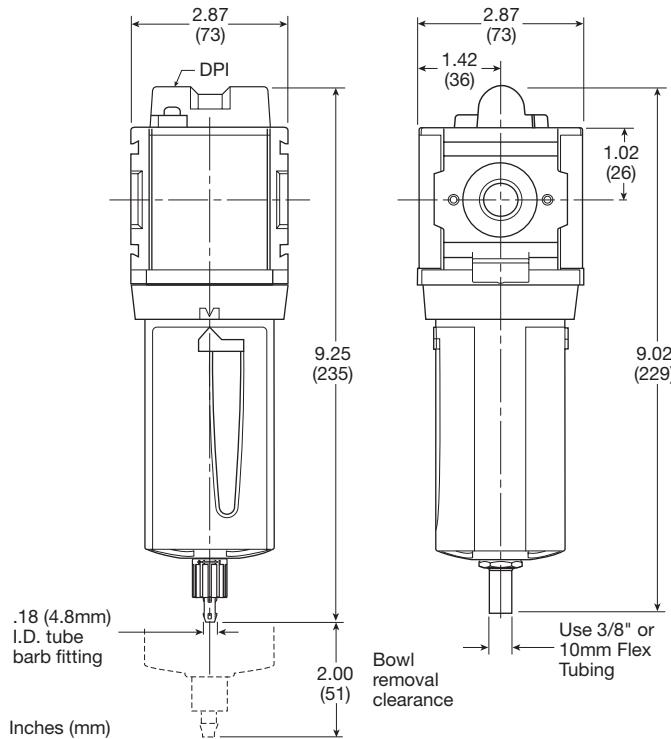
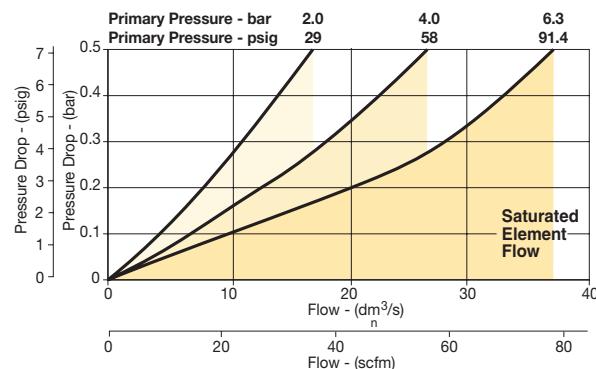
For inventory, lead times, and kit lookup, visit www.pdnplu.com

Standard Coalescing and Adsorber Filters**Material Specifications**

Body	Aluminum
Body cap	ABS
Plastic bowl	Polycarbonate
Metal bowl	Aluminum
Filter element	Borosilicate cloth
Adsorber	Activated carbon
Seals	Nitrile
Sight gauge	Nylon

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

Air Preparation Products**Air Preparation****Flow Charts****P33FA - 1.0 micron flow****P33FA - 0.01 micron flow**

Manual Drain

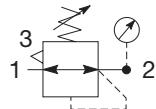
Automatic Drain



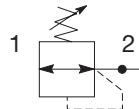
For inventory, lead times, and kit lookup, visit www.pdnplu.com

P31 Regulators – Mini

- Integral 1/4" ports (NPT, BSPP & BSPT)
- Robust but lightweight aluminum construction
- Secondary pressure ranges
- Secondary aspiration plus balanced poppet provides quick response and accurate pressure regulation.
- Relieving & non-relieving types
- Non-rising knob



Self relieving regulator with gauge



Non-relieving regulator

Port Size	Description (relieving)	Gauge	Part Number
1/4"	125 psig (8 bar)	None	P31RB92BNNP
1/4"	125 psig (8 bar)	Square	P31RB92BN5P

Operating Information

Flow capacity*	1/4	68 scfm (32 dm ³ /s, ANR)
Operating temperature†:	-4°F to 150°F (-20°C to 65.5°C)	
Supply pressure (max):	300 psig (20 bar)	
Adjusting range pressure:	30 psig (0-2 bar) 60 psig (0-4 bar) 125 psig (0-8 bar) 232 psig (0-16 bar)	
Gauge port (2 each)**	1/8 BSPP, BSPT, NPT	
Weight:	0.37 lb (0.17 kg)	

* Inlet pressure 145 psig (10 bar). Secondary pressure 91.3 psig (6.3 bar) and 14.5 psig (1 bar) pressure drop.
 ** Non-gauge option only.

† Units with square gauges: 5°F to 150°F (-15°C to 65.5°C)

Ordering Information:

P31RB	9	2	B	N	5	P	
Basic Series Global Modular Mini Regulator	P31RB	Thread Type BSPP 1 BSPT 2 NPT 9					Mounting P Plastic Panel Mount Nut
		Port Size 1/4 2					
		Relief Relieving B Non-Relieving N Reverse Flow-Relieving R					
							Adjustment Range
							With Square Gauge With Round Gauge
							psig bar
							1 = 30* V = 2*
							3 = 60 S = 4
							5 = 125 T = 8
							* Regulator comes with gauge respective to the adjustment range selected.
							Without Gauge
							Y 30 psig; 2 bar; 0.2 MPa
							L 60 psig; 4 bar; 0.4 MPa
							G 125 psig; 8 bar; 0.8 MPa
							J 232 psig; 16 bar; 1.6 MPa
							Adjustment
							N Non-rising knob

Most popular.



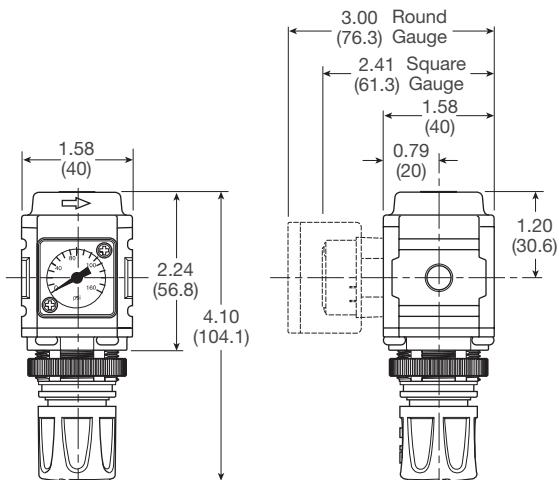
For inventory, lead times, and kit lookup, visit www.pdnplu.com

Material Specifications

Body	Aluminum
Adjustment knob	Acetal
Bonnet	PBT
Diaphragm assembly	Brass / Nitrile
Valve assembly	Brass / Nitrile
Springs	Steel
Seals	Nitrile
Panel nut	Acetal

Repair and Service Kits

Diaphragm repair kit - relieving	P31KB00RB
Diaphragm repair kit - non-relieving	P31KB00RC
Panel mount nut - aluminum	P31KA00MM
Panel mount nut - plastic	P31KA00MP
Angle bracket (attaches via panel nut)	P31KB00MR
C-bracket (fits to body)	P31KA00MW
T-bracket with body connector	P31KA00MT
Body connector	P31KA00CB

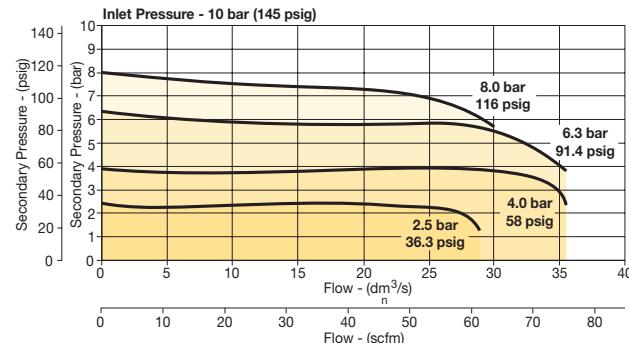


Inches (mm)

NOTE: 1.20 in. (30mm) hole required for panel nut mounting.

Flow Charts

P31RB 1/4" Regulator



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.

Gauges

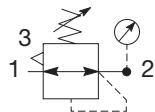
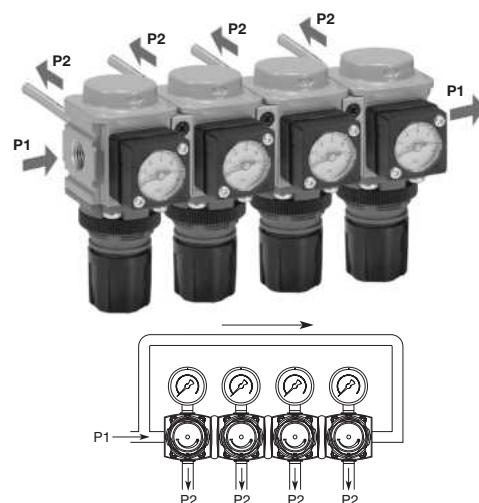
Square flush mount gauge	0-4 bar	K4511SCR04B
	0-11 bar	K4511SCR11B
	0-60 psig	K4511SCR060
	0-160 psig	K4511SCR160
Square with adapter kit	0-4 bar	P6G-PR10040
	0-11 bar	P6G-PR10110
	0-60 psig	P6G-PR90060
	0-160 psig	P6G-PR90160
1.00" Round 1/8" center back mount	0-60 psig / 0-4 bar	K4510N18060
	0-160 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.

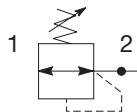


P31 Common P1 Regulators – Mini

- Manifold style regulator with line pressure on both sides
- Pressure output is at front or rear
- Inlet port 1/4" (NPT, BSPP & BSPT)
- Working port 1/8"
- Robust construction
- Secondary pressure ranges
- Secondary aspiration plus balanced poppet provides quick response and accurate pressure regulation
- Relieving & non-relieving types
- Non-rising knob



Self relieving regulator with gauge



Non-relieving regulator

Port Size	Description (relieving)	Gauge	Part Number
1/4"	125 psig (8 bar)	None	P31HB92BNNP
1/4"	125 psig (8 bar)	Square	P31HB92BN5P

Operating Information

Flow capacity*:	42 scfm (20 dm ³ /s, ANR)
1/4	-4°F to 150°F (-20°C to 65.5°C)
Operating temperature:	300 psig (20 bar)
Supply pressure (max):	30 psig (0-2 bar)
Adjusting range pressure:	60 psig (0-4 bar)
	125 psig (0-8 bar)
	232 psig (0-16 bar)
P1 port size (inlet/outlet)	1/4 NPT, BSPP, BSPT
P2 regulated ports (2 ea.)	1/8 NPT, BSPP, BSPT
Weight:	0.66 lb (0.30 kg)

* Inlet pressure 145 psig (10 bar). Secondary pressure 91.3 psig (6.3 bar) and 14.5 psig (1 bar) pressure drop.

Ordering Information:

P31HB 9 2 B N 5 P

Basic Series Global Modular Mini Common Regulator	P31HB
Thread Type	9
BSPP	1
BSPT	2
NPT	9
Port Size †	2
† Working port 1/8".	
Relief	B
Relieving	B
Non-Relieving	N
Mounting	
P Plastic Panel Mount Nut	
Adjustment Range	
With Square Gauge	
psig	bar
1 = 30*	V = 2*
3 = 60	S = 4
5 = 125	T = 8
With Round Gauge	
Z = 30 psig; 2 bar; 0.2 MPa	
M = 60 psig; 4 bar; 0.4 MPa	
G = 125 psig; 8 bar; 0.8 MPa	
J = 232 psig; 16 bar; 1.6 MPa	
Without Gauge	
Y = 30 psig; 2 bar; 0.2 MPa	
L = 60 psig; 4 bar; 0.4 MPa	
N = 125 psig; 8 bar; 0.8 MPa	
H = 232 psig; 16 bar; 1.6 MPa	

* Regulator comes with gauge respective to the adjustment range selected.

Adjustment

N Non-Rising Knob

Most popular.



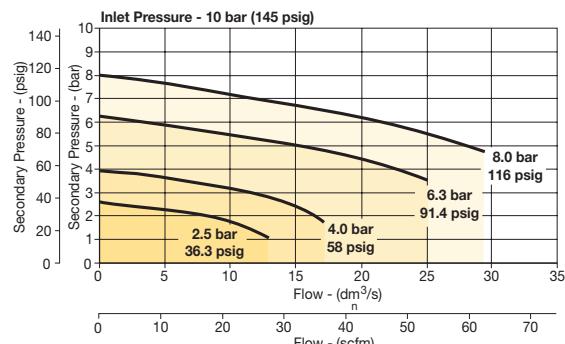
For inventory, lead times, and kit lookup, visit www.pdnplu.com

Mini Common P1 Regulators**Materials of Construction**

Body	Aluminum
Adjustment knob	Acetal
Bonnet	Glass-filled PBT
Diaphragm assembly	Brass / Nitrile
Valve assembly	Brass / Nitrile

Repair and Service Kits

Diaphragm repair kit - relieving	P31KB00RB
Diaphragm repair kit - non-relieving	P31KB00RC
Panel mount nut - aluminum	P31KA00MM
Panel mount nut - plastic	P31KA00MP
Angle bracket (attaches via panel nut)	P31KB00MR
T-bracket with body connector	P31KA00MT
Body connector	P31KA00CB

Air Preparation Products**Air Preparation****Flow Charts****P31HB 1/4" Common Regulator****WARNING**

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

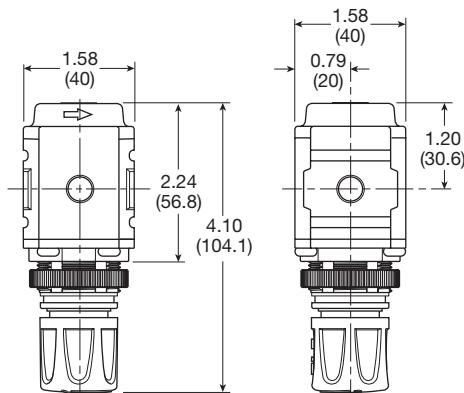
CAUTION:

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.

Gauges

Square with adapter kit	0-4 bar	P6G-PR10040
	0-11 bar	P6G-PR10110
	0-60 psig	P6G-PR90060
	0-160 psig	P6G-PR90160
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.



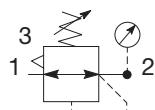
Inches (mm)

NOTE: 1.20 in. (30mm) hole required for panel nut mounting.

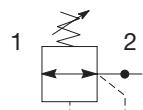


P32 Regulators – Compact

- Integral 1/4", 3/8" or 1/2" ports (NPT, BSPP & BSPT)
- Robust but lightweight aluminum construction
- Secondary pressure ranges
- Secondary aspiration plus balanced poppet provides quick response and accurate pressure regulation
- Relieving & non-relieving types
- Regulator will reverse flow as standard
- Non-rising knob
- Available T-handle



Self relieving regulator with gauge



Non-relieving regulator

Port Size	Description (relieving)	Gauge	Part Number
1/4"	125 psig (8 bar)	None	P32RB92BNNP
1/4"	125 psig (8 bar)	Round	P32RB92BNGP
3/8"	125 psig (8 bar)	None	P32RB93BNNP
3/8"	125 psig (8 bar)	Round	P32RB93BNGP
1/2"	125 psig (8 bar)	None	P32RB94BNNP
1/2"	125 psig (8 bar)	Round	P32RB94BNGP

Operating Information

Flow capacity*:	148 scfm (70 dm ³ /s, ANR)
1/4	165 scfm (78 dm ³ /s, ANR)
3/8, 1/2	-13°F to 150°F (-25°C to 65.5°C)
Operating temperature:	
Supply pressure (max):	300 psig (20 bar)
Adjusting range pressure:	30 psig (0-2 bar) 60 psig (0-4 bar) 125 psig (0-8 bar) 250 psig (0-17 bar)
Gauge port (2 each)	1/4 NPT, BSPP, BSPT
Weight:	0.90 lb (0.41 kg)

* Inlet pressure 145 psig (10 bar). Secondary pressure 91.3 psig (6.3 bar) and 14.5 psig (1 bar) pressure drop.

Ordering Information:

P32RB		9	2	B	N	G	P	Mounting			
Basic Series								P Plastic Panel Mount Nut			
Global Modular											
Compact Regulator	P32RB										
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									
* Regulator comes with gauge respective to the adjustment range selected.											
With Square Gauge											
psig								With Round Gauge			
1 = 30*								Z	30 psig; 2 bar; 0.2 MPa		
V = 2*								M	60 psig; 4 bar; 0.4 MPa		
3 = 60								G	125 psig; 8 bar; 0.8 MPa		
S = 4								J	250 psig; 17 bar; 1.7 MPa		
5 = 125								Without Gauge			
T = 8								Y	30 psig; 2 bar; 0.2 MPa		
Adjustment											
N	Non-Rising Knob							L	60 psig; 4 bar; 0.4 MPa		
T	T-Handle							N	125 psig; 8 bar; 0.8 MPa		
								H	250 psig; 17 bar; 1.7 MPa		

Most popular.



For inventory, lead times, and kit lookup, visit www.pdnplu.com

Material Specifications

Body	Aluminum
Adjustment knob	Acetal
Bonnet	Glass-filled nylon
Diaphragm assembly	Nitrile / Zinc
Valve assembly	Brass / Nitrile
Springs	Steel, stainless steel
Seals	Nitrile
Panel nut	Acetal

Repair and Service Kits

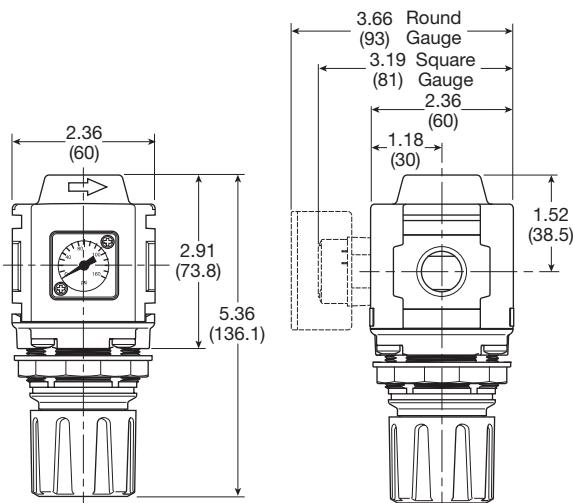
Diaphragm repair kit - relieving	P32KB00RB
Diaphragm repair kit - non-relieving	P32KB00RC
Panel mount nut - aluminum	P32KA00MM
Panel mount nut - plastic	P32KA00MP
Angle bracket (attaches via panel nut)	P32KB00MR
T-bracket with body connector	P32KA00MT
T-bracket	P32KA00MB
Body connector	P32KA00CB

⚠ 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.



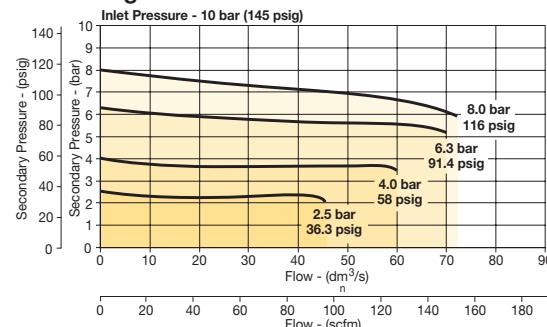
Inches (mm)

NOTE: 1.90 in. (48mm) hole required for panel nut mounting.

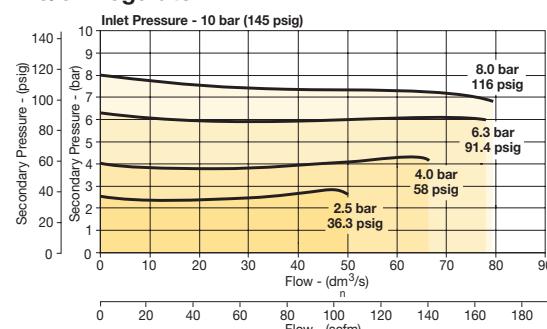
Air Preparation Products Air Preparation

Flow Charts

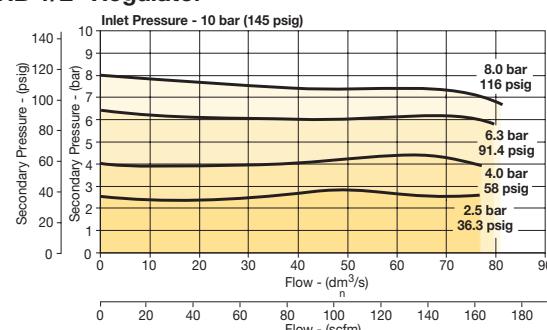
P32RB 1/4" Regulator



P32RB 3/8" Regulator



P32RB 1/2" Regulator



Gauges

Square flush mount gauge	0-4 bar	K4511SCR04B
	0-11 bar	K4511SCR11B
	0-60 psig	K4511SCR060
	0-160 psig	K4511SCR160
Square with adapter kit	0-4 bar	P6G-PR10040
	0-11 bar	P6G-PR10110
	0-60 psig	P6G-PR90060
	0-160 psig	P6G-PR90160
50mm (2") round 1/4" center back mount	0-30 psig / 0-2 bar	K4520N14030
	0-60 psig / 0-4 bar	K4520N14060
	0-160 psig / 0-11 bar	K4520N14160
	0-300 psig / 0-20 bar	K4520N14300

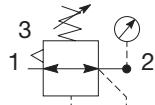
For best performance, regulated pressure should always be set by increasing the pressure up to the desired setting.



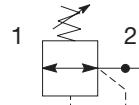
For inventory, lead times, and kit lookup, visit www.pdnplu.com

P32 Semi-Precision Regulator – Compact

- Integral 1/4", 3/8" or 1/2" ports (NPT, BSPP & BSPT)
- Robust but lightweight aluminum construction
- Secondary pressure ranges
- Secondary aspiration plus balanced poppet provides quick response and accurate pressure regulation
- Relieving & non-relieving types
- Regulator will reverse flow as standard
- Non-rising knob



Self relieving regulator with gauge



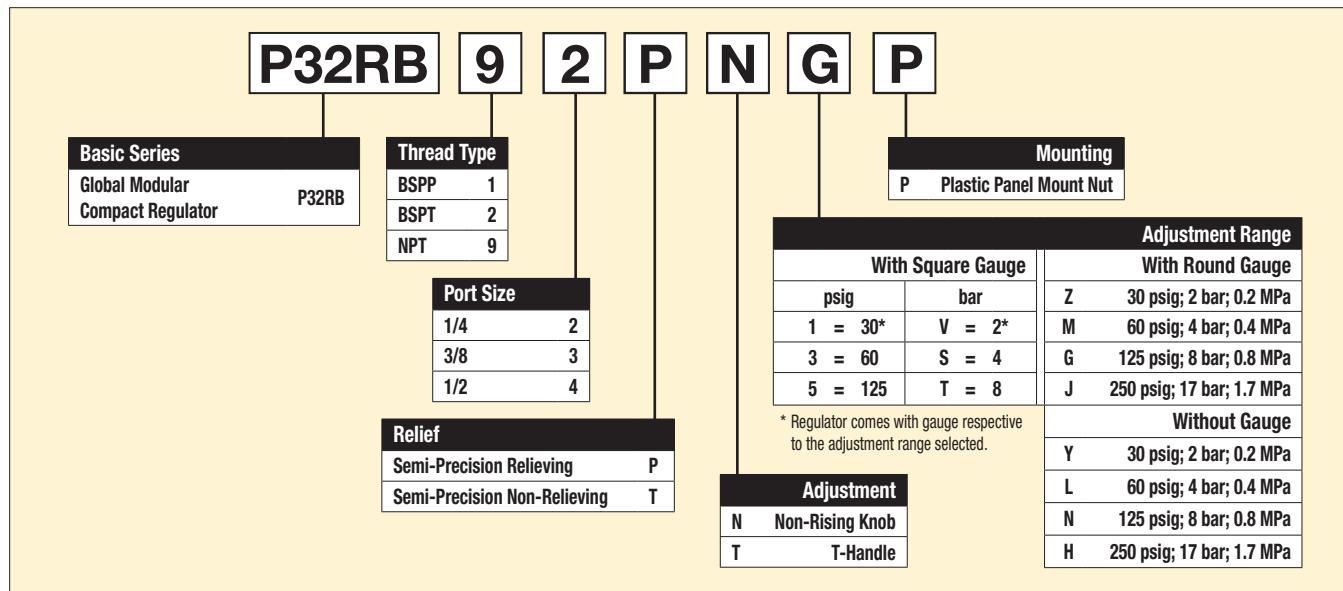
Non-relieving regulator

Port Size	Description (relieving)	Gauge	Part Number
1/4"	125 psig (8 bar)	None	P32RB92PNNP
1/4"	125 psig (8 bar)	Round	P32RB92PNGP
3/8"	125 psig (8 bar)	None	P32RB93PNNP
3/8"	125 psig (8 bar)	Round	P32RB93PNGP
1/2"	125 psig (8 bar)	None	P32RB94PNNP
1/2"	125 psig (8 bar)	Round	P32RB94PNGP

Operating Information

Flow capacity*:	53 scfm (25 dm ³ /s, ANR)
1/4, 3/8, 1/2	
Effect of supply pressure variation	0.6 psig (0.04 bar) for 25 psig (1.7 bar) change in P1
Operating temperature:	-13°F to 150°F (-25°C to 65.5°C)
Supply pressure (max):	300 psig (20 bar)
Adjusting range pressure:	0 to 30 psig (0 to 2 bar) 0 to 60 psig (0 to 4 bar) 0 to 125 psig (0 to 8 bar) 0 to 250 psig (0 to 17 bar)
Gauge port (2 each):	1/4 NPT, BSPP, BSPT
Weight:	0.90 lb (0.41 kg)

Ordering Information:



 Most popular.



For inventory, lead times, and kit lookup, visit www.pdnplu.com

Compact Semi-Precision Regulators

Material Specifications

Body	Aluminum
Adjustment knob	Acetal
Bonnet	Glass-filled nylon
Diaphragm assembly	Nitrile / zinc
Valve assembly	Brass / nitrile
Springs	Steel, stainless steel
Seals	Nitrile
Panel nut	Acetal

Repair and Service Kits

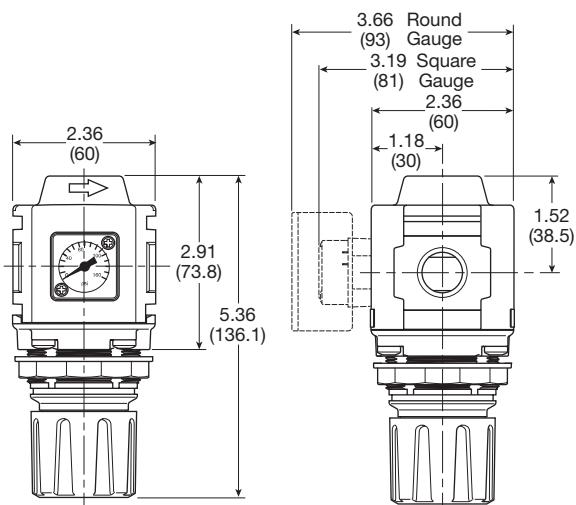
Diaphragm repair kit - relieving	P32KB00RB
Diaphragm repair kit - non-relieving	P32KB00RC
Panel mount nut - aluminum	P32KA00MM
Panel mount nut - plastic	P32KA00MP
Angle bracket (attaches via panel nut)	P32KB00MR
T-bracket with body connector	P32KA00MT
T-bracket	P32KA00MB
Body connector	P32KA00CB

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.



Inches (mm)

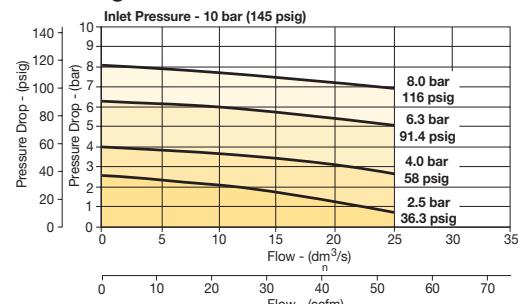
NOTE: 1.90 in. (48mm) hole required for panel nut mounting.

Air Preparation Products

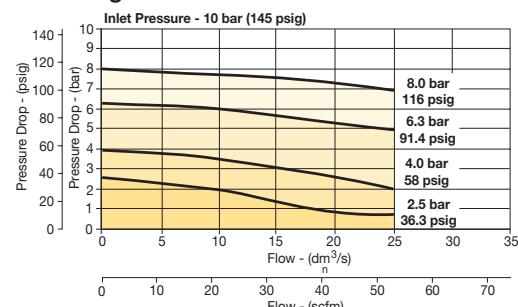
Air Preparation

Flow Charts

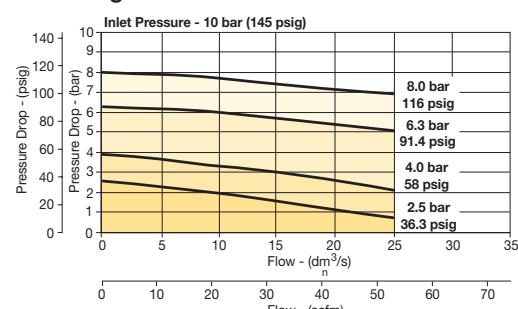
P32RB 1/4" Regulator



P32RB 3/8" Regulator



P32RB 1/2" Regulator



Gauges

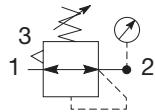
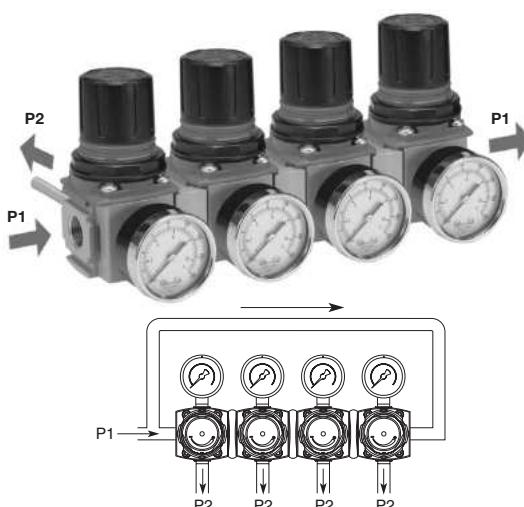
Square flush mount gauge	0-4 bar	K4511SCR04B
	0-11 bar	K4511SCR11B
	0-60 psig	K4511SCR060
	0-160 psig	K4511SCR160
Square with adapter kit	0-4 bar	P6G-PR10040
	0-11 bar	P6G-PR10110
	0-60 psig	P6G-PR90060
	0-160 psig	P6G-PR90160
50mm (2") round 1/4" center back mount	0-30 psig / 0-2 bar	K4520N14030
	0-60 psig / 0-4 bar	K4520N14060
	0-160 psig / 0-11 bar	K4520N14160
	0-300 psig / 0-20 bar	K4520N14300

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

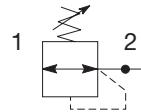


P32 Common - P1 Regulator – Compact

- Manifold style regulator with line pressure on both sides.
- Pressure output is at front or rear.
- Inlet ports 1/4", 3/8" or 1/2" (NPT, BSPP & BSPT)
- Working port 1/4"
- Robust construction
- Secondary pressure ranges
- Secondary aspiration plus balanced poppet provides quick response and accurate pressure regulation
- Relieving & non-relieving types
- Regulator will reverse flow as standard
- Non-rising knob



Self relieving regulator with gauge



Non-relieving regulator

Port Size	Description (relieving)	Gauge	Part Number
1/4"	125 psig (8 bar)	None	P32HB92BNNP
3/8"	125 psig (8 bar)	None	P32HB93BNNP
1/2"	125 psig (8 bar)	None	P32HB94BNNP

Operating Information

Flow capacity*:	64 scfm (30 dm³/s, ANR)
1/4, 3/8, 1/2	-25°C to 65.5°C (-13°F to 150°F)
Operating temperature:	300 psig (20 bar)
Supply pressure (max):	0 to 30 psig (0 to 2 bar)
Adjusting range pressure:	0 to 60 psig (0 to 4 bar)
	0 to 125 psig (0 to 8 bar)
	0 to 232 psig (0 to 16 bar)
Gauge port (2 each):	1/4 NPT, BSPP, BSPT
Weight:	0.50 lb (0.23 kg)

* Inlet pressure 145 psig (10 bar). Secondary pressure 91.3 psig (6.3 bar) and 14.5 psig (1 bar) pressure drop.

Ordering Information:

P32HB		9	2	B	N	N	P	Mounting			
Basic Series											
Global Modular											
Compact Regulator	P32HB										
Thread Type											
BSPP	1										
BSPT	2										
NPT	9										
Port Size †											
1/4	2										
3/8	3										
1/2	4										
† Working port 1/4".											
Relief											
Relieving	B										
Non-Relieving	N										
* Regulator comes with gauge respective to the adjustment range selected.											
Adjustment											
N	Non-Rising Knob										
T	T-Handle										
Adjustment Range											
With Square Gauge											
psig								With Round Gauge			
1 = 30*								Z	30 psig; 2 bar; 0.2 MPa		
3 = 60								M	60 psig; 4 bar; 0.4 MPa		
5 = 125								G	125 psig; 8 bar; 0.8 MPa		
								J	250 psig; 17 bar; 1.7 MPa		
Without Gauge											
Y	30 psig; 2 bar; 0.2 MPa										
L	60 psig; 4 bar; 0.4 MPa										
N	125 psig; 8 bar; 0.8 MPa										
H	250 psig; 17 bar; 1.7 MPa										

Most popular.



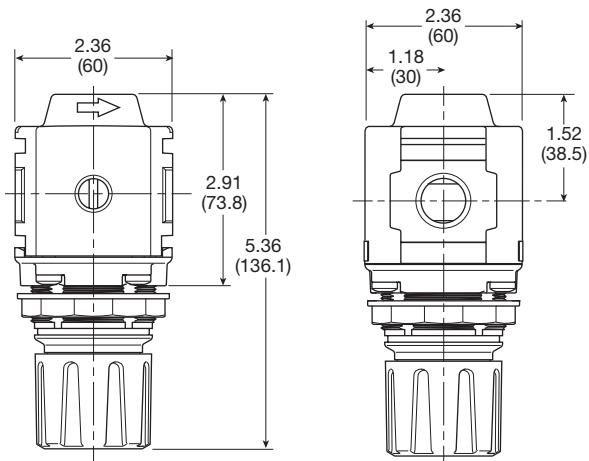
For inventory, lead times, and kit lookup, visit www.pdnplu.com

Compact Common P1 Precision Regulator**Material Specifications**

Body	Aluminum
Adjustment knob	Acetal
Bonnet	Glass-filled nylon
Diaphragm assembly	Nitrile / zinc
Valve assembly	Brass / nitrile
Springs	Steel, stainless steel
Seals	Nitrile
Panel nut	Acetal

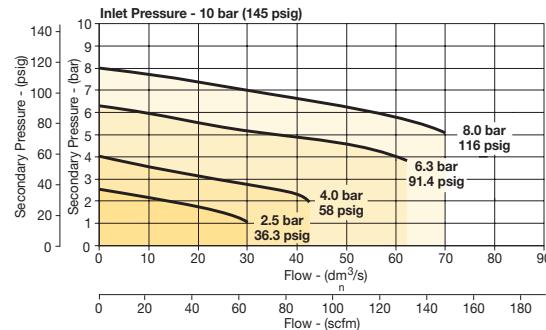
Repair and Service Kits

Diaphragm repair kit - relieving	P32KB00RB
Diaphragm repair kit - non-relieving	P32KB00RC
Panel mount nut - aluminum	P32KA00MM
Panel mount nut - plastic	P32KA00MP
Angle bracket (attaches via panel nut)	P32KB00MR
T-bracket with body connector	P32KA00MT
T-bracket	P32KA00MB
Body connector	P32KA00CB



Inches (mm)

NOTE: 1.90 in. (48mm) hole required for panel nut mounting.

Air Preparation Products**Air Preparation****Flow Charts****P32HB Common Port Regulator**
 **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.

Gauges

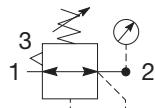
Square flush mount gauge	0-4 bar	K4511SCR04B
	0-11 bar	K4511SCR11B
	0-60 psig	K4511SCR060
	0-160 psig	K4511SCR160
Square with adapter kit	0-4 bar	P6G-PR10040
	0-11 bar	P6G-PR10110
	0-60 psig	P6G-PR90060
	0-160 psig	P6G-PR90160
50mm (2") round 1/4" center back mount	0-30 psig / 0-2 bar	K4520N14030
	0-60 psig / 0-4 bar	K4520N14060
	0-160 psig / 0-11 bar	K4520N14160
	0-300 psig / 0-20 bar	K4520N14300

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

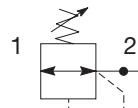


P33 Regulators – Standard

- Integral 1/2" or 3/4" ports (NPT, BSPP & BSPT)
- Robust but lightweight aluminum construction
- Secondary pressure ranges
- Secondary aspiration plus balanced poppet provides quick response and accurate pressure regulation
- Relieving & non-relieving types
- Non-rising knob



Self relieving regulator with gauge



Non-relieving regulator



Port Size	Description (relieving)	Gauge	Part Number
1/2"	125 psig (8 bar)	None	P33RA94BNNP
1/2"	125 psig (8 bar)	Round	P33RA94BNGP
3/4"	125 psig (8 bar)	None	P33RA96BNNP
3/4"	125 psig (8 bar)	Round	P33RA96BNGP

Operating Information

Flow capacity*:	233 scfm (110 dm ³ /s, ANR)
1/2, 3/4	123 scfm (110 dm ³ /s, ANR)
Operating temperature:	-13°F to 150°F (-25°C to 65.5°C)
Supply pressure (max):	300 psig (20 bar)
Adjusting range pressure:	0 to 30 psig (0 to 2 bar) 0 to 60 psig (0 to 4 bar) 0 to 125 psig (0 to 8 bar) 0 to 250 psig (0 to 17 bar)
Gauge port (2 each):	1/4 NPT, BSPP, BSPT
Weight:	1.37 lb (0.62 kg)

* Inlet pressure 145 psig (10 bar). Secondary pressure 91.3 psig (6.3 bar) and 14.5 psig (1 bar) pressure drop.

Ordering Information:

P33RA	9	6	B	N	G	P	
Basic Series Global Modular Standard Regulator	P33RA						Mounting
		Thread Type					P Plastic Panel Mount Nut
		BSPP 1					
		BSPT 2					
		NPT 9					
		Port Size					Adjustment Range
		1/2 4					With Round Gauge
		3/4 6					Z 30 psig; 2 bar; 0.2 MPa
			Relief				M 60 psig; 4 bar; 0.4 MPa
			Relieving B				G 125 psig; 8 bar; 0.8 MPa
			Non-Relieving N				J 250 psig; 17 bar; 1.7 MPa
			Reverse Flow-Relieving R				Without Gauge
				Adjustment			Y 30 psig; 2 bar; 0.2 MPa
				Non-Rising Knob	N		L 60 psig; 4 bar; 0.4 MPa
							N 125 psig; 8 bar; 0.8 MPa
							H 250 psig; 17 bar; 1.7 MPa

Most popular.



For inventory, lead times, and kit lookup, visit www.pdnplu.com

Material Specifications

Body	Aluminum
Adjustment knob	Acetal
Body cap	ABS
Bonnet	Glass-filled nylon
Diaphragm assembly	Nitrile / zinc
Valve assembly	Brass / nitrile
Springs	Steel, stainless steel
Seals	Nitrile
Panel nut	Acetal

Repair and Service Kits

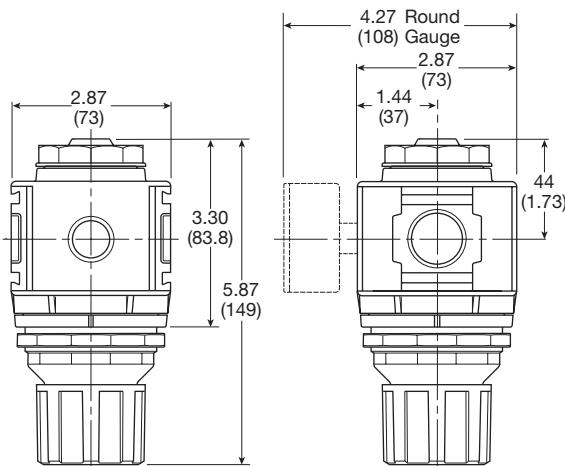
Diaphragm repair kit - relieving	P33KA00RB
Diaphragm repair kit - non-relieving	P33KA00RC
Panel mount nut - aluminum	P33KA00MM
Panel mount nut - plastic	P33KA00MP
Angle bracket (attaches via panel nut)	P33KA00MR
T-bracket with body connector	P32KA00MT
T-bracket	P32KA00MB
Body connector	P32KA00CB

⚠ 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.

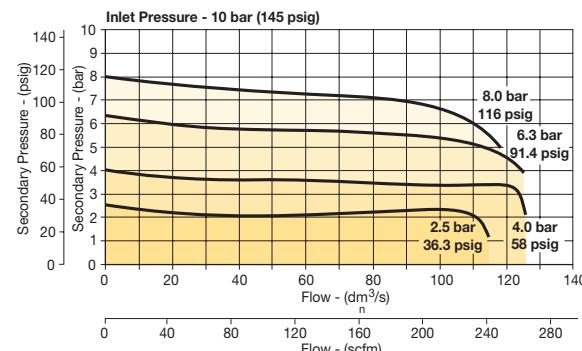


Inches (mm)

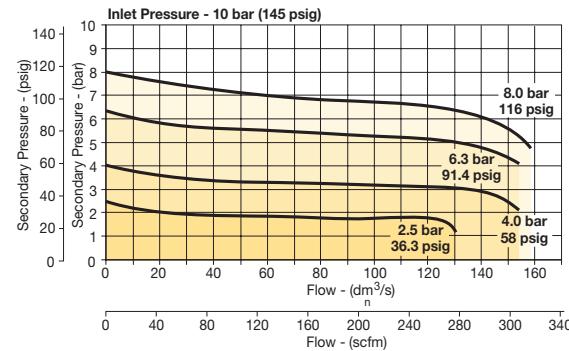
NOTE: 2.40 in. (61mm) hole required for panel nut mounting.

Flow Charts

P33RA 1/2" Regulator



P33RA 3/4" Regulator



Gauges

50mm (2") round	0-30 psig / 0-2 bar	K4520N14030
1/4" center back mount	0-60 psig / 0-4 bar	K4520N14060
	0-160 psig / 0-11 bar	K4520N14160
	0-300 psig / 0-20 bar	K4520N14300

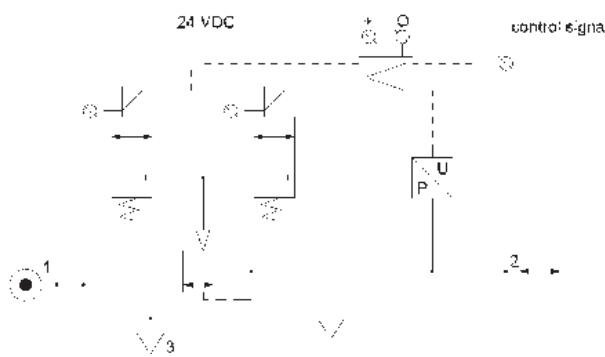
For best performance, regulated pressure should always be set by increasing the pressure up to the desired setting.



For inventory, lead times, and kit lookup, visit www.pdnplu.com

P31P & P32P Proportional Regulators

- Very fast response times
- Accurate output pressure
- 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



Port Size	Description	Part Number
1/4"	145 psig (0-10 bar), NC 0-10V	P31PA92AD2VD1A
1/2"	145 psig (0-10 bar), NC 0-10V	P32PA94AD2VD1A

P31P Series
Bottom exhaustP32P Series
Bottom exhaust

Operating Information

Flow capacity*:	P31P	40 scfm (19 dm ³ /s, ANR)
	P32P	120 scfm (57 dm ³ /s, ANR)
Temperature range:		32°F to 122°F (0°C to 50°C)
Supply pressure (max):		
2 bar unit		36.3 psig (2.5 bar)
10 bar unit		152 psig (10.5 bar)
Operating pressure (min):		P2 pressure + 7.3 psig (0.5 bar)
Working medium:		Compressed air or inert gasses, filtered to 40μ
Pressure range:		0 to 30 psig (0 to 2 bar) 0 to 145 psig (0 to 10 bar)
Weight:	P31P	0.64 lb (0.291 kg)
	P32P	1.42 lb (0.645 kg)

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

Ordering Information:

P31PA	9	2	A	D	2	V	D	1	A
Body Size									
Global Modular Mini (1/4")	P31PA								
Global Modular Compact (1/2")	P32PA								
Port Size									
Global Modular Mini (1/4")	2								
Global Modular 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)									
Power Supply	Control Signal	Output Signal							
2 24 volts	V 0-10V [‡]	D	Digital, PNP						
		P	PNP or 0-10V						
		N	NPN or 0-10V						
		M	4-20mA Fixed						
[‡] Factory setting is 0-10V control signal. 4-20 mA control signal available via parameter 4 on keypad.									
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.									

Most popular.



For inventory, lead times, and kit lookup, visit www.pdnplu.com

Technical Information**Accuracy**

+/- 1.0% of F.S.*

* 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).

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 $R_i = 1\text{ k}\Omega$

Outside the signal band this connection is 0V.

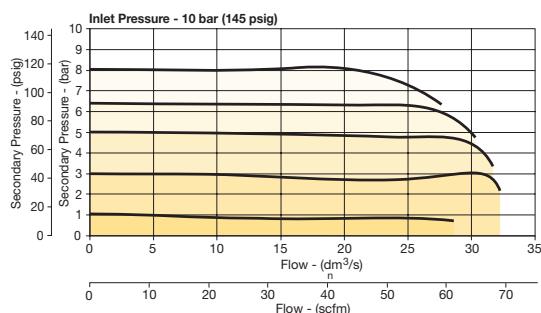
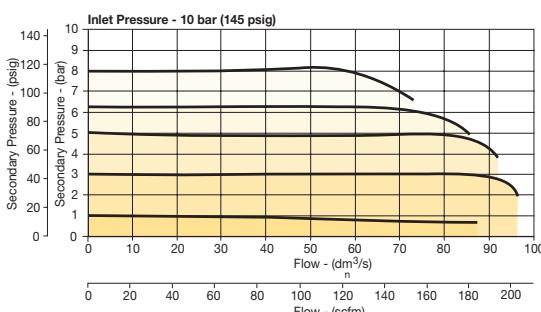
Connections

(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	Brown
2	0 to 10 V	White
	4 to 20mA	White
3	0 V (GND)	Blue
4	24 V	Black

Air Preparation Products**Air Preparation****Flow Charts****P31P Regulator 1/4" Ports****P32P Regulator 1/2" Ports****Degree of protection:** IP65**EU conformity**

CE: standard

EMC: according to directive 89/336/EEC

This pressure regulator is in accordance with:

EN 61000-6-1:2001
EN 61000-6-3:2001

EN 61000-6-2:2001
EN 61000-6-4:2001

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)	Aluminum
Regulator top housing	Nylon
Valve head	Brass & NBR
Remaining seals	NBR



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How to change parameters – How to Videos available at www.parker.com/pneu/propreg

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 	 3-6 seconds				
Until Display Reads			 Flashing Decimal	 Flashing Decimal	 Flashing
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 Millamps

Step	1	2	3	4	5
Press 	 3-6 seconds				
Until Display Reads			 Flashing Decimal	 Flashing Decimal	 Flashing
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.

How to Videos at www.parker.com/pneu/propreg



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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 	 3-6 seconds					
Until Display Reads			 Flashing Decimal	 Flashing Decimal (Value 0, 1 or 2)	 Flashing	
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.

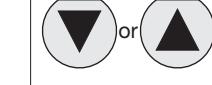
Adjust Span Analog Output Signal

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 	 3-6 seconds					
Until Display Reads			 Flashing Decimal (For 2 bar versions value = 92)	 Flashing Decimal (Value between 0 and 130)	 Flashing	
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.

How to Videos at www.parker.com/pneu/propreg



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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 	 3-6 seconds	 or 		 or 		
Until Display Reads						
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 	 3-6 seconds	 or 		 or 		
Until Display Reads						
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.

How to Videos at www.parker.com/pneu/propreg

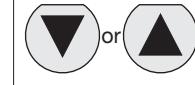


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Preset Minimum Pressure

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 	 3-6 seconds					
Until Display Reads			 Flashing Decimal	 Flashing Decimal (value between 0 and 200)	 Flashing	
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

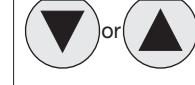
Pressure correction allows the user to set a Maximum pressure as a percentage of secondary pressure F.S.

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 	 3-6 seconds					
Until Display Reads			 Flashing Decimal	 Flashing Decimal (value between 0 and 100)	 Flashing	
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 	 3-6 seconds	 or 		 or 		
Until Display Reads			 Flashing Decimal	 Flashing Decimal (value between 0 and 5)	 Flashing	
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 	 3-6 seconds	 or 		 or 		
Until Display Reads			 Flashing Decimal	 Flashing Decimal (value between 50 and 250)	 Flashing	
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.

How to Videos at www.parker.com/pneu/propreg

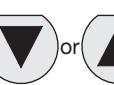
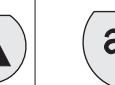


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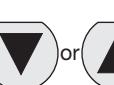
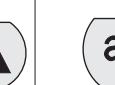
Set Deadband

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 	 3-6 seconds	 or 		 or 		
Until Display Reads				 Flashing Decimal (value between 4 and 40)	 Flashing	
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 	 3-6 seconds	 or 		 or 		
Until Display Reads				 Flashing Decimal (value between 5 and 100)	 Flashing	
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 	 3-6 seconds	 or 		
Until Display Reads			 Flashing Decimal	
Description	Accesses changeable parameters.	Accesses parameter no. 39.	Displays current parameter value. XXX = current software version	

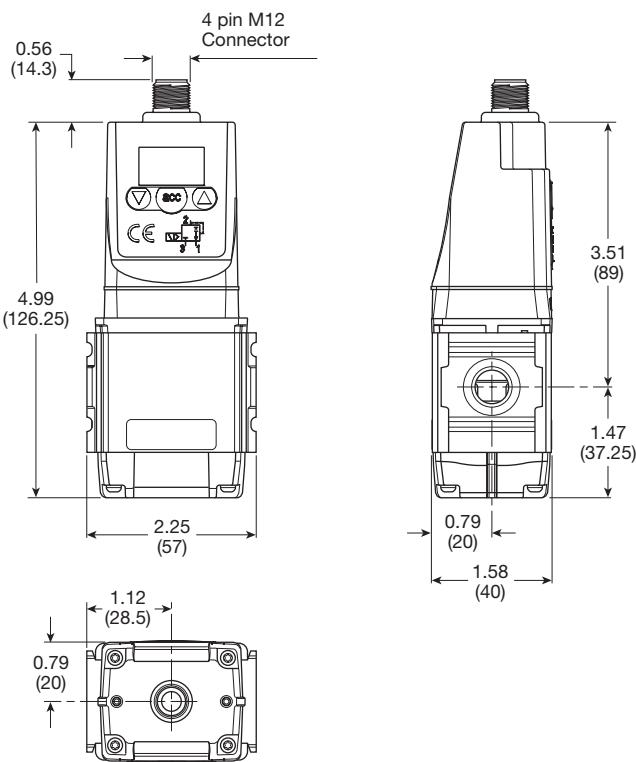
How to Videos at www.parker.com/pneu/propreg



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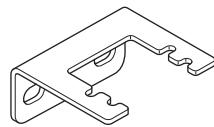
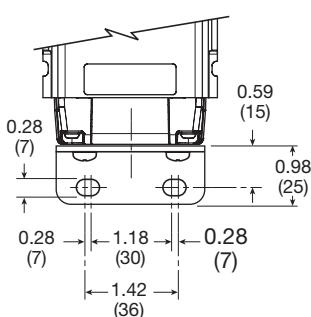
P31P

Dimensions inches (mm)



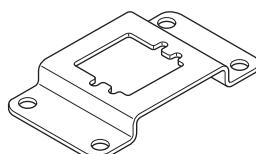
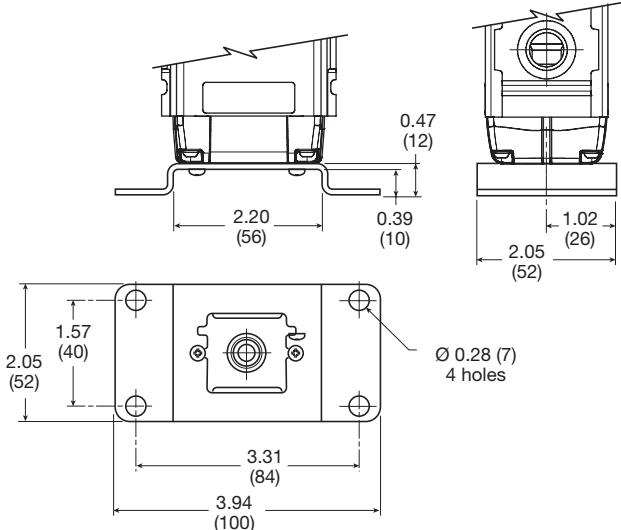
L-Bracket

P3HKA00ML



Foot Bracket

P3HKA00MC



Cables

Description

Part Number

2 mtr. cable with moulded straight M12x1 connector **CB-M12-4P-2M**

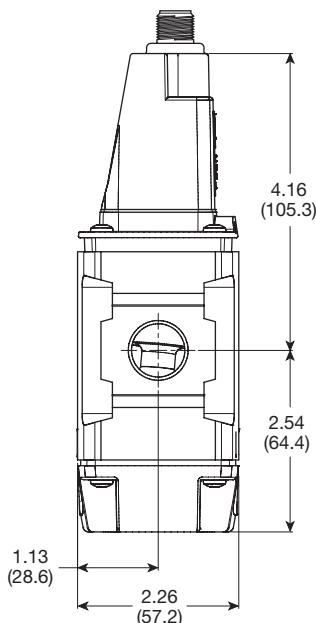
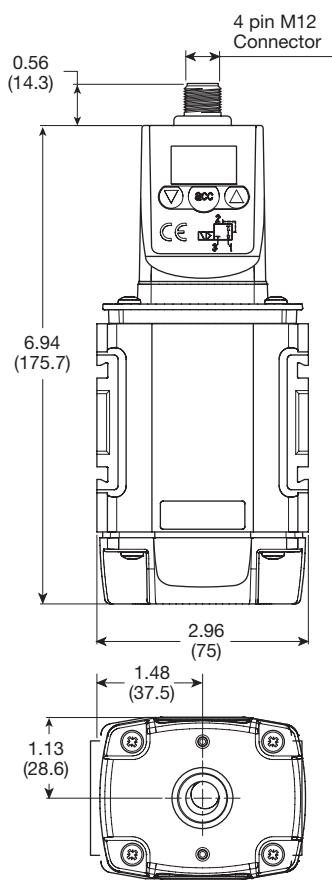
Most popular.



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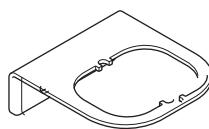
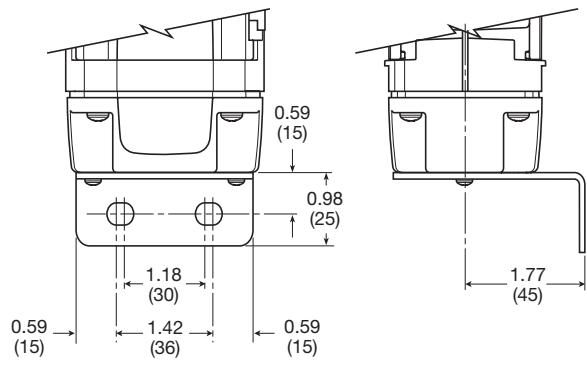
P32P

Dimensions inches (mm)



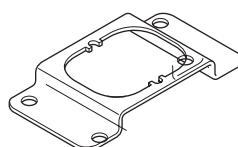
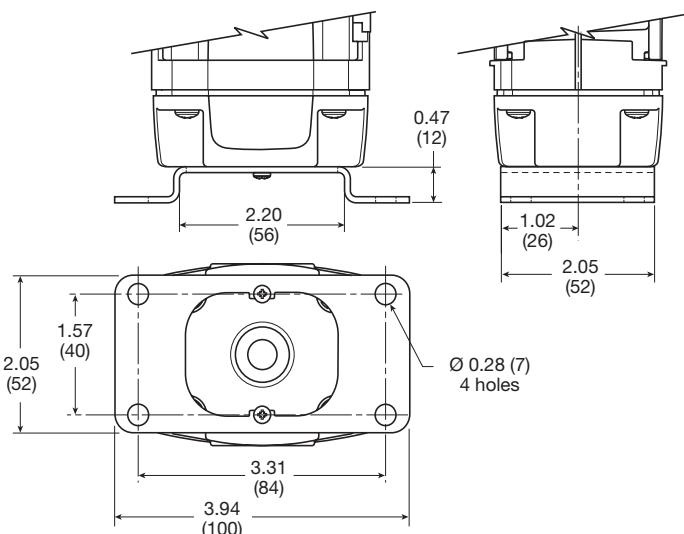
L-Bracket

P3KKA00ML



Foot Bracket

P3KKA00MC



Cables

Description

Part Number

2 mtr. cable with moulded straight M12x1 connector **CB-M12-4P-2M**

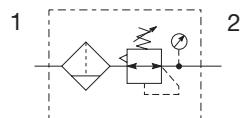
Most popular.



For inventory, lead times, and kit lookup, visit www.pdnplu.com

P31 Filter / Regulators – Mini

- 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
- Secondary aspiration plus balanced poppet provides quick response and accurate pressure regulation



Port Size	Description (relieving)	Bowl / Drain Type [‡]	Part Number
1/4"	125 psig (8 bar)	Poly / Manual	P31EB92EGMBN5P
1/4"	125 psig (8 bar)	Poly / Pulse	P31EB92EGBBN5P
1/4"	125 psig (8 bar)	Metal / Manual	P31EB92EMMBN5P
1/4"	125 psig (8 bar)	Metal / Pulse	P31EB92EMBBN5P

[‡] For polycarbonate bowl, see caution in Engineering Section A.

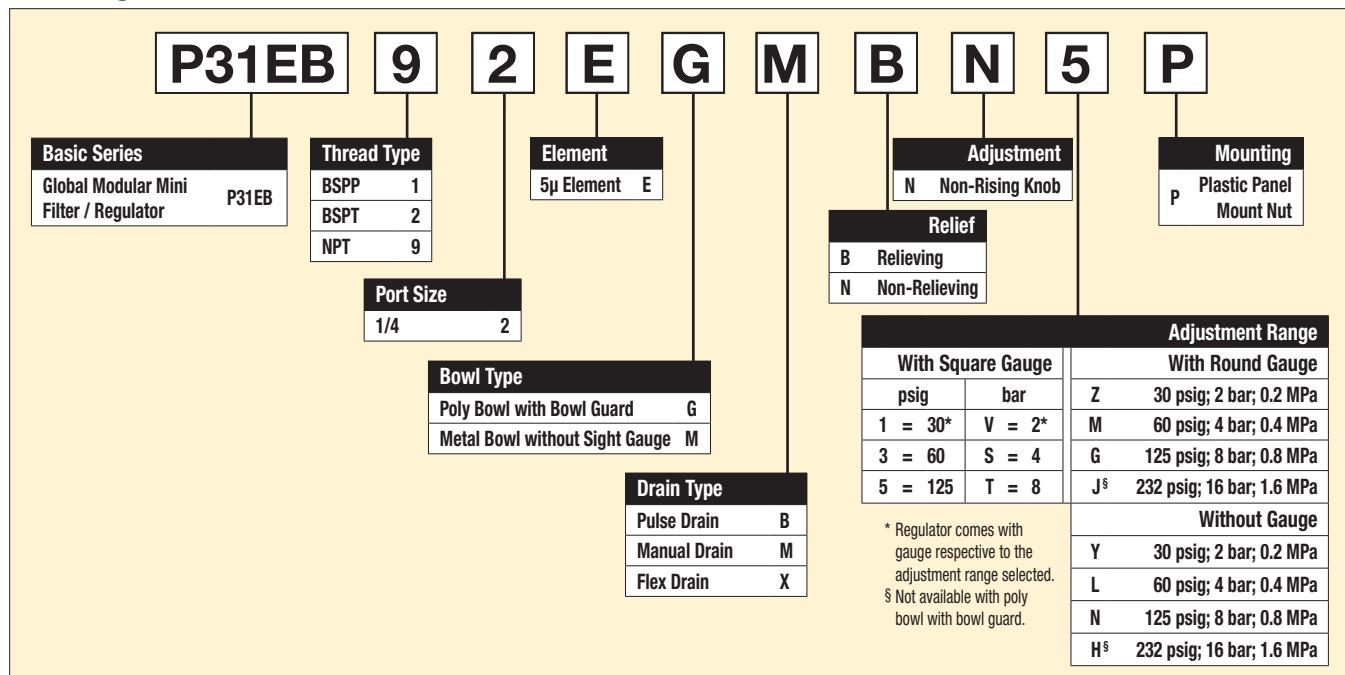
Operating Information

Flow capacity*:	1/4	73 scfm (35 dm ³ /s, ANR)
Operating temperature [†] :		
Plastic bowl	14°F to 125°F (-10°C to 52°C)	
Metal bowl	14°F to 150°F (-10°C to 65.5°C)	
Supply pressure (max):		
Plastic bowl	150 psig (10 bar)	
Metal bowl	250 psig (17 bar)	
Standard filtration		5 micron
Useful retention [†] :		0.4 US oz. (12 cm ³)
Adjusting range pressure:		0 to 30 psig (0 to 2 bar) 0 to 60 psig (0 to 4 bar) 0 to 125 psig (0 to 8 bar) 0 to 250 psig (0 to 17 bar)
Gauge port (2 each)**:		1/8 NPT, BSPP, BSPT
Weight:		0.42 lb (0.19 kg)

* Inlet pressure 145 psig (10 bar). Secondary pressure 91.3 psig (6.3 bar) and 14.5 psig (1 bar) pressure drop.
** Non-gauge option only.
[†] Units with square gauges: 5°F to 150°F (-15°C to 65.5°C)
[‡] 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)

Ordering Information:



Most popular.



For inventory, lead times, and kit lookup, visit www.pdnplu.com

Material Specifications

Body	Aluminum
Adjustment knob	Acetal
Body cap	ABS
Bonnet	PBT
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

⚠️ WARNING

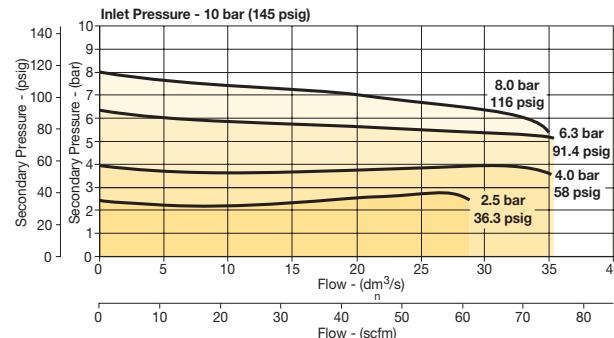
**Product rupture can cause serious injury.
 Do not connect regulator to bottled gas.
 Do not exceed Maximum primary pressure rating.**

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

P31EB 1/4" Filter / Regulator



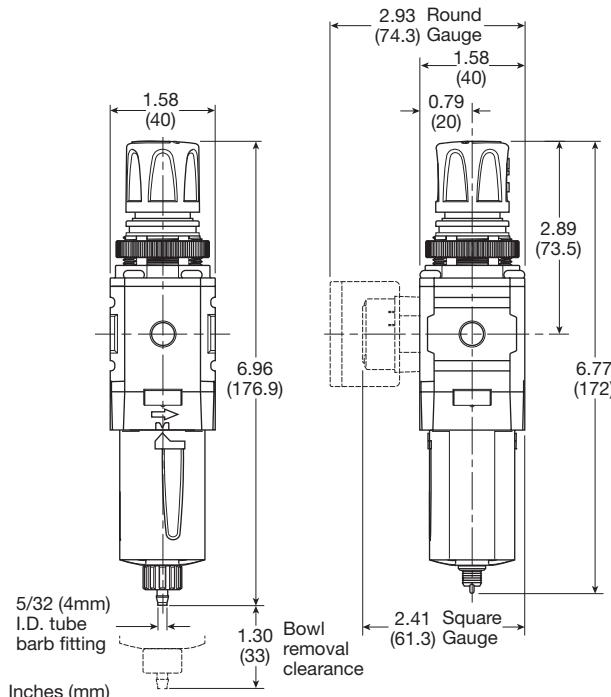
Repair and Service Kits

Plastic bowl / bowl guard manual drain	P31KB00BGM
Plastic bowl / bowl guard pulse drain	P31KB00BGB
Metal bowl / w/o sight gauge pulse drain	P31KB00BMB
5μ particle filter element	P31KA00ESE
Diaphragm repair kit - relieving	P31KB00RB
Diaphragm repair kit - non-relieving	P31KB00RC
Panel mount nut - aluminum	P31KA00MM
Panel mount nut - plastic	P31KA00MP
Angle bracket (attaches via panel nut)	P31KB00MR
C-bracket (fits to body)	P31KA00MW
T-bracket with body connector	P31KA00MT
Body connector	P31KA00CB

Gauges

Square flush mount gauge	0-4 bar	K4511SCR04B
	0-11 bar	K4511SCR11B
	0-60 psig	K4511SCR060
	0-160 psig	K4511SCR160

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



Manual Drain

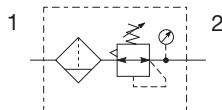
Pulse Drain



For inventory, lead times, and kit lookup, visit www.pdnplu.com

P32 Filter / Regulators – Compact

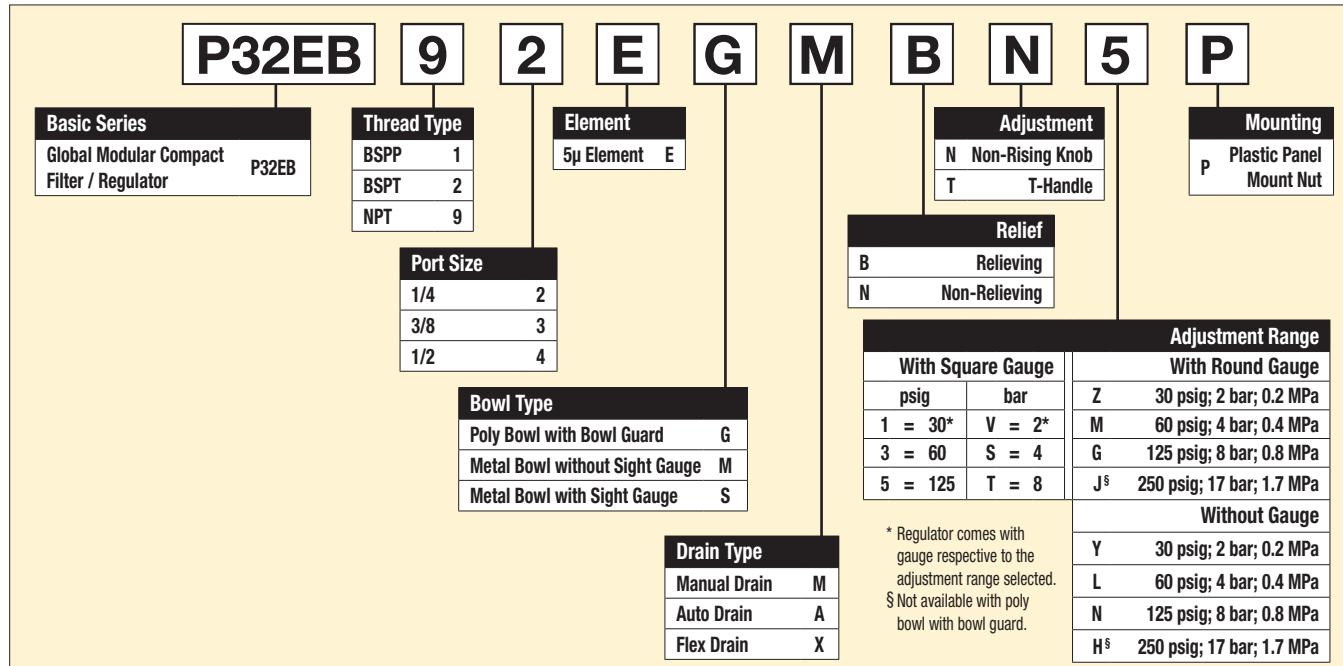
- Integral 1/4", 3/8" or 1/2" ports (NPT, BSPP & BSPT)
- High efficiency 5 micron element as standard
- Excellent water removal efficiency
- Robust but lightweight aluminum construction
- Positive bayonet latch to ensure correct & safe fitting
- Secondary pressure ranges
- Secondary aspiration plus balanced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



Port Size	Description (relieving)	Bowl / Drain Type [‡]	Part Number
1/4"	125 psig (8 bar)	Poly / Manual	P32EB92EGMBNGP
1/4"	125 psig (8 bar)	Poly / Auto	P32EB92EGABNGP
1/4"	125 psig (8 bar)	Metal / Manual	P32EB92ESMBNGP
1/4"	125 psig (8 bar)	Metal / Auto	P32EB92ESABNGP
3/8"	125 psig (8 bar)	Poly / Manual	P32EB93EGMBNGP
3/8"	125 psig (8 bar)	Poly / Auto	P32EB93EGABNGP
3/8"	125 psig (8 bar)	Metal / Manual	P32EB93ESMBNGP
3/8"	125 psig (8 bar)	Metal / Auto	P32EB93ESABNGP
1/2"	125 psig (8 bar)	Poly / Manual	P32EB94EGMBNGP
1/2"	125 psig (8 bar)	Poly / Auto	P32EB94EGABNGP
1/2"	125 psig (8 bar)	Metal / Manual	P32EB94ESMBNGP
1/2"	125 psig (8 bar)	Metal / Auto	P32EB94ESABNGP

[‡] For polycarbonate bowl, see caution in Engineering Section A.

Ordering Information:



■ Most popular.



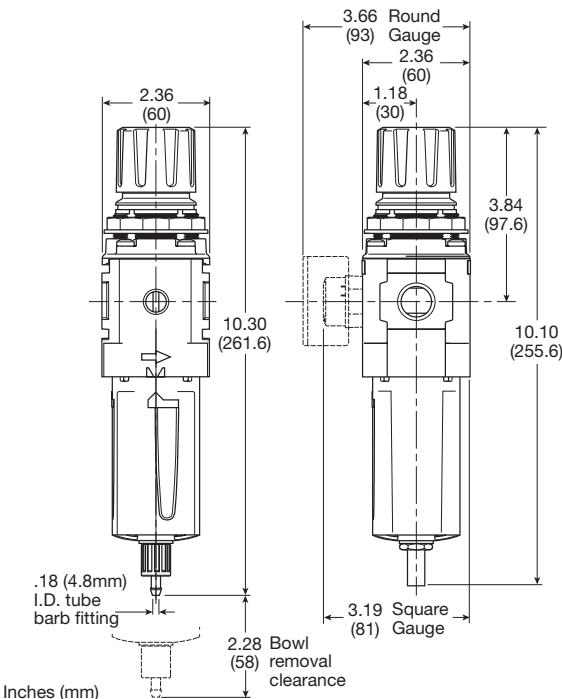
For inventory, lead times, and kit lookup, visit www.pdnplus.com

Material Specifications

Body	Aluminum
Adjustment knob	Acetal
Element retainer / baffle	Acetal
Plastic bowl	Polycarbonate
Metal bowl	Aluminum
Bowl guard	Nylon
Filter element	Sintered polyethylene
Seals	Nitrile
Springs	Steel, stainless steel
Valve assembly	Brass / nitrile
Diaphragm assembly	Nitrile / zinc
Panel nut	Acetal
Sight gauge	Nylon

Repair and Service Kits

Plastic bowl / bowl guard manual drain	P32KB00BGM
Metal bowl / sight gauge manual drain	P32KB00BSM
Auto drain	P32KA00DA
5μ particle filter element	P32KA00ESE
Diaphragm repair kit - relieving	P32KB00RB
Diaphragm repair kit - non-relieving	P32KB00RC
Panel mount nut - aluminum	P32KA00MM
Panel mount nut - plastic	P32KA00MP
Angle bracket (fits to panel mount threads)	P32KB00MR
T-bracket (fits to body connector)	P32KA00MB
T-bracket with body connector	P32KA00MT
Body connector	P32KA00CB



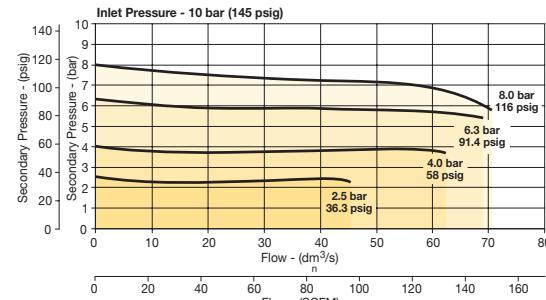
Manual Drain

Automatic Drain

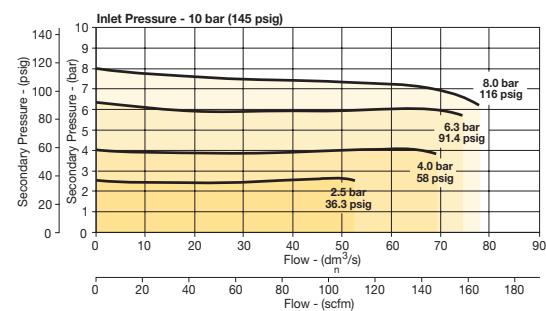
Air Preparation Products
Air Preparation

Flow Charts

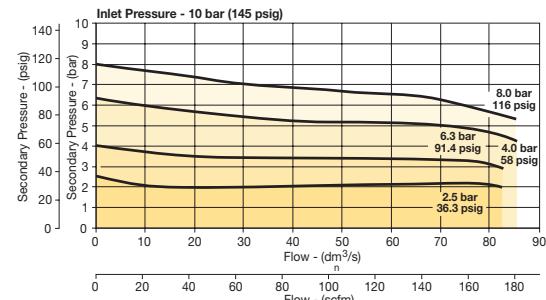
P32EB 1/4" Filter / Regulator



P32EB3/8" Filter/Regulator



P32EB 1/2" Filter/Regulator



⚠ 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.

Gauges

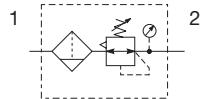
50mm (2") round	0-30 psig / 0-2 bar	K4520N14030
1/4" center back mount	0-60 psig / 0-4 bar	K4520N14060
	0-160 psig / 0-11 bar	K4520N14160
	0-300 psig / 0-20 bar	K4520N14300

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



P32 Semi-Precision Filter / Regulators – Compact

- 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
- Secondary aspiration plus balanced poppet provides quick response and accurate pressure regulation



Port Size	Description / Relieving	Bowl / Drain Type [‡]	Part Number
1/4"	125 psig (8 bar)	Poly / Manual	P32EB92EGMPNGP
1/4"	125 psig (8 bar)	Poly / Auto	P32EB92EGAPNGP
1/4"	125 psig (8 bar)	Metal / Manual	P32EB92ESMPNGP
1/4"	125 psig (8 bar)	Metal / Auto	P32EB92ESAPNGP
3/8"	125 psig (8 bar)	Poly / Manual	P32EB93EGMPNGP
3/8"	125 psig (8 bar)	Poly / Auto	P32EB93EGAPNGP
3/8"	125 psig (8 bar)	Metal / Manual	P32EB93ESMPNGP
3/8"	125 psig (8 bar)	Metal / Auto	P32EB93ESAPNGP
1/2"	125 psig (8 bar)	Poly / Manual	P32EB94EGMPNGP
1/2"	125 psig (8 bar)	Poly / Auto	P32EB94EGAPNGP
1/2"	125 psig (8 bar)	Metal / Manual	P32EB94ESMPNGP
1/2"	125 psig (8 bar)	Metal / Auto	P32EB94ESAPNGP

[‡] For polycarbonate bowl, see caution in Engineering Section A.

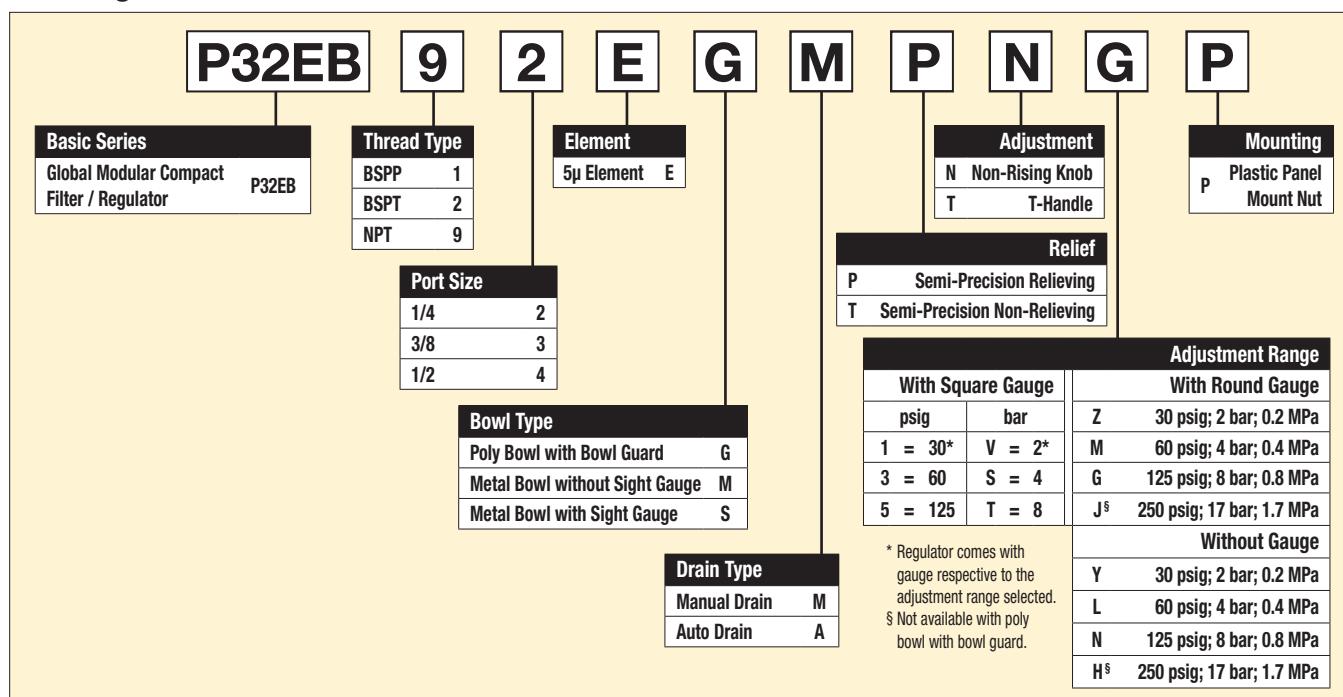
Operating Information

Flow capacity*:	1/4, 3/8, 1/2	75 scfm (35 dm ³ /s, ANR)
Effect of supply pressure variation	0.6 psig (0.04 bar) for 25 psig (1.7 bar) change in P1	
Operating temperature:		
Plastic bowl	-13°F to 125°F (-25°C to 52°C)	
Metal bowl	-13°F to 150°F (-25°C to 65.5°C)	
Supply pressure (max):		
Plastic bowl	150 psig (10 bar)	
Metal bowl	250 psig (17 bar)	
Standard filtration:		5 micron
Useful retention [†] :		1.7 US oz. (51 cm ³)
Adjusting range pressure:		0 to 30 psig (0 to 2 bar)
		0 to 60 psig (0 to 4 bar)
		0 to 125 psig (0 to 8 bar)
		0 to 250 psig (0 to 17 bar)
Gauge port (2 each):		1/4 NPT, BSPP, BSPT
Weight:		1.17 lbs (0.53 kg)

* Inlet pressure 145 psig (10 bar). Secondary pressure 91.3 psig (6.3 bar) and 14.5 psig (1 bar) pressure drop.
[†] 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)

Ordering Information:

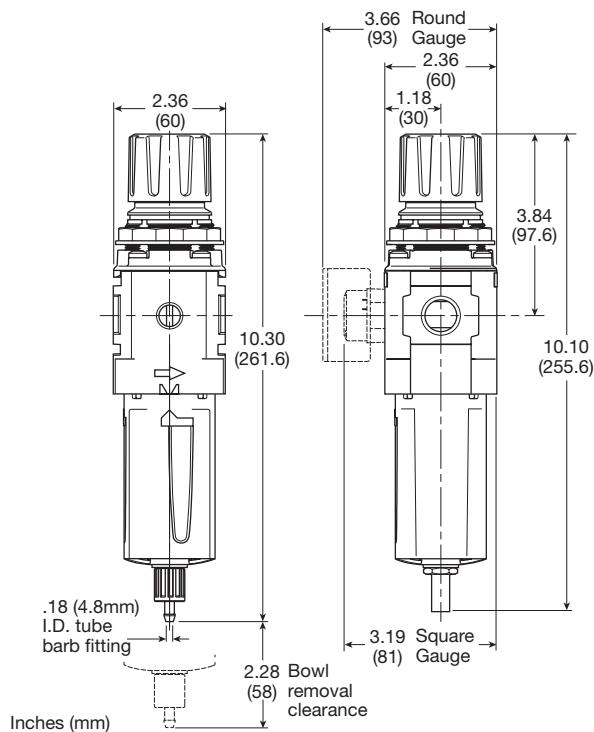


Compact Semi-Precision Filter / Regulators**Material Specifications**

Body	Aluminum
Adjustment knob	Acetal
Element retainer / baffle	Acetal
Plastic bowl	Polycarbonate
Metal bowl	Aluminum
Bowl guard	Nylon
Filter element	Sintered polyethylene
Seals	Nitrile
Springs	Steel, stainless steel
Valve assembly	Brass / nitrile
Diaphragm assembly	Nitrile / zinc
Panel nut	Acetal
Sight gauge	Nylon

Repair and Service Kits

Plastic bowl / bowl guard manual drain	P32KB00BGM
Metal bowl / sight gauge manual drain	P32KB00BSM
Auto drain	P32KA00DA
5μ particle filter element	P32KA00ESE
Diaphragm repair kit - relieving	P32KB00RB
Diaphragm repair kit - non-relieving	P32KB00RC
Panel mount nut - aluminum	P32KA00MM
Panel mount nut - plastic	P32KA00MP
Angle bracket (fits to panel mount threads)	P32KB00MR
T-bracket (fits to body connector)	P32KA00MB
T-bracket with body connector	P32KA00MT
Body connector	P32KA00CB

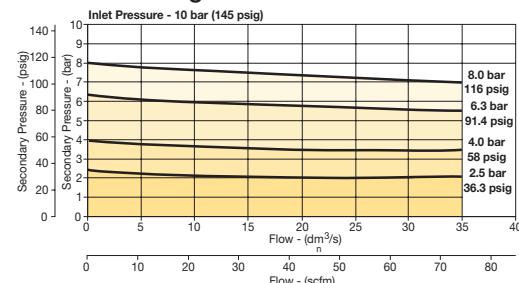
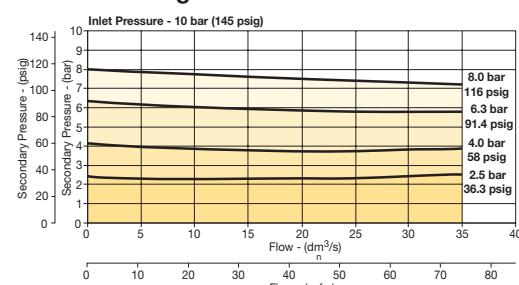
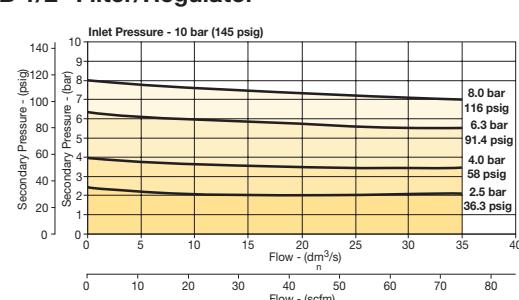


Manual Drain

Automatic Drain



For inventory, lead times, and kit lookup, visit www.pdnplu.com

Air Preparation Products**Air Preparation****Flow Charts****P32EB 1/4" Filter / Regulator****P32EB 3/8" Filter/Regulator****P32EB 1/2" Filter/Regulator****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.

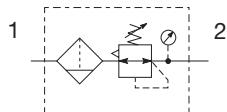
Gauges

50mm (2") round	0-30 psig / 0-2 bar	K4520N14030
1/4" center back mount	0-60 psig / 0-4 bar	K4520N14060
	0-160 psig / 0-11 bar	K4520N14160
	0-300 psig / 0-20 bar	K4520N14300

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

P33 Filter / Regulators – Standard

- 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
- Secondary aspiration plus balanced poppet provides quick response and accurate pressure regulation



Port Size	Description / Relieving	Bowl / Drain Type [†]	Part Number
1/2"	125 psig (8 bar)	Poly / Manual	P33EA94EGMBNGP
1/2"	125 psig (8 bar)	Poly / Auto	P33EA94EGABNGP
1/2"	125 psig (8 bar)	Metal / Manual	P33EA94ESMBNGP
1/2"	125 psig (8 bar)	Metal / Auto	P33EA94ESABNGP
3/4"	125 psig (8 bar)	Poly / Manual	P33EA96EGMBNGP
3/4"	125 psig (8 bar)	Poly / Auto	P33EA96EGABNGP
3/4"	125 psig (8 bar)	Metal / Manual	P33EA96ESMBNGP
3/4"	125 psig (8 bar)	Metal / Auto	P33EA96ESABNGP

[†] For polycarbonate bowl, see caution in Engineering Section A.

Operating Information

Flow capacity*:	1/2 3/4	200 scfm (94 dm ³ /s, ANR) 235 scfm (109 dm ³ /s, ANR)
Operating temperature:		-13°F to 125°F (-25°C to 52°C) -13°F to 150°F (-25°C to 65.5°C)
Supply pressure (max):		Plastic bowl Metal bowl 150 psig (10 bar) 250 psig (17 bar)
Standard filtration:		Metal bowl 5 micron
Useful retention [†] :		2.8 US oz. (85 cm ³)
Adjusting range pressure:		0 to 30 psig (0 to 2 bar) 0 to 60 psig (0 to 4 bar) 0 to 125 psig (0 to 8 bar) 0 to 250 psig (0 to 17 bar)
Gauge port (2 each):		1/4 NPT, BSPP, BSPT
Weight:		1.87 lb. (0.85 kg)

* Inlet pressure 145 psig (10 bar). Secondary pressure 91.3 psig (6.3 bar) and 14.5 psig (1 bar) pressure drop.

[†] 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)

Ordering Information:

P33EA	9	6	E	G	M	B	N	G	P
Basic Series Global Modular Standard Filter / Regulator P33EA									
Thread Type									
BSPP 1 BSPT 2 NPT 9									
Element									
5μ Element E									
Port Size									
1/2 4 3/4 6									
Bowl Type									
Poly Bowl with Bowl Guard G Metal Bowl without Sight Gauge M Metal Bowl with Sight Gauge S									
Relief									
B Relieving N Non-Relieving									
Drain Type									
M Manual Drain A Auto Drain									
Adjustment Range									
With Round Gauge									
Z 30 psig; 2 bar; 0.2 MPa									
M 60 psig; 4 bar; 0.4 MPa									
G 125 psig; 8 bar; 0.8 MPa									
J [§] 250 psig; 17 bar; 1.7 MPa									
Without Gauge									
Y 30 psig; 2 bar; 0.2 MPa									
L 60 psig; 4 bar; 0.4 MPa									
N 125 psig; 8 bar; 0.8 MPa									
H [§] 250 psig; 17 bar; 1.7 MPa									

[§] Not available with poly bowl with bowl guard.

Most popular.



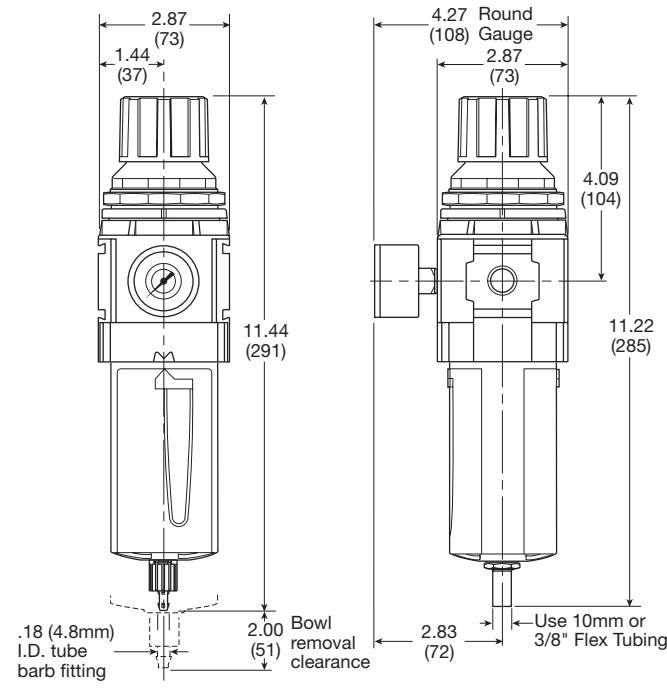
For inventory, lead times, and kit lookup, visit www.pdnplu.com

Material Specifications

Body	Aluminum
Adjustment knob	Acetal
Body cap	ABS
Element retainer / baffle	Acetal
Plastic bowl	Polycarbonate
Metal bowl	Aluminum
Filter element	Sintered Polyethylene
Seals	Nitrile
Springs	Steel, stainless steel
Valve assembly	Brass / nitrile
Diaphragm assembly	Nitrile / zinc
Panel nut	Acetal
Sight gauge	Nylon

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
Diaphragm repair kit - Relieving	P33KA00RB
Diaphragm 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



Manual Drain

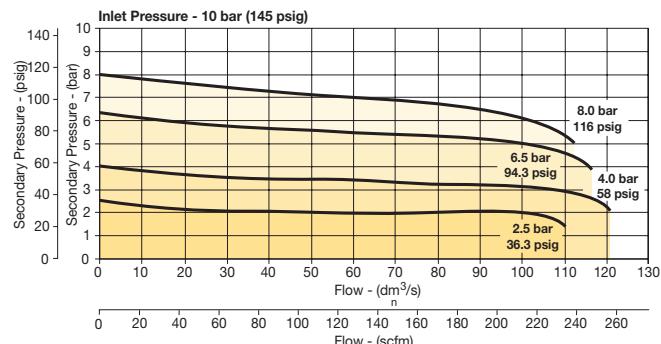
Automatic Drain

Air Preparation Products

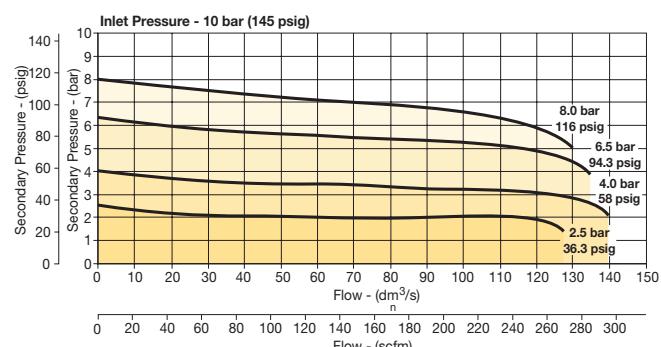
Air Preparation

Flow Charts

P33EA 1/2" Filter / Regulator



P33EA 3/4" Filter/Regulator


 **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.

Gauges

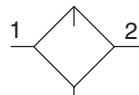
50mm (2") round 1/4" center back mount	0-30 psig / 0-2 bar	K4520N14030
	0-60 psig / 0-4 bar	K4520N14060
	0-160 psig / 0-11 bar	K4520N14160
	0-300 psig / 0-20 bar	K4520N14300

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



P31 Lubricators – Mini

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



Lubricator
with drain



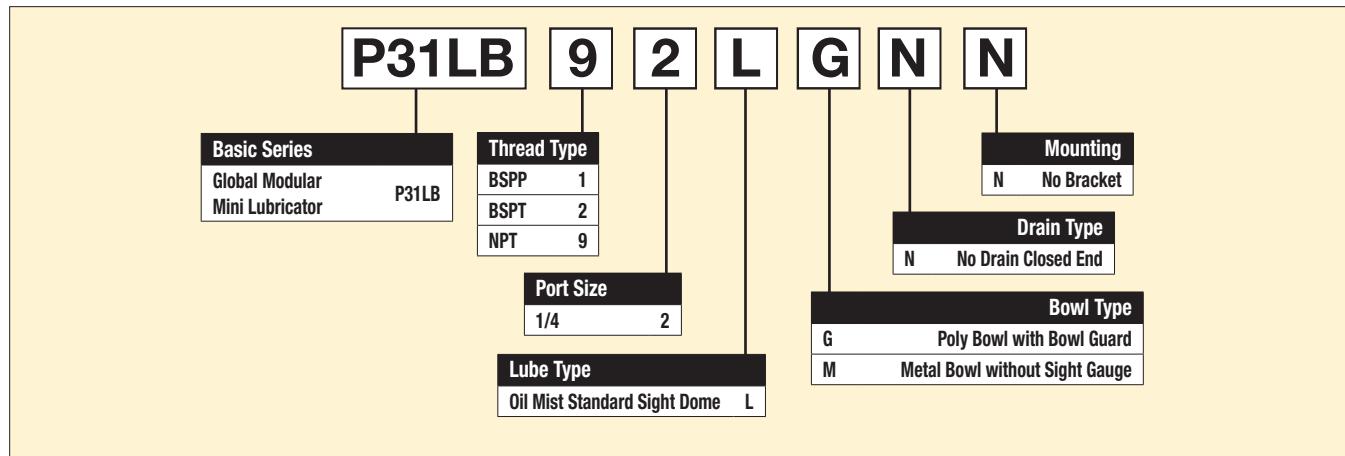
Port Size	Description [‡]	Part Number
1/4"	Poly Bowl - No Drain	P31LB92LGNN
1/4"	Metal Bowl - No Drain	P31LB92LMNN

[‡] For polycarbonate bowl, see caution in Engineering Section A.

Operating Information

Flow capacity*:	52 scfm (25 dm ³ /s, ANR)
Operating temperature:	14°F to 125°F (-10°C to 52°C)
Plastic bowl	14°F to 150°F (-10°C to 65.5°C)
Metal bowl	
Supply pressure (max):	
Plastic bowl	150 psig (10 bar)
Metal bowl	250 psig (17 bar)
Bowl capacity:	0.6 US oz. (18 cm ³)
Weight:	0.29 lb (0.13 kg)
* Inlet pressure 91.3 psig (6.3 bar). Pressure drop 4.9 psig (0.34 bar).	

Ordering Information:



Suggested Lubricant **F442 Oil**

Petroleum based oil of 100 to 200 SUS viscosity at 100°F (38°C) and an

aniline point greater than 200°F (93°C)

(DO NOT USE OILS WITH ADDITIVES, COMPOUNDED OILS CONTAINING SOLVENTS, GRAPHITE, DETERGENTS, OR SYNTHETIC OILS.)

Most popular.



For inventory, lead times, and kit lookup, visit www.pdnplu.com

Material Specifications

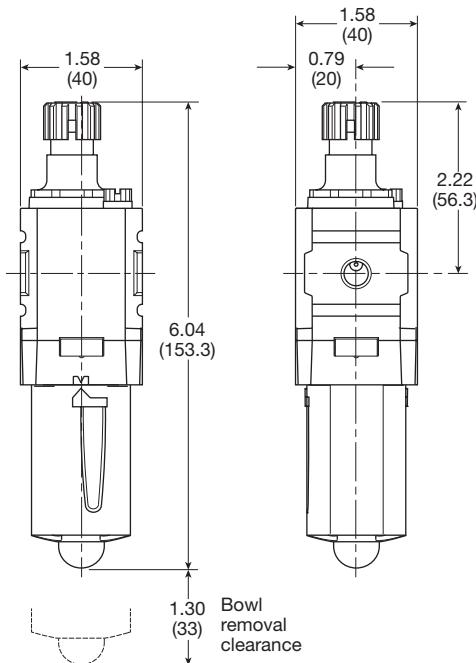
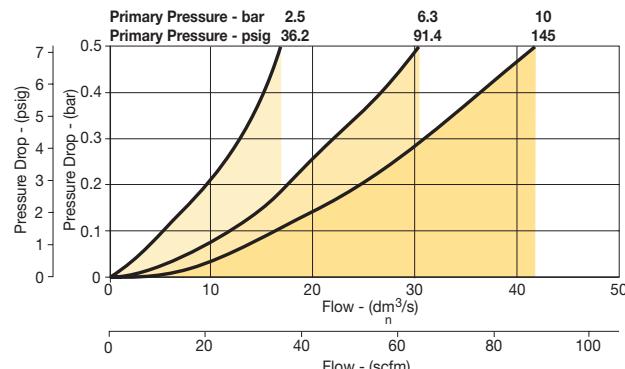
Body	Aluminum
Body cap	ABS
Plastic bowl	Polycarbonate
Metal bowl	Aluminum
Seals	Nitrile
Sight dome	Polycarbonate
Suggested lubricant	ISO / ASTM VG32
Pick-up filter	Sintered bronze

Repair and Service Kits

Plastic bowl / bowl guard no drain	P31KB00BGN
Metal bowl / w/o sight gauge no drain	P31KB00BMN
Drip control assembly	P32KA00PG
Fill plug	P31KA00PL
C-bracket (fits to body)	P31KA00MW
T-bracket with body connector	P31KA00MT
Body connector	P31KA00CB
Oil (1 quart)	F442001
Oil (1 gallon)	F442002
Oil (12 quart case)	F442003
Oil (4 gallon case)	F442005

Flow Charts

P31LB 1/4" Lubricator

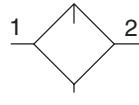


Inches (mm)



P32 Lubricators – Compact

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



Lubricator with drain



Port Size	Description [‡]	Part Number
1/4"	Poly Bowl - No Drain	P32LB92LGNN
1/4"	Metal Bowl - No Drain	P32LB92LSNN
3/8"	Poly Bowl - No Drain	P32LB93LGNN
3/8"	Metal Bowl - No Drain	P32LB93LSNN
1/2"	Poly Bowl - No Drain	P32LB94LGNN
1/2"	Metal Bowl - No Drain	P32LB94LSNN

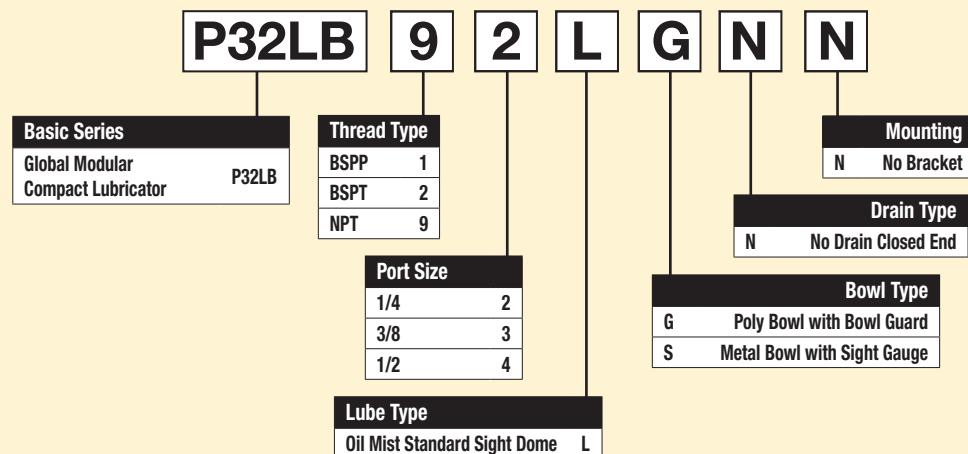
[‡] For polycarbonate bowl, see caution in Engineering Section A.

Operating Information

Flow capacity*:	1/4	38 scfm (17 dm ³ /s, ANR)
	3/8	70 scfm (33 dm ³ /s, ANR)
	1/2	90 scfm (42 dm ³ /s, ANR)
Operating temperature:	Plastic bowl	14°F to 125°F (-10°C to 52°C)
	Metal bowl	14°F to 150°F (-10°C to 65.5°C)
Supply pressure (max):	Plastic bowl	150 psig (10 bar)
	Metal bowl	250 psig (17 bar)
Bowl capacity:		4.09 US oz. (121 cm ³)
Weight:		0.68 lb (0.31 kg)

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

Ordering Information:



Suggested Lubricant **F442 Oil**

Petroleum based oil of 100 to 200 SUS viscosity at 100°F (38°C) and an aniline point greater than 200°F (93°C)

(DO NOT USE OILS WITH ADDITIVES, COMPOUNDED OILS CONTAINING SOLVENTS, GRAPHITE, DETERGENTS, OR SYNTHETIC OILS.)

Most popular.



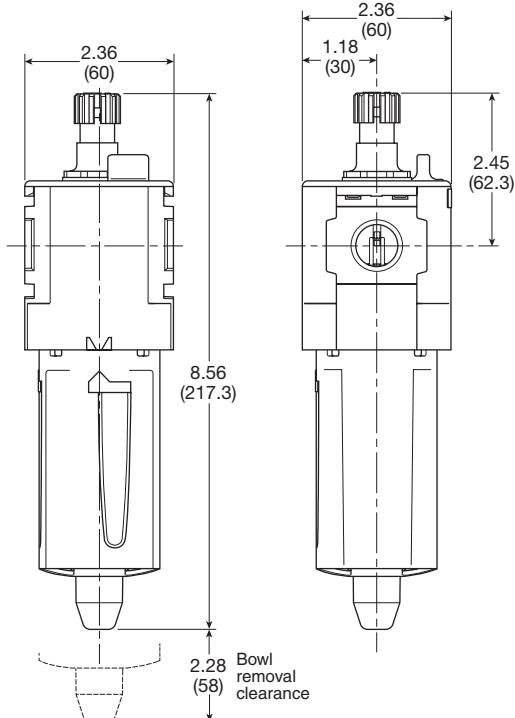
For inventory, lead times, and kit lookup, visit www.pdnplu.com

Material Specifications

Body	Aluminum
Body cap	ABS
Plastic bowl	Polycarbonate
Metal bowl	Aluminum
Seals	Nitrile
Sight dome	Polycarbonate
Sight gauge	Nylon
Suggested lubricant	ISO / ASTM VG32
Pick-up filter	Sintered bronze

Repair and Service Kits

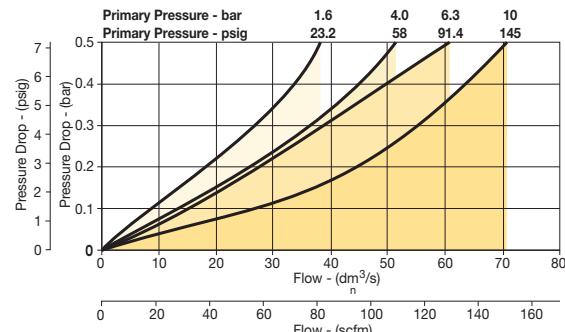
Plastic bowl / bowl guard no drain	P32KB00BGN
Metal bowl / w/o sight gauge no drain	P32KB00BMN
Metal bowl / Sight gauge no drain	P32KB00BSN
Drip control assembly	P32KA00PG
Fill plug	P32KA00PL
L-bracket (fits to body)	P32KA00ML
T-bracket (fits to body connector)	P32KA00MB
T-bracket with body connector	P32KA00MT
Body connector	P32KA00CB
Oil (1 quart)	F442001
Oil (1 gallon)	F442002
Oil (12 quart case)	F442003
Oil (4 gallon case)	F442005



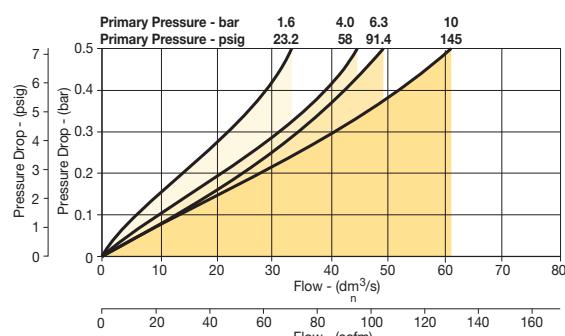
Inches (mm)

Flow Charts

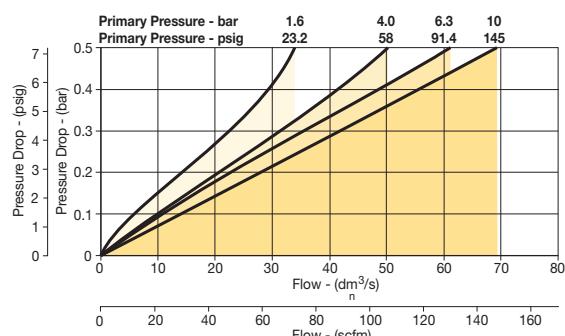
P32LB 1/4" Lubricator



P32LB 3/8" Lubricator

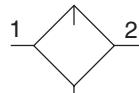


P32LB 1/2" Lubricator



P33 Lubricators – Standard

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



Lubricator
with drain



Port Size	Description [‡]	Part Number
1/2"	Poly Bowl - No Drain	P33LA94LGNN
1/2"	Metal Bowl - No Drain	P33LA94LSNN
3/4"	Poly Bowl - No Drain	P33LA96LGNN
3/4"	Metal Bowl - No Drain	P33LA96LSNN

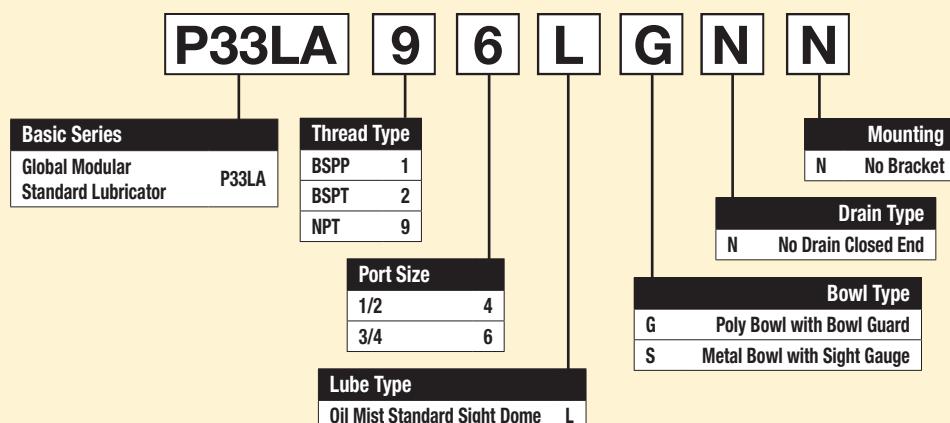
[‡] For polycarbonate bowl, see caution in Engineering Section A.

Operating Information

Flow capacity*:	110 scfm (52 dm ³ /s, ANR) 150 scfm (71 dm ³ /s, ANR)
Operating temperature:	14°F to 125°F (-10°C to 52°C) 14°F to 150°F (-10°C to 65.5°C)
Supply pressure (max):	150 psig (10 bar) 250 psig (17 bar)
Bowl capacity:	6.1 US oz. (181 cm ³)
Weight:	1.04 lb (0.47 kg)

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

Ordering Information:



Suggested Lubricant **F442 Oil**

Petroleum based oil of 100 to 200 SUS viscosity at 100°F (38°C) and an aniline point greater than 200°F (93°C)

(DO NOT USE OILS WITH ADDITIVES, COMPOUNDED OILS CONTAINING SOLVENTS, GRAPHITE, DETERGENTS, OR SYNTHETIC OILS.)

Most popular.



For inventory, lead times, and kit lookup, visit www.pdnplu.com

Material Specifications

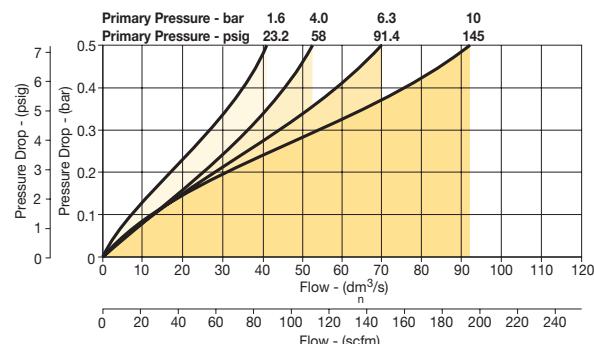
Body	Aluminum
Body cap	ABS
Plastic bowl	Polycarbonate
Metal bowl	Aluminum
Seals	Nitrile
Sight dome	Polycarbonate
Sight gauge	Nylon
Suggested lubricant	ISO / ASTM VG32
Pick-up filter	Sintered bronze

Repair and Service Kits

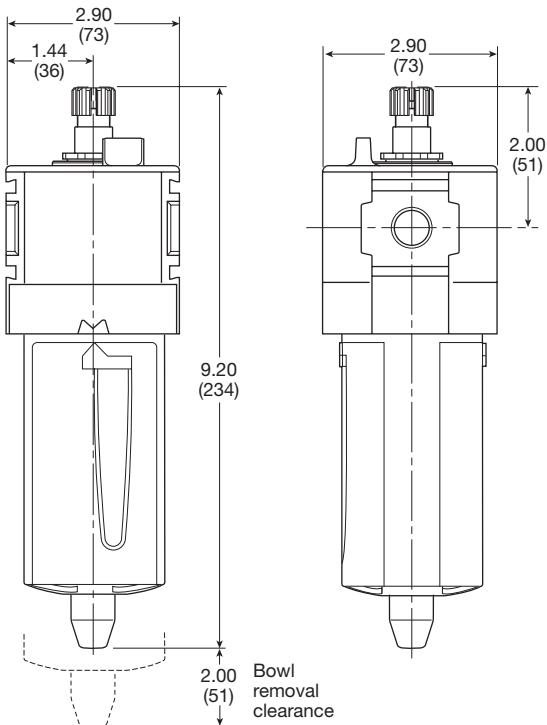
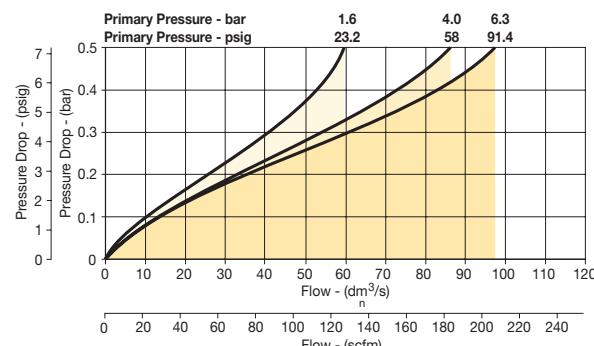
Plastic bowl / bowl guard no drain	P33KA00BGN
Metal bowl / w/o sight gauge no drain	P33KA00BMN
Metal bowl / sight gauge no drain	P33KA00BSN
Drip control assembly	P32KA00PG
Fill plug	P32KA00PL
L-bracket (fits to body)	P33KA00ML
T-bracket (fits to body connector)	P32KA00MB
T-bracket with body connector	P32KA00MT
Body connector	P32KA00CB
Oil (1 quart)	F442001
Oil (1 gallon)	F442002
Oil (12 quart case)	F442003
Oil (4 gallon case)	F442005

Flow Charts

P33LA 1/2" Lubricator



P33LA 3/4" Lubricator



Inches (mm)



For inventory, lead times, and kit lookup, visit www.pdnplu.com

Popular Combinations: Inlet pressure 145 psig (10 bar), secondary pressure 91.3 psig (6.3 bar), 14.5 psig (1 bar) pressure drop.



Filter + Regulator + Lubricator Combinations, poly bowl
5 micron element, 116 psig (8 bar) regulator + gauge and wall mounting brackets

Port Size	Flow	Manual Drain	Pulse Drain
1/4"	27 scfm (13 dm³/s, ANR)	P31CB92GEMN5LNW	P31CB92GEBN5LNW



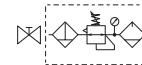
Filter/Regulator + Lubricator Combinations, poly bowl
5 micron element, 116 psig (8 bar) regulator + gauge and wall mounting brackets

Port Size	Flow	Manual Drain	Pulse Drain
1/4"	28 scfm (14 dm³/s, ANR)	P31CA92GEMN5LNW	P31CA92GEBN5LNW



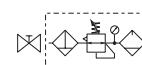
Ball Valve + Filter + Regulator + Lubricator Combinations, poly bowl
5 micron element, 116 psig (8 bar) regulator + gauge and wall mounting brackets

Port Size	Flow	Manual Drain	Pulse Drain
1/4"	27 scfm (13 dm³/s, ANR)	P31QB92GEMN5LNW	P31QB92GEBN5LNW



Ball Valve + Filter/Regulator + Lubricator Combinations, poly bowl
5 micron element, 116 psig (8 bar) regulator + gauge and wall mounting brackets

Port Size	Flow	Manual Drain	Pulse Drain
1/4"	28 scfm (14 dm³/s, ANR)	P31QA92GEMN5LNW	P31QA92GEBN5LNW



Filter / Regulator coding (use with codes: A M)				Lubricator coding (use with combo codes: A B)				Assembly configuration	
Filter coding (use with combo codes: B F G). For multiple filters, repeat as needed.				Regulator coding (use with combo code: B)					
P31 C B 9 2 G Combination B/V + Combination Q Combination + B/V X Combination C B/V = Ball valve				E M Element 5μ Element E 0.01μ Element C 1μ Element 9 Adsorber A					
Combination Type* F/R+L A F+Fc+Fa G F+R+L B F/R+Fc M F+Fc F				N 5 Relief / Adjustment Non-Rising Knob N					
Thread Type BSPP 1 BSPT 2 NPT 9				Adjustment Range With Round Gauge 30 psig; 2 bar; 0.2 MPa Z 60 psig; 4 bar; 0.4 MPa M 125 psig; 8 bar; 0.8 MPa G 232 psig; 16 bar; 1.6 MPa J					
Port Size 1/4 2				Drain Type Manual Drain M Pulse Drain B					
Bowl Type Poly Bowl with Bowl Guard G Metal Bowl without Sight Gauge M				Lub Type Oil Mist L Standard N Sight Dome					
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. * For polycarbonate bowl, see caution in Engineering Section A.				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.	
Without Gauge 30 psig; 2 bar; 0.2 MPa Y 60 psig; 4 bar; 0.4 MPa L 125 psig; 8 bar; 0.8 MPa N 232 psig; 16 bar; 1.6 MPa H				With Square Gauge psig bar 30* = 1 2* = V 60 = 3 4 = S 125 = 5 8 = T				* Regulator comes with gauge respective to the adjustment range selected. [§] Not available with poly bowl with bowl guard.	

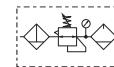


For inventory, lead times, and kit lookup, visit www.pdnplu.com

Popular Combinations: Inlet pressure 145 psig (10 bar), secondary pressure 91.3 psig (6.3 bar), 14.5 psig (1 bar) pressure drop.



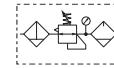
Filter + Regulator + Lubricator Combinations, poly bowl
5 micron element, 116 psig (8 bar) regulator + gauge and wall mounting brackets



Port Size	Flow	Manual Drain	Auto Drain
1/4"	42 scfm (20 dm ³ /s, ANR)	P32CB92GEMNGLNW	P32CB92GEANGLNW
3/8"	68 scfm (32 dm ³ /s, ANR)	P32CB93GEMNGLNW	P32CB93GEANGLNW
1/2"	85 scfm (40 dm ³ /s, ANR)	P32CB94GEMNGLNW	P32CB94GEANGLNW



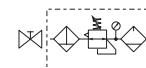
Filter/Regulator + Lubricator Combinations, poly bowl
5 micron element, 116 psig (8 bar) regulator + gauge and wall mounting brackets



Port Size	Flow	Manual Drain	Auto Drain
1/4"	45 scfm (22 dm ³ /s, ANR)	P32CA92GEMNGLNW	P32CA92GEANGLNW
3/8"	70 scfm (33 dm ³ /s, ANR)	P32CA93GEMNGLNW	P32CA93GEANGLNW
1/2"	90 scfm (43 dm ³ /s, ANR)	P32CA94GEMNGLNW	P32CA94GEANGLNW



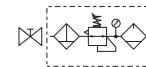
Ball Valve + Filter + Regulator Combinations, poly bowl
5 micron element, 116 psig (8 bar) regulator + gauge and wall mounting brackets



Port Size	Flow	Manual Drain	Auto Drain
1/4"	42 scfm (20 dm ³ /s, ANR)	P32QB92GEMNGLNW	P32QB92GEANGLNW
3/8"	68 scfm (32 dm ³ /s, ANR)	P32QB93GEMNGLNW	P32QB93GEANGLNW
1/2"	85 scfm (40 dm ³ /s, ANR)	P32QB94GEMNGLNW	P32QB94GEANGLNW



Ball Valve + Filter/Regulator + Lubricator Combinations, poly bowl
5 micron element, 116 psig (8 bar) regulator + gauge and wall mounting brackets



Port Size	Flow	Manual Drain	Auto Drain
1/4"	45 scfm (22 dm ³ /s, ANR)	P32QA92GEMNGLNW	P32QA92GEANGLNW
3/8"	70 scfm (33 dm ³ /s, ANR)	P32QA93GEMNGLNW	P32QA93GEANGLNW
1/2"	90 scfm (43 dm ³ /s, ANR)	P32QA94GEMNGLNW	P32QA94GEANGLNW

P32	C	B	9	4	G
Combination					
B/V + Combination	Q				
Combination + B/V	X				
Combination	C				
B/V = Ball valve					
Combination Type*					
F/R+L	A	F+Fc+Fa	G		
F+R+L	B	F/R+Fc	M		
F+Fc	F				
* Combination type					
F = 5μ					
Fc1 = 1μ					
Fc = .01μ					
Fa = Adsorber					
* For polycarbonate bowl, see caution in Engineering Section A.					
* 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.					
Bowl Type					
Poly Bowl with Bowl Guard [‡]					
Metal Bowl without Sight Gauge					
Metal Bowl With Sight Gauge					
* Not available when using lubricator.					
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.

Regulator coding
(use with combo code: B)

Relief / Adjustment

Non-Rising Knob Relieving

Adjustment Range

With Round Gauge

30 psig; 2 bar; 0.2 MPa

60 psig; 4 bar; 0.4 MPa

125 psig; 8 bar; 0.8 MPa

250 psig; 17 bar; 1.7 MPa

Without Gauge

30 psig; 2 bar; 0.2 MPa

60 psig; 4 bar; 0.4 MPa

125 psig; 8 bar; 0.8 MPa

250 psig; 17 bar; 1.7 MPa

With Square Gauge

30* = 1 2* = V

60 = 3 4 = S

125 = 5 8 = T

Lubricator coding
(use with combo codes: A B)

Assembly configuration

Lub Type

Oil Mist

Standard

Sight

Dome

Drain Type

No Drain;

Closed End

Mounting

No Bracket

A

Port Blocks

C

Port Blocks & Wall Brkt

D

Wall Bracket

W

* Regulator comes with gauge respective to the adjustment range selected.

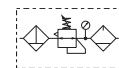
[‡] Not available with poly bowl with bowl guard.



Popular Combinations: Inlet pressure 145 psig (10 bar), secondary pressure 91.3 psig (6.3 bar), 14.5 psig (1 bar) pressure drop.



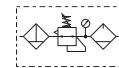
Filter + Regulator + Lubricator Combinations, poly bowl
5 micron element, 116 psig (8 bar) regulator + gauge and wall mounting brackets



Port Size	Flow	Manual Drain	Auto Drain
1/2"	90 scfm (43 dm³/s, ANR)	P33CB94GEMNGLNW	P33CB94GEANGLNW
3/4"	110 scfm (52 dm³/s, ANR)	P33CB96GEMNGLNW	P33CB96GEANGLNW



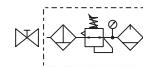
Filter/Regulator + Lubricator Combinations, poly bowl
5 micron element, 116 psig (8 bar) regulator + gauge and wall mounting brackets



Port Size	Flow	Manual Drain	Auto Drain
1/2"	110 scfm (52 dm³/s, ANR)	P33CA94GEMNGLNW	P33CA94GEANGLNW
3/4"	150 scfm (71 dm³/s, ANR)	P33CA96GEMNGLNW	P33CA96GEANGLNW



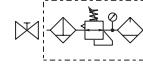
Ball Valve + Filter + Lubricator Combinations, poly bowl
5 micron element, 116 psig (8 bar) regulator + gauge and wall mounting brackets



Port Size	Flow	Manual Drain	Auto Drain
1/2"	90 scfm (43 dm³/s, ANR)	P33QB94GEMNGLNW	P33QB94GEANGLNW
3/4"	110 scfm (52 dm³/s, ANR)	P33QB96GEMNGLNW	P33QB96GEANGLNW



Ball Valve + Filter/Regulator + Lubricator Combinations, poly bowl
5 micron element, 116 psig (8 bar) regulator + gauge and wall mounting brackets



Port Size	Flow	Manual Drain	Auto Drain
1/2"	110 scfm (52 dm³/s, ANR)	P33QA94GEMNGLNW	P33QA94GEANGLNW
3/4"	150 scfm (71 dm³/s, ANR)	P33QA96GEMNGLNW	P33QA96GEANGLNW

P33	C	B	9	6	G
Combination					
B/V + Combination	Q				
Combination + B/V	X				
Combination	C				
B/V = Ball valve					
Combination Type*					
F/R+L	A	F+Fc+Fa	G		
F+R+L	B	F/R+Fc	M		
F+Fc	F				
* Combination type					
F = 5μ					
Fc = 1μ					
Fc = .01μ					
Fa = Adsorber					
† For polycarbonate bowl, see caution in Engineering Section A.					
* 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.					
Bowl Type ‡					
Poly Bowl With Bowl Guard					
Metal Bowl Without Sight Gauge					
Metal Bowl With Sight Gauge					

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

E	M
Element	
0.01μ Element	C
0.01μ Element	D*
with dpi	
5μ Element	E
5μ Element	F*
with dpi	
1μ Element	9
1μ Element	Q*
with dpi	
Adsorber	A
* Not available with F/R.	
Drain Type	
Auto Drain	A
Manual Drain	M

N	G
Relief / Adjustment	
Non-Rising Knob	
Relieving	
Adjustment Range	
With Round Gauge	
30 psig; 2 bar; 0.2 MPa	Z
60 psig; 4 bar; 0.4 MPa	M
125 psig; 8 bar; 0.8 MPa	G
250 psig; 17 bar; 1.7 MPa	J*
Without Gauge	
30 psig; 2 bar; 0.2 MPa	Y
60 psig; 4 bar; 0.4 MPa	L
125 psig; 8 bar; 0.8 MPa	N
250 psig; 17 bar; 1.7 MPa	H*
* Not available with poly bowl with bowl guard.	

L	N
Lub Type	
Oil Mist	
Standard	
Sight Dome	
Drain Type	
No Drain; Closed End	

W	
Mounting	
No Bracket	
A	
Port Blocks	
C	
Port Blocks & Wall Brkt	
D	
Wall Bracket	
W	

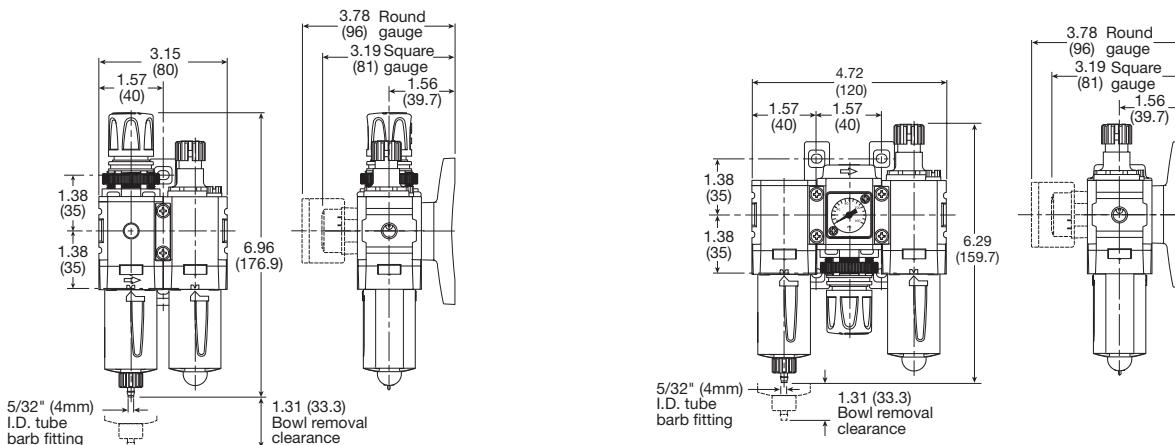


For inventory, lead times, and kit lookup, visit www.pdnplus.com

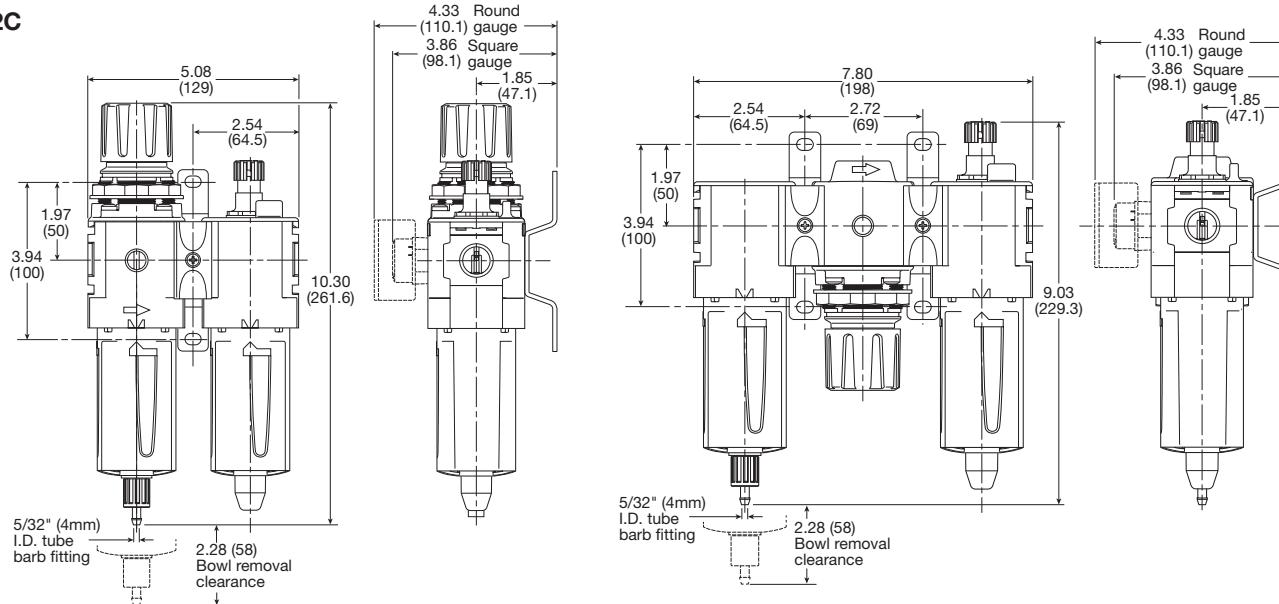
Popular Combination Dimensions

inches (mm)

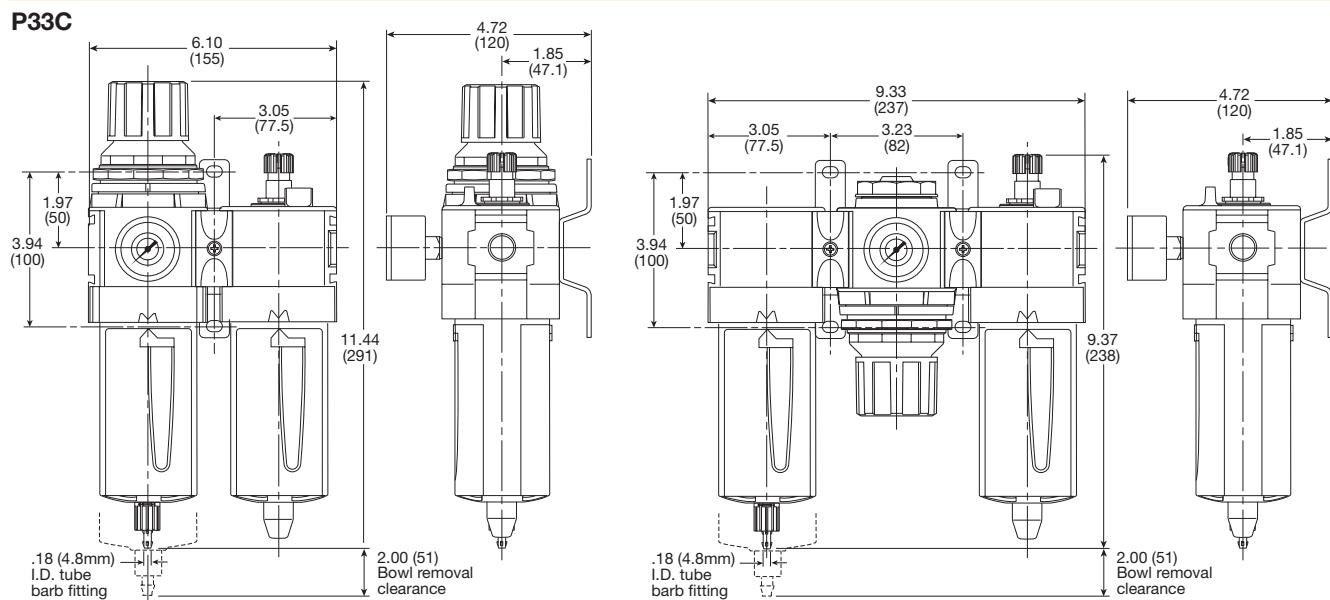
P31C



P32C

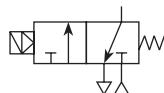


P33C

For inventory, lead times, and kit lookup, visit www.pdnplu.com

P31D & P32D Dump Valves

- Modular design with 1/4" or 1/2" integral ports (NPT, BSPP & BSPT)
- 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.

Port Size	Description	Weight lbs (kg)	Part Number
1/4"	120VAC Solenoid & cable plug	0.8 (0.37)	P31DA92SGNC1FN
1/4"	24VDC Solenoid & cable plug [‡]	0.9 (0.41)	P31DA92SGNC2CN
1/4"	External air pilot operated	0.8 (0.37)	P31DA92PPN
1/2"	120VAC 30mm coil & cable plug incl. [‡]	1.5 (0.69)	P32DA94SCNA3GN
1/2"	24VDC 30mm coil & cable plug incl. [‡]	2.0 (0.91)	P32DA94SCNA2CN
1/2"	External air pilot operated [‡]	1.9 (0.87)	P32DA94PPN

[‡] Includes exhaust silencer

Operating Information

Flow capacity*:	P31D	36 scfm (17 dm ³ /s, ANR)
	P32D	108 scfm (51 dm ³ /s, ANR)
Temperature range (max) [†] :		
Solenoid operated	14°F to 122°F (-10°C to 50°C)	
Air pilot operated	-4°F to 176°F (-20°C to 80°C)	
Pressure (max):		
Solenoid operated	150 psig (10 bar)	
Air pilot operated	250 psig (17 bar)	
Operating pressure (min):		44 psig (3 bar)
Fluid:		Compressed air
Ports:	Air pilot	1/8
	Exhaust	P31D - 1/4; P32D - 1/2
	Gauge	P31D - 1/8; P32D - 1/4

* Inlet pressure 91.3 psig (6.3 bar), inlet pressure and 14.5 psig (1 bar) pressure drop.

† Air supply must be dry enough to avoid ice formation at temperatures below 35.6°F (2°C). Snap pressure: Full flow when downstream pressure reaches 50% of the inlet pressure.

Ordering Information:

P31DA	9	2	S	G	N	C	2CN
Body Size						Solenoid type only	
Dump Valve (1/4")						C	2CN
Dump Valve (1/2")						Actuator Interface	
P31DA						G 15mm Solenoid (P31 only)	
P32DA						C 30mm Solenoid	
Thread Type						P Threaded Air Pilot	
BSPP 1						Solenoid Voltage	
BSPT 2						2CN 24VDC Non Locking Manual Override	
NPT 9						3GN 120VAC Non Locking Manual Override	
Note: P32 unit used for both P32 & P33 series						1FN 120VAC Non Locking Manual Override (P31 series only)	
Port Size						Solenoid Type	
Global Modular Mini (1/4") 2						C 15mm (P31 series only)	
Global Modular Compact (1/2") 4						A 30mm CNOMO Coil (P32 only)	
						D 30mm CNOMO Coil (M12 connection) (P32 only)	

Most popular.



For inventory, lead times, and kit lookup, visit www.pdnplu.com

Material Specifications

Body	Aluminum
Body cover	Polyester
Seals	Nitrile NBR

Mounting Brackets

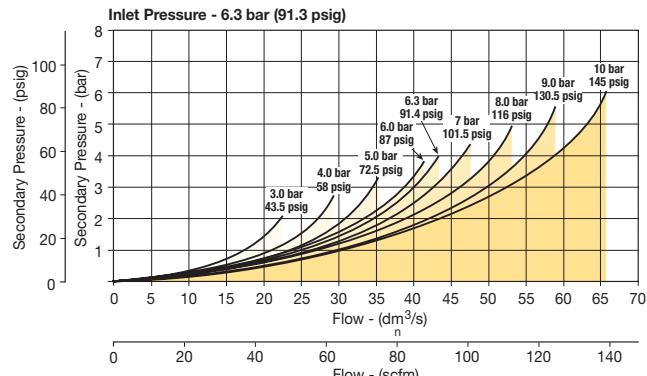
Description	Part number	P31	
		L-bracket mounting kit	P3HKA00ML
Foot bracket mounting kit	P3HKA00MC		

Note:

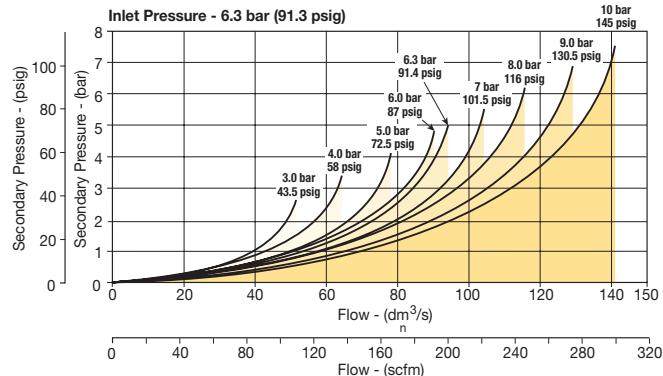
For solenoid operators and cable plugs (connectors) see pages 87 and 88.

Flow Charts

P31DA 1/4" Remote Dump Valve

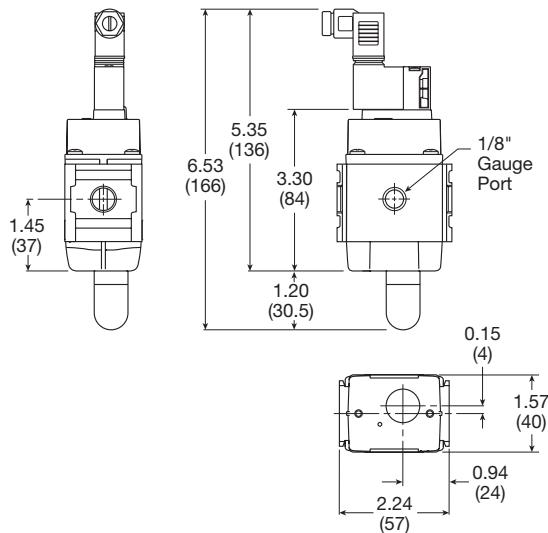


P32DA 1/2" Remote Dump Valve

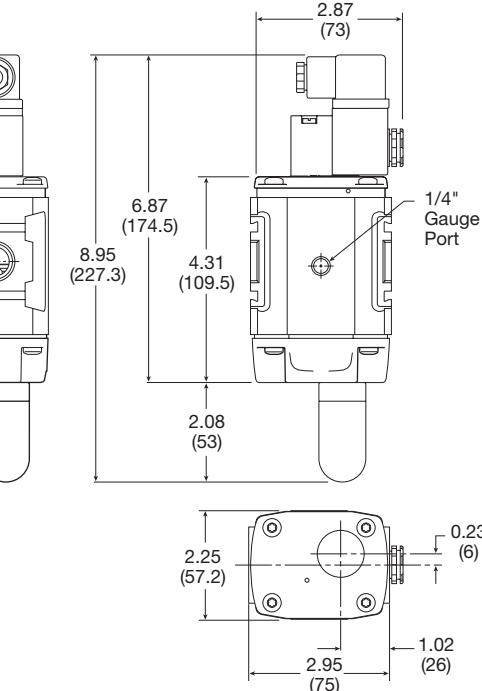


Dimensions inches (mm)

P31D



P32D



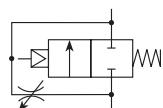
Most popular.



For inventory, lead times, and kit lookup, visit www.pdnplu.com

P31S & P32S Soft Start Valves

- 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 pressure
- 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

Port Size	Description	Weight Lbs (Kg)	Part Number
1/4"	120VAC Solenoid & Cable Plug	0.8 (0.37)	P31SA92SGNC1FN
1/4"	24VDC Solenoid & Cable Plug	0.9 (0.41)	P31SA92SGNC2CN
1/4"	Internal Air Pilot Operated	0.8 (0.37)	P31SA92Y0N
1/4"	External Air Pilot (1/8" threaded)	0.8 (0.37)	P31SA92PPN
1/2"	120VAC 30mm Coil & Cable Plug incl. 1.5 (0.87)		P32SA94SCNA3GN
1/2"	24VDC 30mm Coil & Cable Plug	2.0 (0.90)	P32SA94SCNA2CN
1/2"	Internal Air Pilot Operated	2.0 (0.90)	P32SA94Y0N
1/2"	External Air Pilot (1/8" threaded)	1.5 (0.87)	P32SA94PPN



Operating Information

Flow capacity*:	P31S	36 scfm (17 dm³/s, ANR)
	P32S	101 scfm (48 dm³/s, ANR)
Temperature range (max)†:		
Solenoid operated	14°F to 122°F (-10°C to 50°C)	
Air pilot operated	-4°F to 176°F (-20°C to 80°C)	
Pressure (max):		
Solenoid operated	150 psig (10 bar)	
Air pilot operated	250 psig (17 bar)	
Operating pressure (min):		44 psig (3 bar)
Fluid:		Compressed air
Ports:	Air pilot	1/8
	Gauge	P31S - 1/8; P32S - 1/4
* Inlet pressure 91.3 psig (6.3 bar), inlet pressure and 14.5 psig (1 bar) pressure drop.		
† Air supply must be dry enough to avoid ice formation at temperatures below 35.6°F (2°C). Snap pressure: Full flow when downstream pressure reaches 50% of the inlet pressure.		

Ordering Information:

P31SA	9	2	S	G	N	C	2CN
Body Size						Solenoid type only	
Soft Start						C	2CN
Soft Start							
Thread Type						Solenoid Voltage	
BSPP 1						2CN	24VDC Non Locking Manual Override
BSPT 2						3GN	120VAC Non Locking Manual Override
NPT 9						1FN	120VAC Non Locking Manual Override (P31 series only)
Port Size						Solenoid Type	
Global Modular Mini (1/4") 2						C	15mm (P31 series only)
Global Modular Compact (1/2") 4						A	30mm CNOMO Coil (P32 only)
						D	30mm CNOMO Coil (M12 connection) (P32 only)
Note: P32 unit used for both P32 & P33 series							

Most popular.



For inventory, lead times, and kit lookup, visit www.pdnplu.com

Material Specifications

Body	Aluminum
Body cover	Polyester
Seals	Nitrile NBR

Service Kits

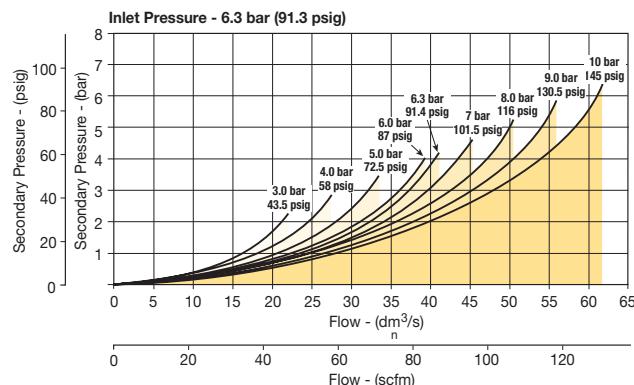
P31S	L-bracket mounting kit	P3HKA00ML
	Foot bracket mounting kit	P3HKA00MC
P32S	L-bracket mounting kit	P3KKA00ML
	Foot bracket mounting kit	P3KKA00MC

Note:

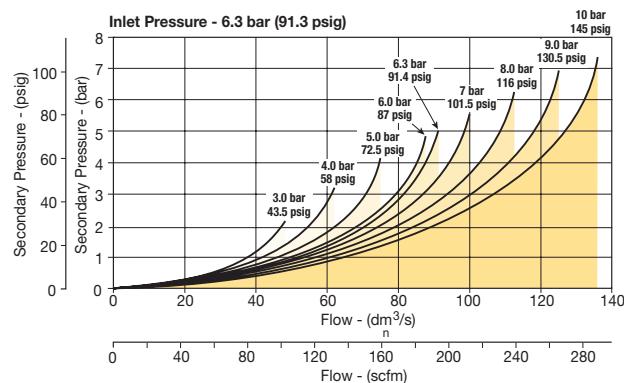
For solenoid operators and cable plugs (connectors) see pages 87 and 88.

Flow Charts

P31SA 1/4" Soft Start Valve

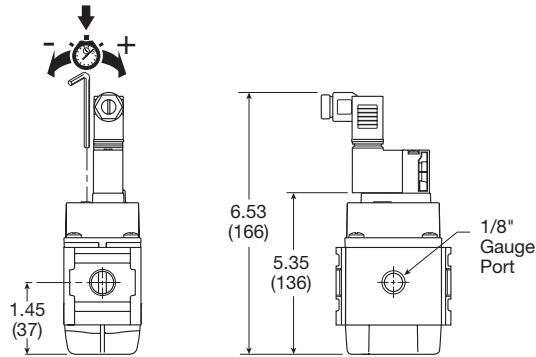


P32SA 1/2" Soft Start Valve

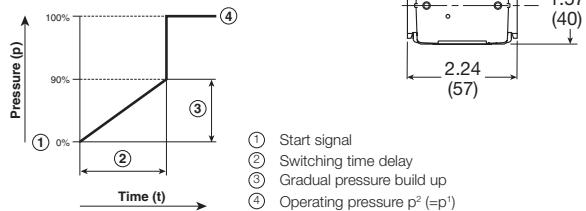


Dimensions inches (mm)

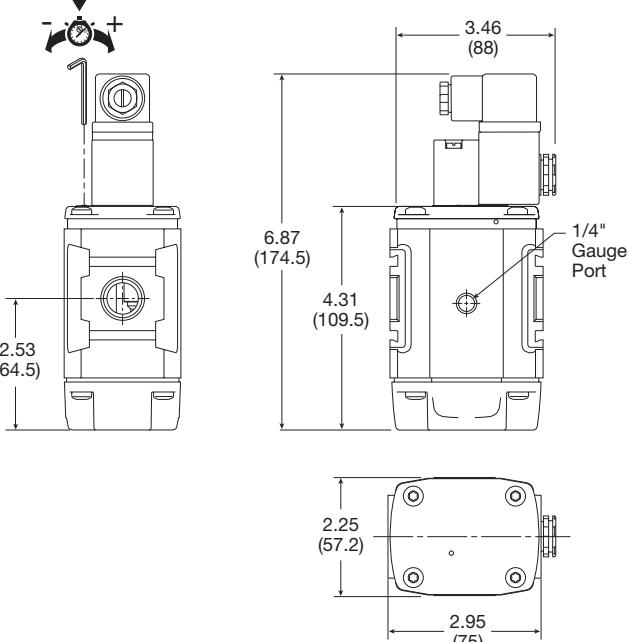
P31S



Soft Start Function:

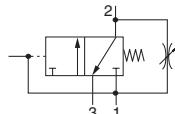


P32S



P31T & P32T Combined Soft Start / Dump Valves

- 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.

Port Size	Description	Weight lbs (kg)	Part Number
1/4"	120VAC Solenoid & cable plug	0.8 (0.37)	P31TA92SGNC1FN
1/4"	24VDC Solenoid & cable plug	0.9 (0.41)	P31TA92SGNC2CN
1/4"	External air pilot operated	0.8 (0.37)	P31TA92PPN
1/2"	120VAC 30mm coil & cable plug incl.	1.9 (0.87)	P32TA94SCNA3GN
1/2"	24VDC 30mm coil & cable plug incl.	2.0 (0.91)	P32TA94SCNA2CN
1/2"	External air pilot operated	1.9 (0.87)	P32TA94PPN

Operating Information

Flow capacity*:	P31T	36 scfm (17 dm ³ /s, ANR)
	P32T	97 scfm (46 dm ³ /s, ANR)
Temperature range (max) [†] :		
Solenoid operated	14°F to 122°F (-10°C to 50°C)	
Air pilot operated	-4°F to 176°F (-20°C to 80°C)	
Pressure (max):		
Solenoid operated	150 psig (10 bar)	
Air pilot operated	250 psig (17 bar)	
Operating pressure (min):		44 psig (3 bar)
Fluid:		Compressed air
Ports:	Air pilot	1/8
	Exhaust	P31T - 1/4; P32T - 1/2
	Gauge	P31T - 1/8; P32T - 1/4

* Inlet pressure 91.3 psig (6.3 bar), inlet pressure and 14.5 psig (1 bar) pressure drop.

† Air supply must be dry enough to avoid ice formation at temperatures below 35.6°F (2°C). Snap pressure: Full flow when downstream pressure reaches 50% of the inlet pressure.

Ordering Information:

P31TA	9	2	S	G	N	C	2CN
Solenoid type only							
Body Size				Actuator Interface			
Soft Start / Dump Valve (1/4")				G 15mm Solenoid (P31 only)			
Soft Start / Dump Valve (1/2")				C 30mm Solenoid			
Thread Type				P Threaded Air Pilot			
BSPP 1				Solenoid Voltage			
BSPT 2				2CN 24VDC Non Locking Manual Override			
NPT 9				3GN 120VAC Non Locking Manual Override			
Pilot Type				1FN 120VAC Non Locking Manual Override (P31 series only)			
P External Air Pilot				Solenoid Type			
S Solenoid Pilot				C 15mm (P31 series only)			
Port Size				A 30mm CNOMO Coil (P32 only)			
Global Modular Mini (1/4") 2				D 30mm CNOMO Coil (M12 connection) (P32 only)			
Global Modular Compact (1/2") 4							

Most popular.



For inventory, lead times, and kit lookup, visit www.pdnplu.com

Combined Soft Start / Dump Valves**Material Specifications**

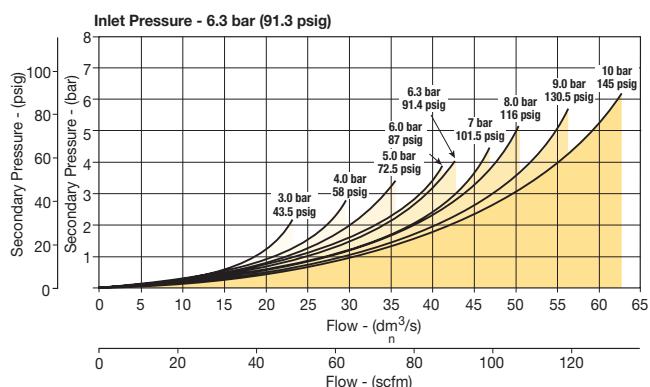
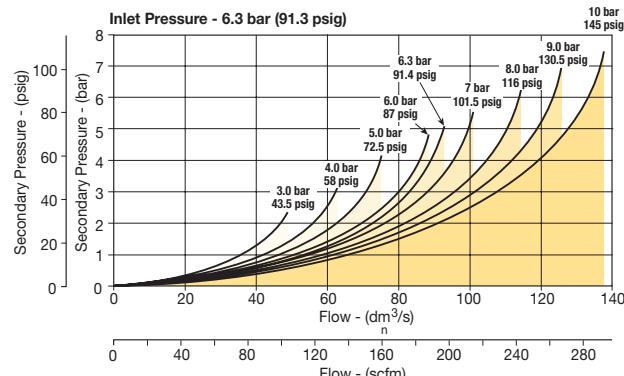
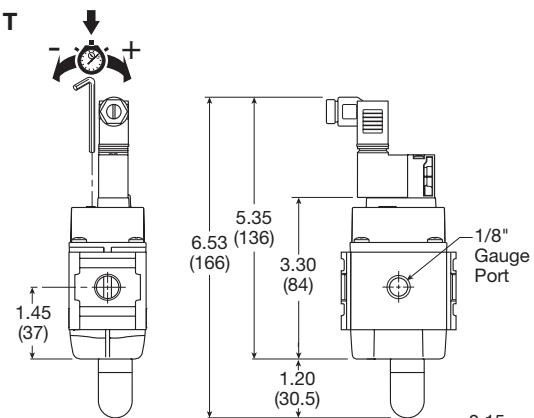
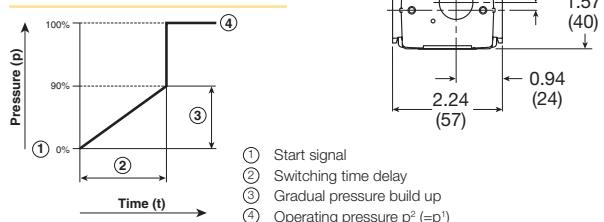
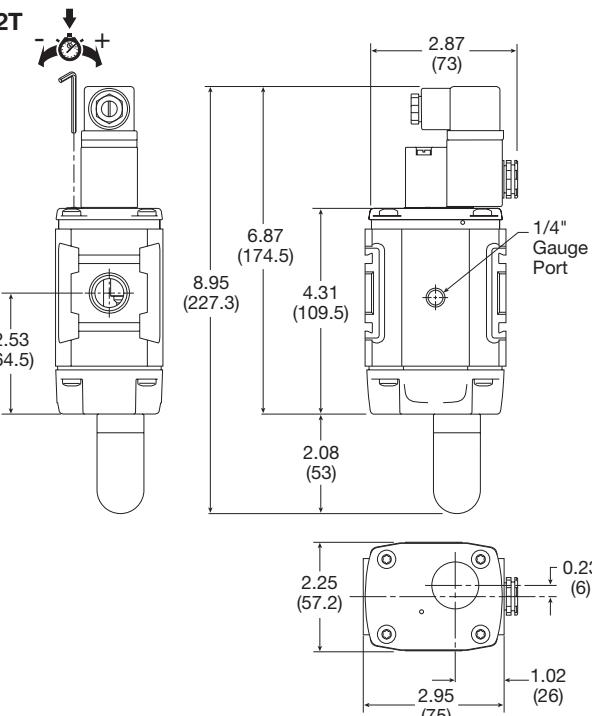
Body	Aluminum
Body cover	Polyester
Seals	Nitrile NBR

Service Kits

P31T	L-bracket mounting kit	P3HKA00ML
	Foot bracket mounting kit	P3HKA00MC
P32T	L-bracket mounting kit	P3KKA00ML
	Foot bracket mounting kit	P3KKA00MC

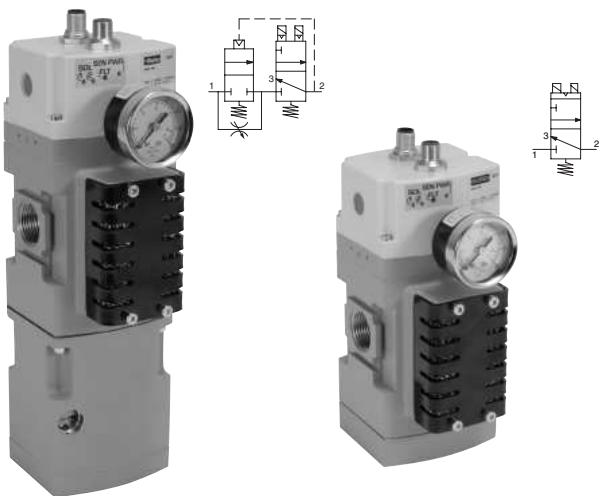
Note:

For solenoid operators and cable plugs (connectors) see pages 87 and 88.

Air Preparation Products**Air Preparation****Flow Charts****P31TA 1/4" Soft Start & Dump Valve****P32TA 1/2" Soft Start & Dump Valve****Dimensions** inches (mm)**P31T****Soft Start Function:****P32T**

P33D & P33T Safety Exhaust Valves

- Easy electrical interface with M12 connectors to safety circuit
- External monitoring provides a cost and space saving advantage
- Solid state pressure sensors provide accurate, fast fault detection
- Quick visual LED indicators on the front of the valve
- Superior seated seal design for longer life
- Safety exhaust outlet is no-maintenance and non-clog by design
- Suitable for stand alone use or modular mounting to P32 or P33 FRL assembly
- High B10 life value
- Fast exhaust times allow for smaller machine footprint



(optional soft start)

Operating Information

Operating pressure:	30 to 150 PSIG (2 to 10 bar)
Minimum operating pressure:	30 PSIG (2 bar)
Ambient temperature:	40° to 120°F (4° to 50°C)
Recommended filtration:	40µ
Operating medium:	Compressed air
Ingress protection class:	IP65
B10 (mio):	10 million switching cycles
B10 d (mio):	20 million switching cycles
Allowable discordance:	150ms
Flow media:	Compresses air to ISO 8573-1 Class 7:4:4
Weight lbs (kg):	6.5 (2.9) with soft start 4.2 (1.9) without soft start

The soft start opens to full flow at approximately 60% of input pressure.



Ordering Information:

P3	3	T	B	1	6	A	B	E	N
Series Standard P3	Global Standard 3	Type Safety Redundant (no soft start) D Safety Redundant (c/w soft start) T	Design Current B	Thread Type BSPP 1 NPT 9	Port Size 3/4" 1 6	Output for Solenoid, M12 Connector Pin 2 & 4, Common 3 A 3 & 4 C 2 & 4 D	Output for Sensors, M12 Connector Pin 1 & 2, 1 & 4, Common 3 A 1 & 2, 5 & 4, Common 3 B 5 & 2, 1 & 4, Common 3 C	Sensor Monitoring External E	Gauge² No Gauge N Dial Gauge ³ (standard) G Digital Gauge ³ D MPS-P34 Pressure Sensor M

Notes:

- For 1/2" connections use 1/2" port blocks on standard 3/4" housing.
- Safety valve supplied with 1/8" gauge port in either BSPP or NPT threads as specified for ports. Gauges shipped loose.
- Dial or digital gauge not available on BSPP version.

Note: Mounting hardware and port blocks are sold separately.

Most popular.



For inventory, lead times, and kit lookup, visit www.pdnplu.com

Safety Exhaust Valves**General Technical Data**

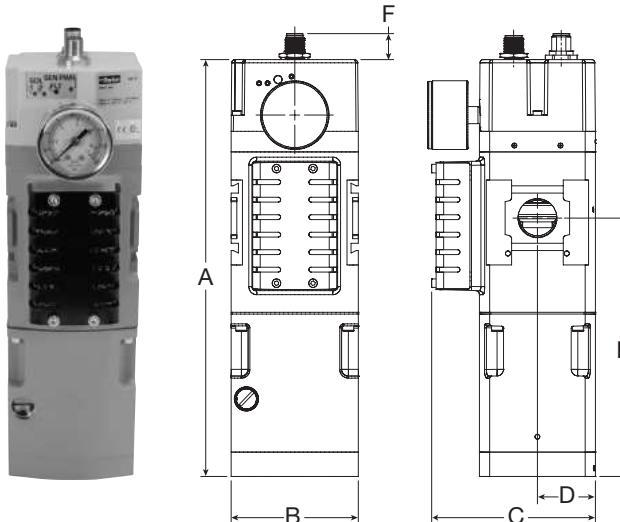
Valve type	Externally monitored, redundant, dual poppet
Soft start	Optional
Valve function	3/2 way, normally closed
Housing material	Cast aluminum
Seals	NBR
Fasteners	Stainless steel / brass
Silencer	Steel, non clog safety design

Electrical Specifications

Operating voltage	24V DC
Electrical connection	Two M12 connectors
Switching time 1-2 (ms)	23.3
Switching time 2-3 (ms)	42.7
Duty cycle (%)	100%
Operating voltage (DC)	21.6 to 26.4
Nominal power per solenoid coil at 24V DC (W) +/- 10%	1.2 W
per pressure sensor at 24V DC	1.2 W

In accordance with EN ISO 13849-1 this safety valve is suitable for use up to Category 4, Ple, sil 3. Certified to cCSAus and bears the CE mark.

A product Integration Guide is available to help connect your logic controller to the Parker Safety Exhaust Valve under the Product Support tab at www.parker.com/pdn/safetyvalve

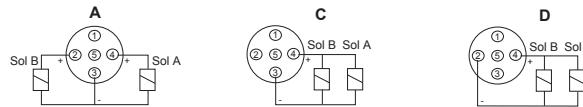
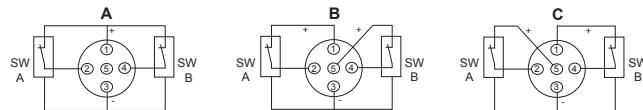
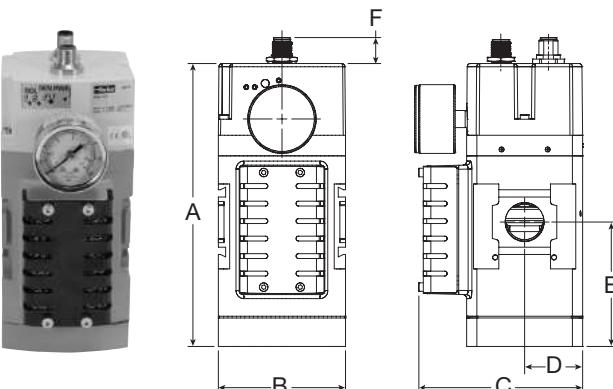
Externally Monitored (with Soft Start)**Dimensions inches (mm)**

Ports	Standard nominal flow rate		A	B	C	D	E	F
	1 → 2 L/min (SCFM)*	2 → 3 L/min (SCFM)*						
Externally Monitored with soft start	3/4"	4,100 (145)	7,500 (265)	10.31 (261.9)	3.15 (80)	4.30 (109.3)	1.44 (36.5)	6.39 (162.3)
Externally Monitored no soft start	3/4"	4,300 (152)	7,500 (265)	7.03 (178.7)	3.15 (80)	4.30 (109.3)	1.44 (36.5)	3.11 (79.0)

* Standard nominal flow rate is based on 6 bar input pressure with $\Delta P = 1$ bar

Air Preparation Products
Air Preparation**Mounting Hardware**

Body Connector	P32KA00CB
T-Bracket w / Body Connector	P32KA00MT
T-Bracket (fits to body connector or port block)	P32KA00MB
Port Block Kits (includes two)	1/2" NPT 1/2" BSPT 1/2" BSPP 3/4" NPT 3/4" BSPT 3/4" BSPP
	P32KA94CP P32KA24CP P32KA14CP P32KA96CP P32KA26CP P32KA16CP

Solenoid M12 Pinouts**Pressure Sensor M12 Pinouts****Externally Monitored (No Soft Start)**

Safety Exhaust Valve Function

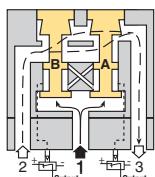
When applications demand a safe environment you can count on safety valves from Parker Hannifin. The P33 family of safety exhaust valves are 3/2 normally closed valves designed to rapidly exhaust compressed air in the event of a fault condition and to provide monitored coverage ensuring safe function. The P33 is available in two distinct styles, internally* or externally monitored. The valve is suitable for use up to Category 4, performance level e. Monitoring is achieved externally via a two channel system connected to a safety interface device. Both valves are available with an adjustable soft start and high flow exhaust to shut your equipment down faster when needed. LED's provide clear status of main solenoid operation, sensor power and fault condition for quick visual reference.

Externally Monitored Valve, Faults and Resets

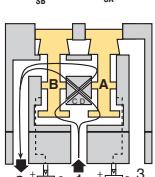
The externally monitored valve has the monitoring done via a PLC or relay which offers a size and cost advantage over internally monitored valves. The integration of a safety interface into the PLC or relay will help determine the achievable category and performance level of the control system. Customers are required to provide the logic function via the safety device. The valve will lock-out to the "safe state" if asynchronous movement of the valve elements occur which will be detected by solid state pressure sensors. To achieve the proper safety rating, the safety PLC or relay must monitor the solid state pressure sensors to ensure they are not in different states for more than 150ms. If the sensors are in different states for longer than 150ms then the programming logic must shut off power to the solenoids and consider it a fault condition. If during operation the externally monitored P33 enters a fault condition the valve will shut off. A separate reset signal must be incorporated into the logic sequence to avoid automatic restart of the valve. The safety exhaust valves are not for use with clutch or brake applications and are designed for use in conjunction with a safety relay or safety PLC for safe monitoring and fault detection.

Achieving Desired Performance Level **

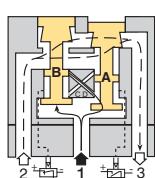
The category and performance level (PLr) needed for your machine is determined by a risk assessment of the machinery design and application based on EN ISO 13849-1. The Parker P33 safety valve is designed for those applications requiring a PL of d or e. Please note these levels require other aspects of the system to meet these requirements. As a guide: you can achieve a Cat 4 PL e system by integrating monitoring via a programmable safety rated device. Because the P33 is a mechanical fail-safe device, the monitoring could also be done via a standard PLC and still attain as high as a PL d rating.

**Conditions at Start**

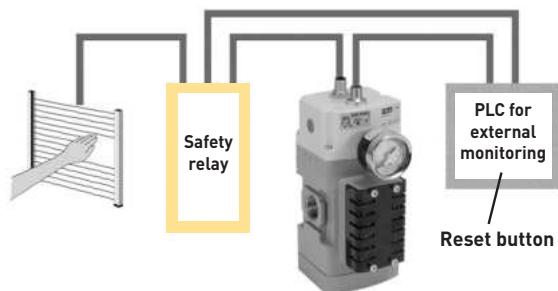
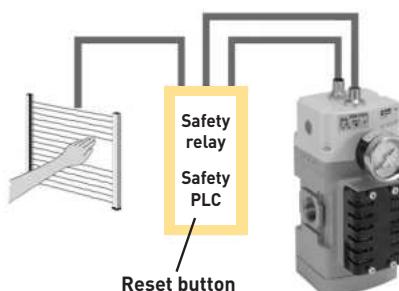
The Safety exhaust valve starts with inlet 1 closed to outlet 2 by both valve elements A and B. Outlet 2 is open to exhaust 3. Pressure signals at both sensors SA and SB are exhausted and contacts 1 and 2 of sensors SA and SB are connected. The normally closed sensors both provide voltage feedback signals to the external monitoring system.

**Normal Operation**

During normal operation the two solenoids are simultaneously energized which actuates both pilots and causes valve elements A and B to shift. Inlet 1 is then connected to outlet 2 via crossflow passages C and D. Exhaust 3 is closed. Sensing pressure signals go to each pressure sensor and become equal to inlet pressure. Both sensors contacts open and no voltage signals are provided to the external monitoring system. This indicates that both sides of the valve actuated as expected.

**Detecting a Malfunction**

A malfunction in the system or the valve itself could cause one valve element to be open and the other closed. Air then flows past the inlet poppet on valve element A, into crossflow passage D, but is substantially blocked by the spool portion of element B. The large size of the open exhaust passage past element B keeps the pressure at the outlet port below 2% of inlet pressure. Full sensing air pressure from side A goes to sensor SA, and a reduced pressure goes to sensor SB. This full pressure signal causes SA to open. Sensor SB, with a reduced pressure signal, does not open. An external monitoring system can detect the malfunction by monitoring the outputs of the SA and SB sensors. The external monitor system must then react accordingly by shutting down the power to the valve solenoids and any other components deemed necessary to stop the machine.

Cat 3, PL d**Cat 4, PL e**

* For information on internally monitored safety valves reference Bulletin 0700-B13.

** An integration guide is available to provide further information on connecting the safety valve product to achieve the desired performance level. Please consult Parker and the standard EN ISO 13849-1 for more information.



Machinery Directive - Overview

The Machinery Directives' goal is to protect people and the environment from accidents caused from all types of machinery. Based on the standard EN 13849 [safety of machines; safety-related parts of control systems] these standards build the procedure to assess safety-related control systems.

Required Performance Level (PLr) based on a risk assessment are now commonly used to determine the safety level required for the controls system, for the application of machinery.

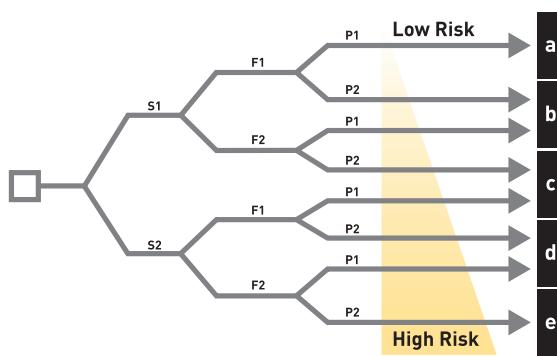
Performance Level (PL) based on the original B, 1,2,3,4 safety categories, diagnostic capabilities, Mean time to dangerous failure (MTTFd), and common cause failure (CCF), define safety levels of a given safety function. This ensures that safety is not just focused on component reliability, but instead introduces common sense safety principles such as redundancy, diversity, and fail-safe behavior of safety related control parts.

The new EN 13849 standards of the Machinery Directive dictates the machine is safe when the Performance Level of the safety control circuit is equal to or greater than the Required Performance Level of the application. When determining the required performance level, the greater the risk, the higher the requirements of the control system.

$$PLr \leq PL$$

Determining PLr According to EN 13849-1

The level of each hazardous situation is classified in five Performance levels from a to e. With PL a the control functions contribution to risk reduction is low, while at PL e it is high. The risk graph above can be used as a guideline to determine the required performance level PLr for safety function.



Risk Parameters

(S) Severity of injury

- S1 Slight (normally reversible injury)
- S2 Serious (normally irreversible injury, or death)

(F) Frequency and / or duration of exposure to hazard

- F1 Seldom to less often and / or brief
- F2 Frequent to continuous and / or long

(P) Possibility of avoiding the hazard

- P1 Possibility of avoiding the hazard
- P2 Scarcely ever possible

Determining PL According to EN 13849-1

Determining the MTTF _d = Mean Time To Dangerous Failure									
Determining the PL = Performance Level	Determining the SIL = Safety Integrity Level								
	a	b	c	d	e	1	2	3	4
DC < 60% None	10 ⁻⁵ ≤ PFH _d < 10 ⁻⁴								
DC < 60% None		3 × 10 ⁻⁵ ≤ PFH _d < 10 ⁻⁵							
60% ≤ DC < 70% Low			10 ⁻⁴ ≤ PFH _d < 3 × 10 ⁻⁵						
90% ≤ DC < 99% Medium				10 ⁻⁷ ≤ PFH _d < 10 ⁻⁶					
90% ≤ DC < 99% Low					10 ⁻⁶ ≤ PFH _d < 10 ⁻⁷				
99% ≤ DC High						CCF ≥ 65%			
Cat. B	Cat. 1	Cat. 2	Cat. 3	Cat. 4					
CCF not relevant									

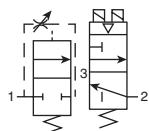
Categories Defined by EN 13849-1

Category	Summary
Category B	When a fault occurs it can lead to the loss of the safety function.
Category 1	Same that Category B, but loss of the safety function is less likely thanks to a good MTTFd of each channel.
Category 2	System behavior allow that the occurrence of a fault can lead to the loss of the safety function between the checks; the loss of the safety function is detected by the check.
Category 3	A single fault in any of safety related parts does not lead to the loss of the safety function. Whenever reasonably possible the single fault shall be detected at or before the next demand upon the safety function. (Means redundancy)
Category 4	Same as Category 3, but if detection of single fault is not possible on or before the next demand upon the safety, an accumulation of these undetected faults shall not lead to the loss of the safety function. (Means redundancy & check)



P33T Redundant Safety Exhaust Valve

- Proven control reliable technology with integrated soft start
- Soft start application of air to the system when energized; can be adjusted for slower or faster buildup of system pressure
- Rapid exhaust of downstream air when de-energized to remove stored energy and allow safe access
- Memory, monitoring, and air flow control functions are integrated into two identical valve elements. Valves lock-out if asynchronous movement of valve elements occurs during actuation or de-actuation, resulting in a residual outlet pressure of less than 1% of supply.
- Reset can only be accomplished by the integrated electrical (solenoid) reset. Cannot be reset by removing and re-applying supply pressure.
- Basic 3/2 normally closed valve function: Dirt tolerant, wear compensating poppet design for quick response and high flow capacity.
- LED indicators of main solenoid operation, reset solenoid operation, and status indicator condition.
- Optional transducer for monitoring of downstream pressure in the system.
- Dual exhaust silencers included.
- Not for use with clutch / brake applications.
- For use in conjunction with a safety relay or safety PLC.



Port Size			Cv		Part Number*
Inlet	Outlet	Transducer	1 to 2	2 to 3	Part Number*
3/4	3/4	w/o transducer	3.7	8.5	P33TA96RG4F2CN
3/4	3/4	w/ transducer	3.7	8.5	P33TA96RG4G2CN

* NPT port threads. For BSPP threads, replace "9" in the part number with a "1".



Operating Information

Pilot Solenoids:	According to VDE 0580
Enclosure rating:	According to DIN 400 50 IP65
Connector socket:	According to DIN 43650 Form A
	Three solenoids, rated for continuous duty
Standard voltages:	24VDC
Power consumption (each solenoid), for primary & reset solenoids:	1.2 Watts on DC
Enclosure rating:	IP65, IEC 60529
Electrical connection:	M12, 5-pin
Ambient temperature:	15°F to 122°F (-10°C to 50°C)
Media temperature:	40°F to 175°F (4°C to 80°C)
Flow media:	Compressed Air, Filtered to Minimum 40 Micron
Inlet pressure:	30 to 150 psig (2 to 10 bar)
Monitoring:	Dynamically, cyclically, internally during each actuating and de-actuating movement. Monitoring function has memory and requires an overt act to reset unit after lockout.
Mounting orientation:	Vertically with pilot solenoids on top
Port threads:	3/4 NPT, 3/4 BSPP
Control reliable:	Category 4 (Cat 4); performance Level e (PLe) in accordance with Machine directive - EN ISO 13849-1 (Certification pending)
Weight:	16.1 lb (7.3 kg) w/o transducer 16.3 lb (7.4 kg) w/ transducer

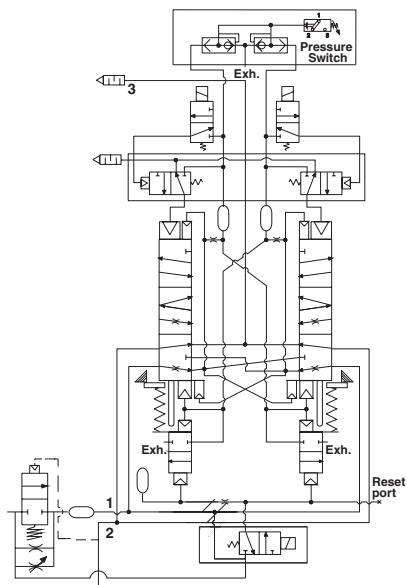
Ordering Information:

P33TA	9	6	G	F	2CN
Body Size	Port Size	Operator	Solenoid	Voltage	
Standard P33T	3/4"	15mm Solenoid G	Dual M12 Connector without Transducer F	24VDC with Manual Override 2CN	
Thread Type	Type	Mounting	Triple M12 Connector with Transducer G		
BSPP 1	Solenoid Pilot + Gauge R	Cat 4 w/Bracket 4			
NPT 9					

Most popular.



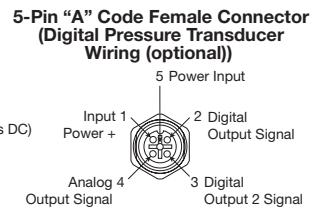
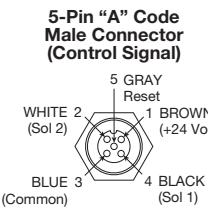
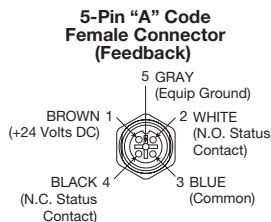
For inventory, lead times, and kit lookup, visit www.pdnplu.com



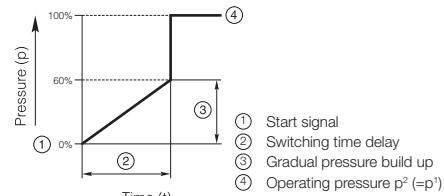
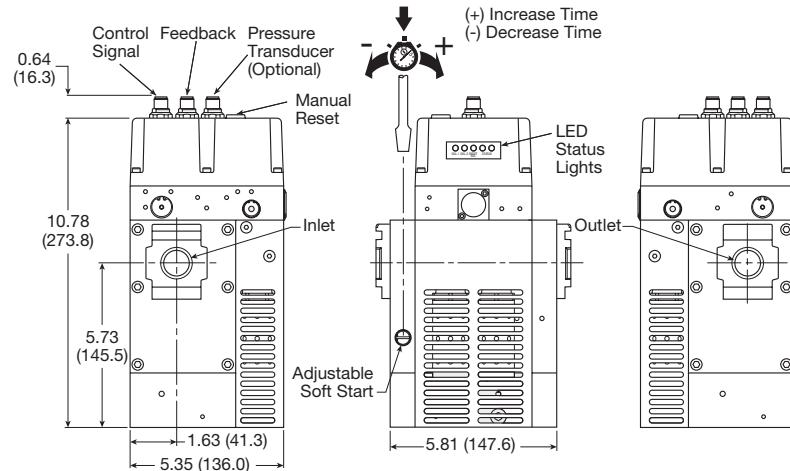
Repair and Service Kits

Black grill	1834C05-001
Body connector	P32KA00CB
M12, 5-pin female to flying lead cable, TPE; 6.6 ft (2 m)	RKC 4.5T-2/S1587
M12, 5-pin male to flying lead cable, TPE; 6.6 ft (2 m)	RSC 4.5T-2/S1587
1/2 NPT, port block kit	P32KA94CP
3/4 NPT, port block kit	P32KA96CP
1/2 BSPP, port block kit	P32KA14CP
3/4 BSPP, port block kit	P32KA16CP
1/2 BSPT, port block kit	P32KA24CP
3/4 BSPT, port block kit	P32KA26CP
Pressure switch	1227A30-001
Pressure transducer (optional)	1232H30-001
T-bracket w/ body connector	P32KA00MT
T-bracket (fits to body connector or port block)	P32KA00MB
Silencer(s) 3/4"	5500A5013
Solenoid (main & reset)	1527B7916-001
Square flush mounting gauge kit, 0-160 psig	K4511SCR160

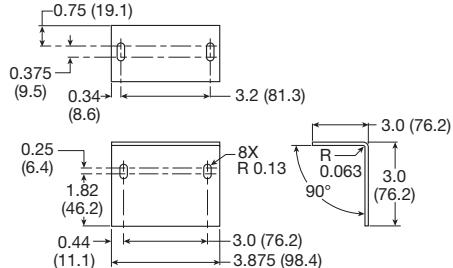
Valve Wiring



Dimensions inches (mm)



Angle Mounting Bracket



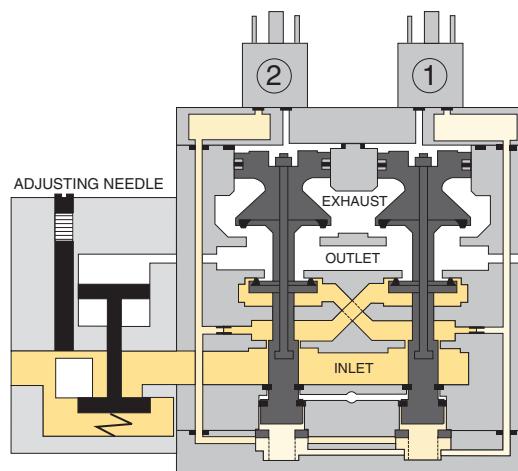
Note: Mounting bracket and installation screws included and required to install unit in the system.



Valve de-actuated (ready-to-run):

The flow of inlet air pressure to the inlet chamber of the main valve internals is restricted by a fixed orifice and an adjustable flow control as well as an air piloted 2-way normally closed poppet valve. The flow of inlet air pressure into the crossover passages is restricted by the size of the passage between the stem and the valve body opening. Flow is sufficient to quickly pressurize pilot supply / timing chambers 1 and 2. The inlet poppets prevent air flow from crossover passages into the outlet chamber. Air pressure acting on the inlet poppets and return pistons securely hold the valve elements in the closed position. (Reset adapter omitted for clarity.)

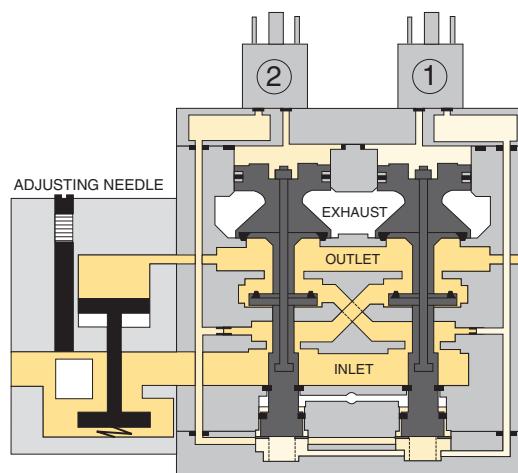
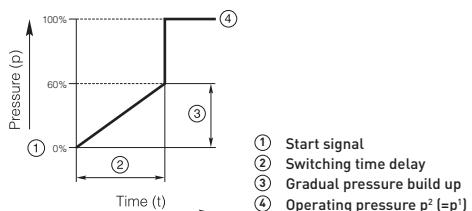
The green "Status" LED will be illuminated indicating the valve is operational.

**Valve actuated:**

Energizing the pilot valves simultaneously applies pressure to both pistons, forcing the internal parts to move to their actuated (open) position, where inlet air flow to crossover passages is fully open, inlet poppets are fully open and exhaust poppets are fully closed. The outlet is then pressurized at a rate allowed by the fixed orifice and the adjusted flow control. Once the air pressure in the outlet chamber reaches approximately 60% of inlet pressure, the air piloted 2-way normally closed poppet valve opens fully and the pressure in the inlet, crossovers, outlet, and timing chambers are quickly equalized. The adjustable flow control will control the time it takes for the outlet air pressure to reach approximately 60% of inlet pressure.

De-energizing the pilots quickly causes the valve elements to return to the ready-to-run position.

Solenoid 1, Solenoid 2 and the green "Status" LED's will be illuminated indicating the valve is operating properly.

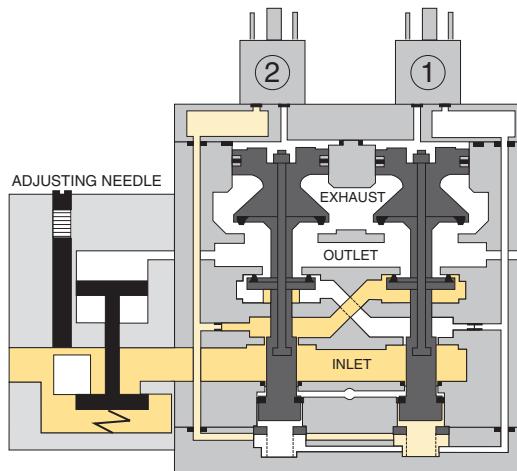
**Soft start function:**

Valve fault and lock-out:

Whenever the valve elements operate in a sufficiently asynchronous manner, either on actuation or de-actuation, the valve will move to a locked-out position. In the locked-out position, one crossover and its related timing chamber will be exhausted, and the other crossover and its related timing chamber will be fully pressurized. The valve element (side 2) that is partially actuated has pilot air available to fully actuate it, but no air pressure on the return piston to fully de-actuate the valve element.

Air pressure in the crossover acts on the differential of side 2 stem diameters creating a latching force. Side 1 is in a fully closed position, and has no pilot air available to actuate, but has full pressure on the inlet poppet and return piston to hold the element in the fully closed position. Inlet air flow on side 1 into its crossover is restricted, and flows through the open inlet poppet on side 2, through the outlet into the exhaust port, and from the exhaust port to atmosphere. Residual pressure in the outlet is less than 1% of inlet pressure. The return springs are limited in travel, and can only return the valve elements to the intermediate (locked-out) position. Sufficient air pressure acting on the return pistons is needed to return the valve elements to a fully closed position.

The red "Status" LED will be illuminated indicating the valve in fault and lock-out must be reset

**Valve reset (electrical or manual):**

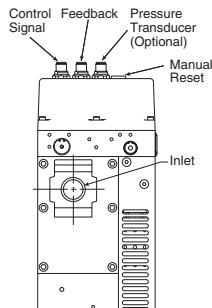
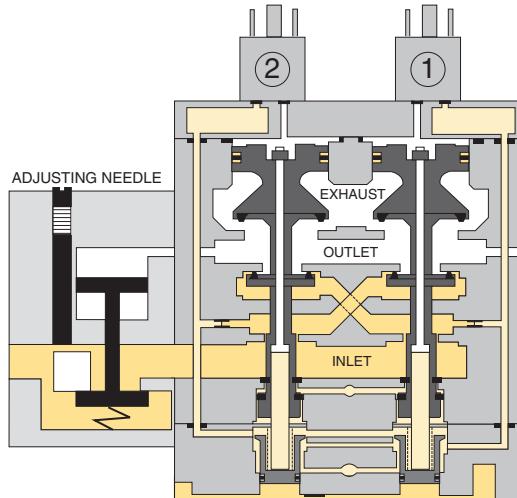
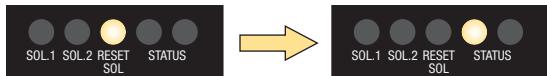
The reset procedure is as follows:

- Remove the electrical signals to the main coils
- Ensure there is air supplied to the valve
- Energize the reset solenoid for a minimum of 200 ms
- Allow a 200 ms delay after de-energizing the reset solenoid and re-energizing the main solenoids

The valve will remain in the locked-out position, even if the inlet air supply is removed and re-applied.

A remote reset signal must be applied to reset the valve. A momentary, remote electrical signal must be applied to the reset solenoid to apply pressure to the reset pistons in the valve. Actuation of the reset piston physically pushes the main valve elements to their closed position. Inlet air fully pressurizes the crossovers and holds the inlet poppets on seat. Actuation of the reset piston opens the reset poppet, thereby, immediately exhausting pilot supply air, thus, preventing valve operation during reset (Reset adapter added to illustration.). De-actuation of reset pistons causes the reset poppets to close and pilot supply to fully pressurize. Reset air pressure is applied by a 3/2 normally closed solenoid, or a manual push button mounted on the reset adapter in the top valve cover.

The green "Status" LED will be illuminated once the valve is reset.

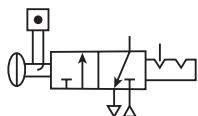


Ball Valve / Lockout Valve

The Ball / Lockout Valve shuts off downstream line pressure in the closed position with a 90° turn of the handle. In the closed position, inlet air pressure is blocked and downstream / system air is exhausted through a threaded port. To prevent unauthorized adjustment, the padlock slide may be assembled on either side. It is recommended that this slide is installed after final system assembly.

The Safety Lockout valves conform to OSHA #29 CFR part 1910 — control of hazardous energy source (lockout / tagout).

Note: This padlock slide is a permanent assembly and may not be removed later, any unauthorized tampering will void any warranty claims. The valve can only be locked in the closed position.



Ordering Information

Model Type	Port Size	Exhaust Port	Thread Type	Flow scfm (dm ³ /s, ANR)	Modular Ball Valve Flow from Left to Right
P31	1/4"	1/4"	NPT	42.4 (20)	P31VB92LBNN
P32	3/8"	1/4"	NPT	190.7 (90)	P32VB93LBNN
	1/2"	1/4"	NPT	258.5 (122)	P32VB94LBNN
P33	1/2"	1/2"	NPT	561.5 (265)	P33VB94LBNN
	3/4"	1/2"	NPT	678 (320)	P33VB96LBNN

* Lockout tab and muffler supplied with unit.

For thread type: BSPP 1
 BSPT 2
 NPT 9



Operating Information

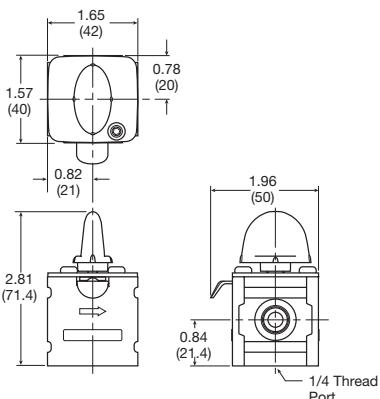
Operating temperature:	-40°C to 80°C (-40°F to 176°F)
Pressure supply (max):	250 psig (17 bar)
Port size:	1/4, 3/8, 1/2, 3/4
BSPP / BSPT / NPT	
Weight:	0.33 lbs (0.15 kg)
P31	0.79 lbs (0.36 kg)
P32	1.21 lbs (0.55 kg)
P33	

Material Specifications

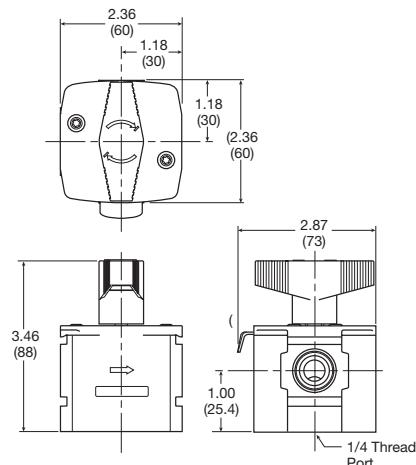
Body	Aluminum
Seals	PTFE
Ball	Stainless Steel
Lockout Tab	Zinc Plated Steel
Screw	Zinc Plated Steel

Dimensions inches (mm)

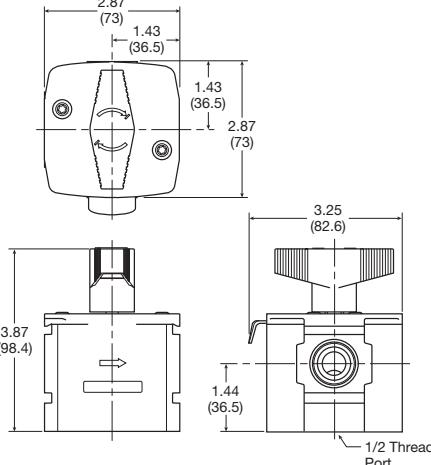
P31



P32



P33



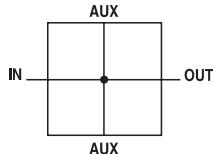
Most popular.



For inventory, lead times, and kit lookup, visit www.pdnplu.com

Manifold Blocks

- 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



Ordering Information

Model Type	Auxiliary Port Size		Auxiliary Port Size		Thread Type	Part Number
	In / Out Port Size	Top	Bottom	Port Size		
P31	1/4"	1/4"	1/4"	NPT		P31MA92022N
P32	1/2"	1/4"	1/2"	NPT		P32MA94024N
P33	3/4"	1/4"	1/2"	NPT		P33MA96024N

For thread type: BSPP 1
BSPT 2
NPT 9

Operating Information

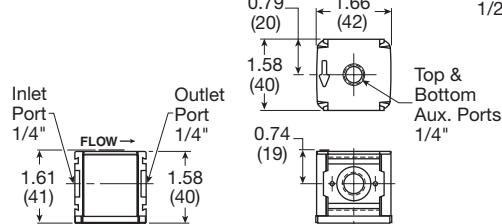
Operating temperature:	-40°F to 150°F (-40°C to 65.5°C)
Pressure supply (max):	300 psig (20.7 bar)
Weight:	
P31	0.26 lbs (0.12 kg)
P32	0.45 lbs (0.20 kg)
P33	0.45 lbs (0.20 kg)

Material Specifications

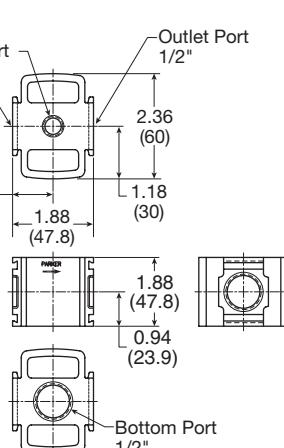
Body Aluminum

Dimensions inches (mm)

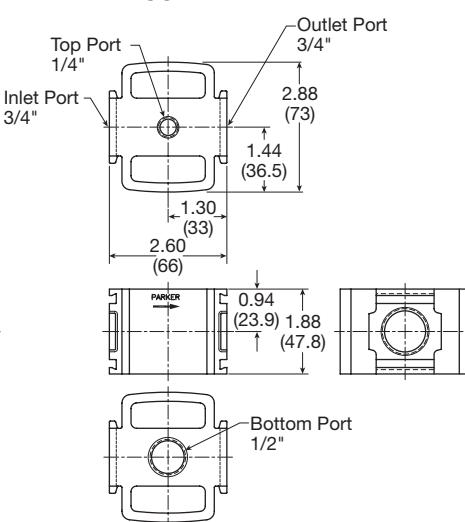
P31



P32



P33



 Most popular.



For inventory, lead times, and kit lookup, visit www.pdnplus.com

PPS1 Pressure Switch

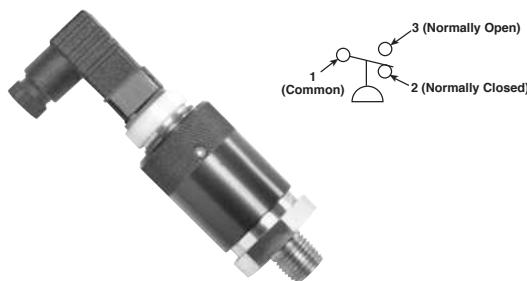
- Long life elastomer diaphragm
- High quality snap action switch
- Field adjustable
- Compact design
- Easily customized
- Quick delivery
- NEMA 4, 13

Definitions and Terminology

Repeatability — Accuracy is the maximum allowable set point deviation of a single pressure or temperature switch under one given set of environmental and operational conditions.

Single Pole Double Throw (SPDT) Switching element — A SPDT switching element has one normally open, one normally closed and one common terminal. Three terminals mean that the switch can be wired with the circuit either normally open (NO), or normally closed (NC), or both.

Dead Band — The dead band, sometimes referred to as "differential" or "hysteresis", is the change in pressure between actuation and deactuation set points.



Operating Information

Temperature range:	-40°F to 105°F (-40°C to 220°C)
Operating pressure range:	1, 2, 3 - 250 PSI (17.2 bar) 4 - 2000 PSI (137.9 bar)
Set point tolerance	±1 PSI or 5% (.07 bar)
Deadband	10 - 20% of set pressure
Current rating	3A @ 125 VAC 2A @ 30 VDC (Resistive)
Circuit form	SPDT Standard
Cycle life	1 Million

Ordering Information:

PPS1	- 1	C	3	- R	HM
Thread				Set Point Direction	Electrical Connection
1/4" NPT Male	1			R	HM
1/8" NPT Male	2			Rising	DIN 9.4mm
1/4" BSPP Male	17				WL
1/8" BSPP Male	18				Wire Leads 18"
Circuit				Range*	
SPDT	C			1	3-10 PSI
				2	6-30 PSI
				3	20-120 PSI
				4 [†]	100-400 PSI

* Factory setting for calibration purposes
Range 1 = 6 PSI
Range 2 = 18 PSI
Range 3 = 70 PSI
Range 4 = 250 PSI

[†] Only available in 1/4" NPT

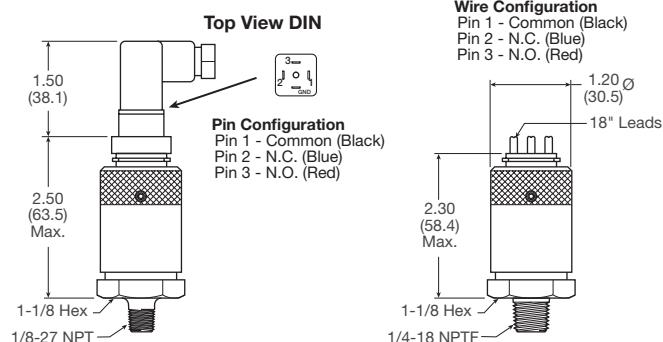
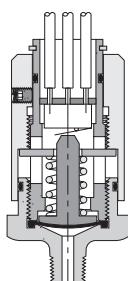
Note: Switch is field adjustable.

Material Specifications

Adjustment knob	Anodized aluminum
Body	Brass
Diaphragm	Nitrile

Operation

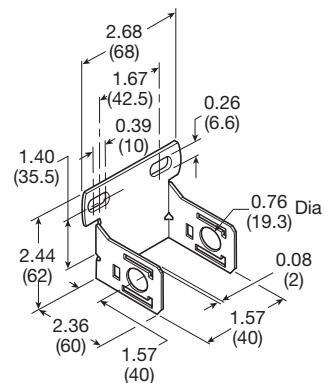
The pressure switch monitors the air pressure in your pneumatic system. When the pressure in your system either drops below or exceeds the set point pressure, an electrical output is given.



P31 Accessories

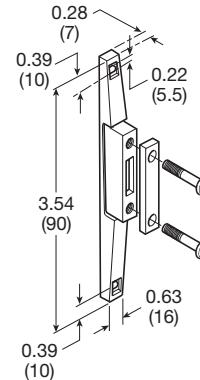
C-Bracket (Fits to filter and lubricator body)

P31KA00MW



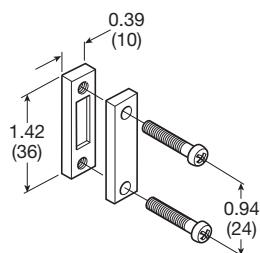
T-Bracket w/ Body Connector (O-ring not shown)

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		



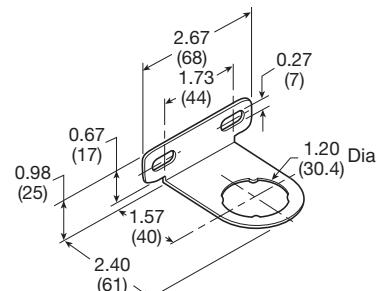
Port Block Kit w/ T-Bracket (O-ring not shown)

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		



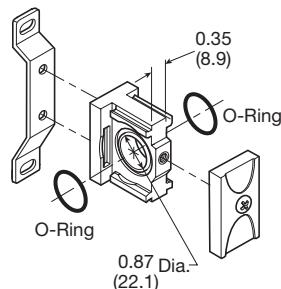
Angle Bracket (Fits to regulator and filter/regulator body)

P31KB00MR

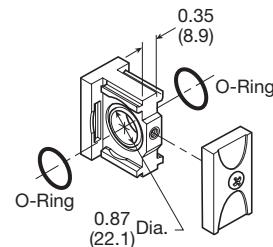


P32 Accessories**T-Bracket w/ Body Connector**

P32KA00MT

**Body Connector**

P32KA00CB

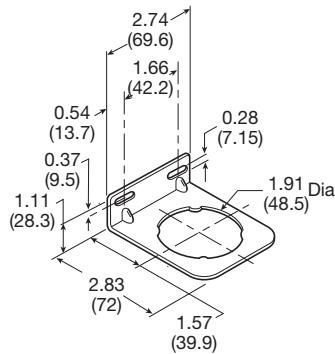
**Port Block Kit**

1/4 NPT.....	P32KA92CP	1/4 BSPT	P32KA22CP
3/8 NPT.....	P32KA93CP	3/8 BSPT	P32KA23CP
1/2 NPT.....	P32KA94CP	1/2 BSPT	P32KA24CP
3/4 NPT.....	P32KA96CP	3/4 BSPT	P32KA26CP
1/4 BSPP	P32KA12CP		
3/8 BSPP	P32KA13CP		
1/2 BSPP	P32KA14CP		
3/4 BSPP	P32KA16CP		

**Angle Bracket**

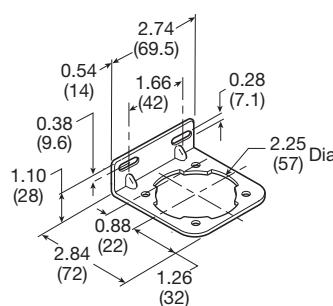
(Fits to regulator and filter/regulator bonnet)

P32KB00MR

**L-Bracket**

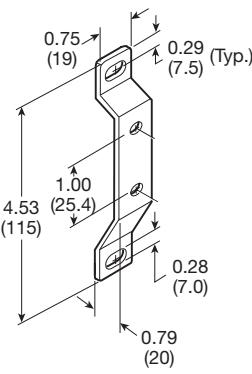
(Fits to filter and lubricator body)

P32KA00ML

**T-Bracket**

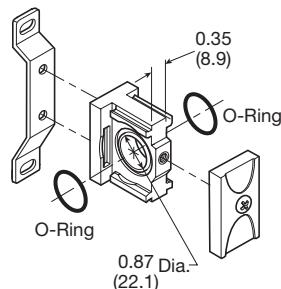
(fits to body connector or port block)

P32KA00MB

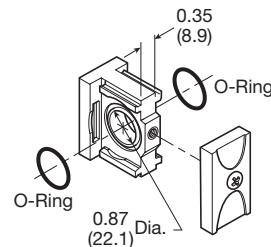


P33 Accessories

T-Bracket w/ Body Connector
P32KA00MT



Body Connector
P32KA00CB



Port Block Kit

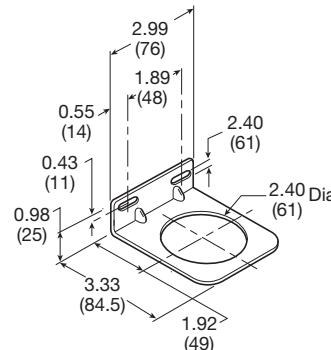
1/4 NPT.....	P32KA92CP	1/4 BSPT	P32KA22CP
3/8 NPT.....	P32KA93CP	3/8 BSPT	P32KA23CP
1/2 NPT.....	P32KA94CP	1/2 BSPT	P32KA24CP
3/4 NPT.....	P32KA96CP	3/4 BSPT	P32KA26CP
1/4 BSPP	P32KA12CP		
3/8 BSPP	P32KA13CP		
1/2 BSPP	P32KA14CP		
3/4 BSPP	P32KA16CP		



Angle Bracket

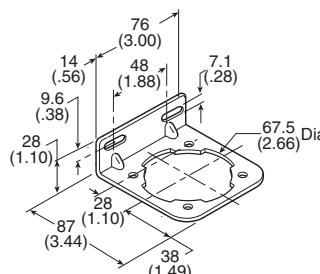
(Fits to regulator and filter/regulator bonnet)

P33KA00MR



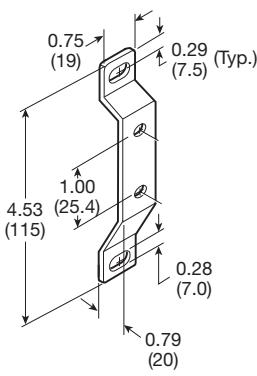
L-Bracket
(Fits to filter and lubricator body)

P33KA00ML



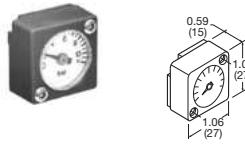
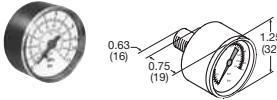
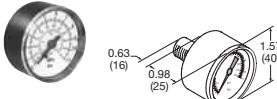
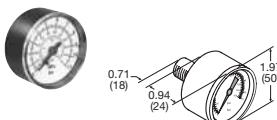
T-Bracket
(fits to body connector or port block)

P32KA00MB



Series	Description	Part Number	
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	
P31 P32 / P33	Differential Pressure Indicator Kit	P31KB00RQ P32KA00RQ	
P31 / P32 / P33	Drip Control Assembly Kit	P32KA00PH	
P31 P32 / P33	Fill Plug Kit	P31KA00PL P32KA00PL	
P31 P32 P33	Lubricator - Plastic Bowl w/ Bowl Guard No Drain	P31KB00BGN P32KB00BGN P33KA00BGN	

Series	Description	Part Number	
P31 P32 P33	Lubricator - Metal Bowl w/o Sight Gauge No Drain	P31KB00BMN P32KB00BMN P33KA00BMN	
P32 P33	Lubricator - Metal Bowl w/ Sight Gauge No Drain	P32KB00BSN P33KA00BSN	
P31 P32 P33	Metal Bowl w/o Sight Gauge & Manual Drain	P31KB00BMM P32KB00BMM P33KA00BMM	
P31	Metal Bowl w/o Sight Gauge & Pulse Drain	P31KB00BMB	
P32 P33	Metal Bowl w/o Sight Gauge & Auto Drain	P32KB00BMA P33KA00BMA	
P32 P33	Metal Bowl w/ Sight Gauge & Manual Drain	P32KB00BSM P33KA00BSM	
P32 P33	Metal Bowl w/ Sight Gauge & Auto Drain	P32KB00BSA P33KA00BSA	
P31 P32 P33	Plastic Bowl w/ Bowl Guard & Manual Drain	P31KB00BGM P32KB00BGM P33KA00BGM	
P31	Plastic Bowl w/ Bowl Guard & Pulse Drain	P31KB00BGB	
P32 P33	Plastic Bowl w/ Bowl Guard & Auto Drain	P32KB00BGA P33KA00BGA	
P31 P32 P33	Regulator - Relieving Repair Kit	P31KB00RB P32KB00RB P33KA00RB	
P31 P32 P33	Regulator - Non-Relieving Repair Kit	P31KB00RC P32KB00RC P33KA00RC	

Series	Description	Connection	Part Number		
P31			P31KB00PR		
P32	Regulator - Main Adjusting Spring 0-30 psig (0-2 bar) Kit		P32KB00PR		
P33			P33KA00PR		
P31			P31KB00PS		
P32	Regulator - Main Adjusting Spring 0-60 psig (0-4.1 bar) Kit		P32KB00PS		
P33			P33KA00PS		
P31			P31KB00PT		
P32	Regulator - Main Adjusting Spring 0-125 psig (0-8.6 bar) Kit		P32KB00PT		
P33			P33KA00PT		
P31			P31KB00PV		
P32	Regulator - Main Adjusting Spring 0-250 psig (0-17 bar) Kit		P32KB00PV		
P33			P33KA00PV		
P31	Square Flush Mounting Gauge Kit	0-60 psig 0-160 psig 0-4 bar 0-11 bar	K4511SCR060 K4511SCR160 K4511SCR04B K4511SCR11B		
P31 / P32	Square Mounting Gauge with Adapter Kit	0-60 psig 0-160 psig 0-4 bar 0-11 bar	P6G-PR90060 P6G-PR90160 P6G-PR10040 P6G-PR10110		
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 (Replacement kit) (Pack of 10)		P31KA00CY P32KA00CY		
P31 P32	Tamperproof Knob Kit		P31KB00AT P32KB00AT		
P31 P32	Tamperproof Lockable Kit		P31KB00AL P32KB00AL		

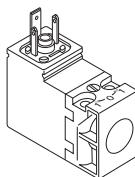
Solenoid Operators - CNOMO

Solenoid Operators, Coil Combinations

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

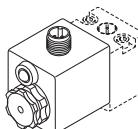
* Limited to 50°C if use with 100% duty cycle

P31 Series only - Solenoid coils 15mm NC



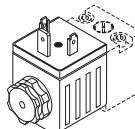
Voltage	Order code Override, blue, Non-Locking Flush	Weight (kg)
24VDC	PS2982B49P	0.038
115VAC 50Hz / 120VAC 60Hz	PS2982B53P	0.038

Solenoid Coils with M12 Connection



Voltage	Part Number	Weight (kg)
Direct current		
24VDC	P2FC6449	0.065

Solenoid Coils with DIN A or Industrial B Connection



Voltage	22mm x 30mm Part Number B Industrial Standard	Weight (kg)	30mm x 30mm Part Number DIN 43650A Standard	Weight (kg)
Direct current				
24VDC	P2FCB449	0.093	P2FCA449	0.105

Alternative current	P2FCB453	0.093	P2FCA453	0.105
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Most popular.

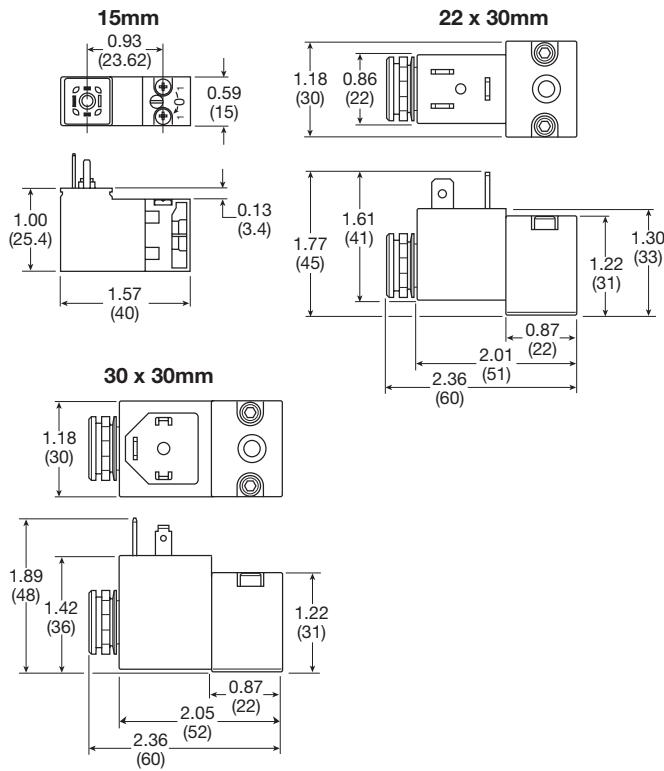


For inventory, lead times, and kit lookup, visit www.pdnplu.com

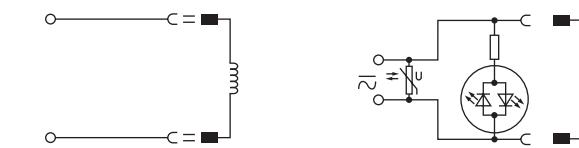
Solenoid Connectors / Cable Plugs EN175301-803

Description		Part Number 22mm Form B Industrial	Part Number 30mm Form A DIN 43650A
With standard screw	Standard IP65 without flying lead	PS2429BP	PS2028BP
	With LED and protection 24VAC/DC	PS243079BP	PS203279BP
	With LED and protection 110VAC	PS243083BP	PS203283BP
With cable	Standard with 2m cable IP65	PS2429JBP	PS2028JCP
	24VAC/DC, 2m cable LED and protection IP65	PS2430J79BP	PS2032J79CP
	110VAC/DC, 2m cable LED and protection IP65	PS2430J83BP	PS2032J83CP

Solenoid Coil Dimensions inches (mm)



Electrical Schematics



PS2028BP	PS243079BP	PS203279BP
PS2028JBP	PS2430J79BP	PS2032J79CP
PS2429BP	PS243083BP	PS203283BP
PS2429JBP	PS2430J83BP	PS2032J83CP
PS2932BP	PS294679BP	PS294683BP
PS2932JBP	PS2946J79BP	PS2946J83BP

Cable Plug Dimensions inches (mm)

22mm Form B Industrial Cable plugs	PS2429BP	30mm DIN 43650A Cable plugs	PS2028BP

Most popular.



For inventory, lead times, and kit lookup, visit www.pdnplus.com

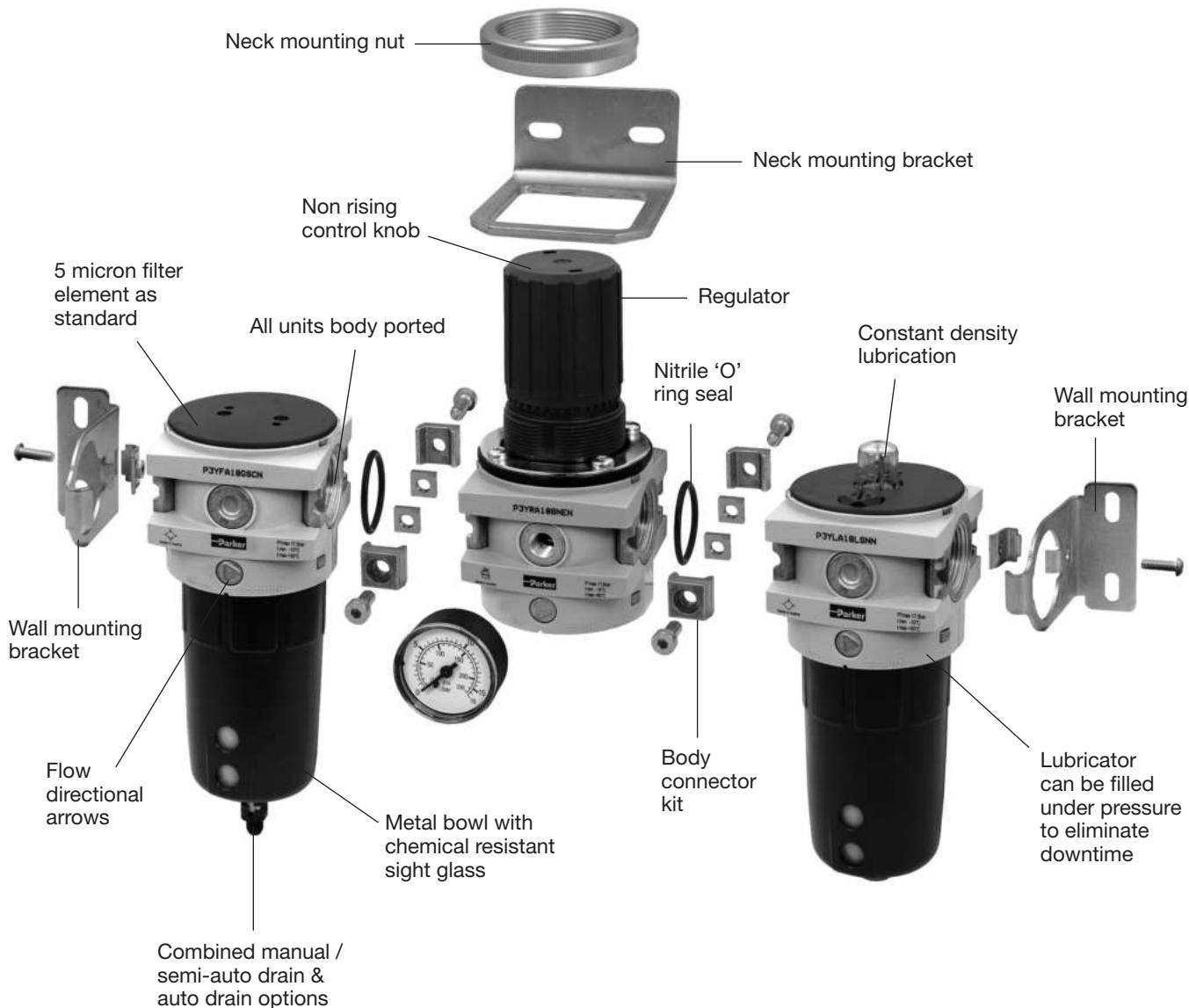
P3Y System

The P3Y system allows units to be connected together without the use of pipe connectors. This saves space, provides constant mounting centers, and maintains a modern aesthetically pleasing appearance.

The P3Y filters are specially designed to efficiently filter out rust, dirt, moisture and other impurities from compressed air lines. Operation is fully automatic with a minimum of pressure drop. Coalescing filters and adsorber filters for high purity air are also included in the P3Y series.

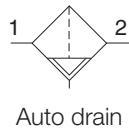
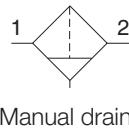
The P3Y regulators are designed to provide quick response and accurate pressure regulation for the most demanding hi-flow industrial applications.

The rolling diaphragm was designed for long trouble-free operation and will not rupture or tear under high cycle or demanding applications. The P3Y mist lubricators are designed to provide lubrication for many general purpose applications.



P3Y Particulate Filter

- Integral 3/4" or 1" ports (NPT & BSPP)
- High efficiency particulate element as standard
- Excellent water removal efficiency
- Robust but lightweight aluminium construction
- Low temperature -40°C (-40°F) with combined manual / semi-auto drain as standard



Port Size	Description	Part Number
3/4"	Combined Manual /Semi-Auto Drain	P3YFA96ESCN
3/4"	Auto Drain	P3YFA96ESAN
1"	Combined Manual /Semi Auto Drain	P3YFA98ESCN
1"	Auto Drain	P3YFA98ESAN

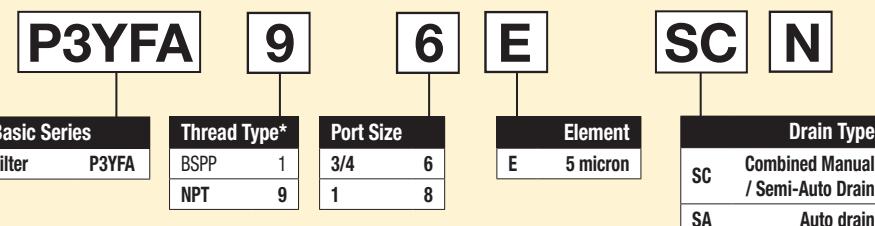
Operating Information

Supply pressure (max)*:	254 psig (17.5 bar)			
Operating temperature:				
Auto drain	14°F to 140°F (-10°C to 60°C)			
Combined drain	-40°F to 140°F (-40°C to 60°C)			
Standard filtration	5 micron			
Manual / semi-auto drain:	Closed at 11.6 psig (0.8 bar) G1/8 thread male			
Auto drain bowl pressure:	Closed at 11.6 psig (0.8 bar)			
Bowl capacity:	4.4 US oz. (130 cm ³)			
Standard filtration:	5 micron			
Flow capacity [†] :	3/4"	170 scfm (80.2 dm ³ /s, ANR)		
	1"	170 scfm (80.2 dm ³ /s, ANR)		
Fluid:	Compressed air			
Weight:	1.98 lb (0.9 kg)			
† Inlet pressure 91.4 psig (6.3 bar) inlet pressure and 7.3 psig (0.5 bar) pressure drop.				
* Air supply must be dry enough to avoid ice formation at temperatures below 35.6°F (2°C).				

Air quality:

Within ISO 8573-1: 1991 Class 3 and 5 (Particulates)
 Within ISO 8573-1: 2001 Class 6 and 7 (Particulates)

Ordering Information:



* Note: For 1-1/2" ported unit, please order P3YKA*BCP port block kit separately.

Most popular.



For inventory, lead times, and kit lookup, visit www.pdnplu.com

Material Specifications

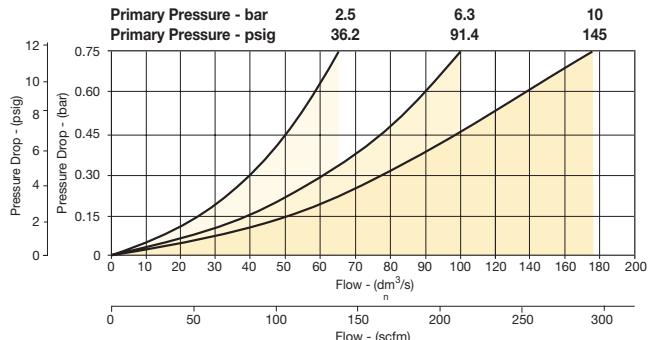
Body	Aluminium
Sight glass and bowl	Polypropylene
Body cover	ABS
Element	Sintered P.E.
Seals	Nitrile NBR
Manual / semi-auto drain	Acetal
Automatic drain	PA / Ø 10mm brass connection

Repair and Service Kits

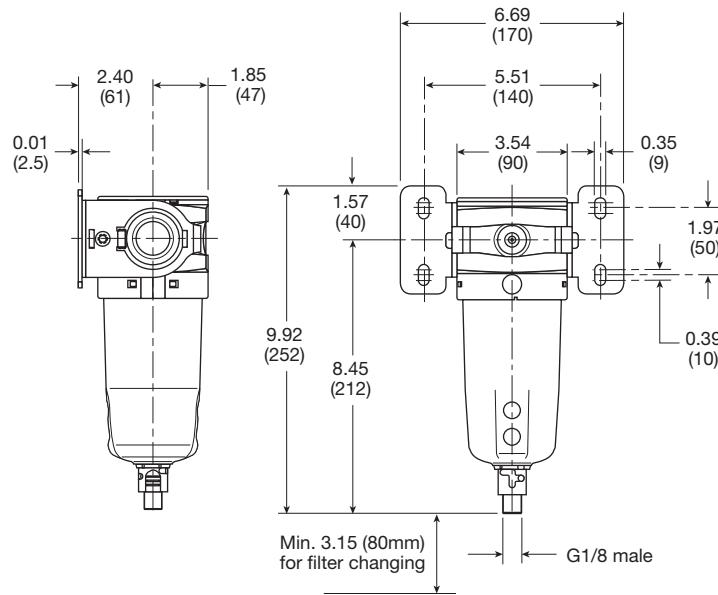
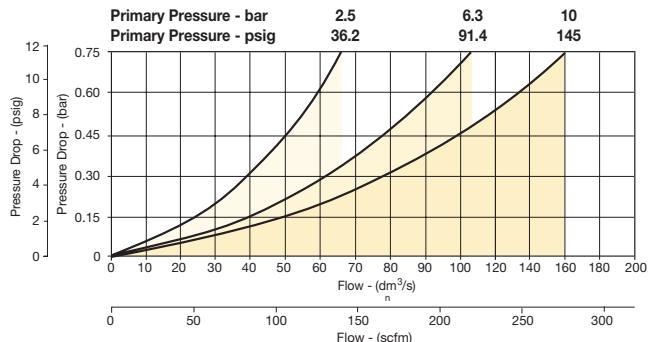
5 micron element kit	P3YKA00ESE
40 micron element kit	P3YKA00ESG
Bowl kit with combined manual / semi auto drain	P3YKA00BSC
Bowl kit with auto drain	P3YKA00BSA

Flow Characteristics

(3/4") Filter



(1") Filter



Inches (mm)



P3Y Coalescing Filter

- Extended high efficiency filter element provides greater filtration surface area.
- Integral 3/4" or 1" ports (BSPP & NPT)
- Removes liquid aerosols and sub micron particles
- Oil free air for critical applications, such as air gauging, pneumatic instrumentation and control
- Adsorber activated carbon element removes oil vapors and most hydrocarbons
- Robust but lightweight aluminum construction

Notes: To optimize the life of the coalescing element, it is advisable to install a P3YFA pre-filter with a 5 micron element upstream of the coalescing filter.

To optimize the life of the adsorber element, it is advisable to install a P3Y coalescing 0.01 micron filter upstream of the adsorber filter.

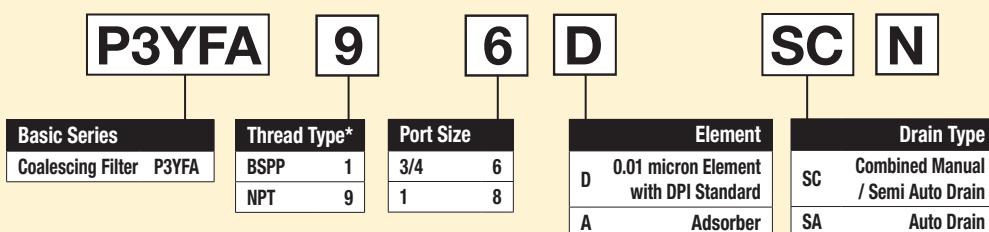


Port Size	Description	Part Number
3/4"	Coalescing Filter 0.01 micron, Combined Manual / Semi-Auto Drain	P3YFA96DSCN
3/4"	Coalescing Filter 0.01 micron, Auto Drain	P3YFA96DSAN
1"	Coalescing Filter 0.01 micron, Combined Manual / Semi-Auto Drain	P3YFA98DSCN
1"	Coalescing Filter 0.01 micron, Auto Drain	P3YFA98DSAN

Operating Information

Supply pressure (max)*:	254 psig (17.5 bar)
Operating temperature:	14°F to 140°F (-10°C to 60°C)
Manual / auto drain:	Closed at 11.6 psig (0.8 bar) G1/8 thread male
Media specifications:	0.008 mg/m ³ (PPM w/w)
Adsorber, max oil carryover	
Bowl capacity:	4.4 US oz. (130 cm ³)
Standard filtration:	0.01 micron
Flow capacity [†] :	3/4" 275 scfm (176.9 dm ³ /s, ANR) 1" 307 scfm (144.8 dm ³ /s, ANR)
Fluid:	Compressed air
Weight:	3.5 lb (1.6 kg)
† Inlet pressure 91.4 psig (6.3 bar) inlet pressure and 7.3 psig (0.5 bar) pressure.	
* Air supply must be dry enough to avoid ice formation at temperatures below 35.6°F (2°C).	

Ordering Information:



* Note: For 1-1/2" ported unit, please order P3YKA*BCP port block kit separately.

Most popular.



For inventory, lead times, and kit lookup, visit www.pdnplu.com

Material Specifications

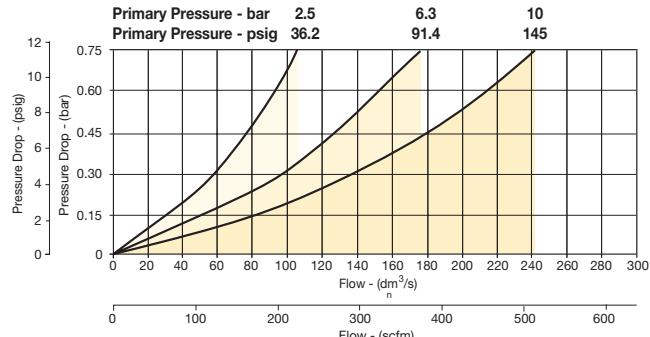
Body	Aluminium
Sight glass and bowl	Polypropylene
Filter cover	ABS
Coalescing element	Borosilicate & nano fibers
Top & bottom end cap (coalescing)	Aluminium
Adsorber element	Activated carbon
Top & bottom end cap (adsorber)	Glass filled nylon
Support cylinders	Grade 430 stainless steel
Support media	Polypropylene
Anti re-entrainment barrier	Polyester
Encapsulation	Epoxy resin / hardener
Seals	Nitrile NBR
Manual / semi-auto drain	Acetal
Auto drain	PA / Ø 10mm brass connection
Differential pressure indicator, body	Acetal
Differential pressure indicator, internal parts	Acetal
Differential pressure indicator, spring	Stainless steel
Differential pressure indicator, seals	Nitrile NBR
Differential pressure indicator, support plate	ABS
Differential pressure indicator, screws	Steel / zinc plated

Repair and Service Kits

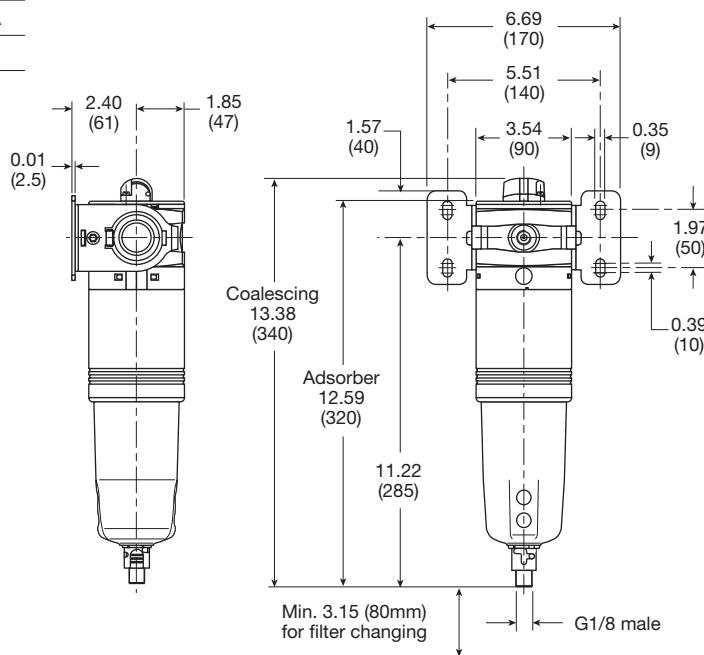
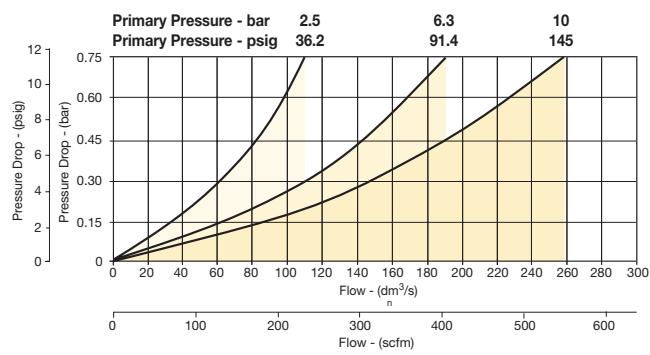
0.01 micron element kit	P3YKA00ESC
Adsorber element kit	P3YKA00ESA
Bowl kit with combined manual / semi auto drain	P3YKA00BSC
Bowl kit with auto drain	P3YKA00BSA
Differential pressure indicator kit	P3YKA00RQ

Flow Characteristics

(3/4") 0.01 Micron Coalescing Filter Saturated



(1") 0.01 Micron Coalescing Filter Saturated

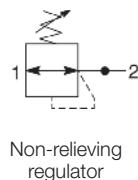
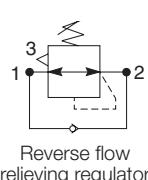
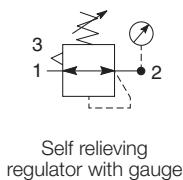


Inches (mm)



P3Y Regulators

- Integral 3/4" or 1" ports (BSPP and NPT)
- Robust but lightweight aluminium construction
- Secondary pressure ranges 12 and 16 bar
- Rolling diaphragm for extended life
- Secondary aspiration plus rolling diaphragm provides quick response and accurate pressure regulation
- Optional tamperproof regulator padlock
- Reverse flow / relieving option
- Low temperature -40°C (-40°F)



Port Size	Description	Part Number
3/4"	174 psig relieving	P3YRA96BNEN
3/4"	174 psig relieving + pressure gauge	P3YRA96BNFN
1"	174 psig relieving	P3YRA98BNEN
1"	174 psig relieving + pressure gauge	P3YRA98BNFN

Operating Information

Supply pressure (max)*:	254 psig (17.5 bar)
Operating temperature:	-40°F to 140°F (-40°C to 60°C)
Flow capacity [†] :	3/4" 380 scfm (179.3 dm ³ /s, ANR) 1" 550 scfm (259.6 dm ³ /s, ANR)
Fluid:	Compressed air
Gauge port (x2):	1/4"
Weight:	2.4 lb (1.08 kg)
† Inlet pressure 145 psig (10 bar) inlet pressure, 91.4 psig (6.3 bar) set pressure and 7.3 psig (0.5 bar) pressure drop.	
* Air supply must be dry enough to avoid ice formation at temperatures below 35.6°F (2°C).	

Ordering Information

P3YRA	9	6	B	N	E	N
Basic Series						
Regulator	P3YRA					
Thread Type*						
BSPP	1					
NPT	9					
Port Size						
3/4	6					
1	8					
Relief						
B	Relieving					
R	Reverse Flow / Relieving					
Lockable						
N	Standard					
A [†]	Lockable					
Adjustment Range						
E 0 to 174 psi (0 to 12 bar), No Gauge						
H 0 to 232 psi (0 to 16 bar), No Gauge						
F 0 to 174 psi (0 to 12 bar), Gauge						
J 0 to 232 psi (0 to 16 bar), Gauge						

Notes:

- * For 1-1/2" ported unit, please order P3YKA*BCP port block kit separately.
- † Not field convertible.

Most popular.



For inventory, lead times, and kit lookup, visit www.pdnplu.com

Material Specifications

Body	Aluminium
Bonnet	Glass filled polyamide
Regulator cover	ABS
Control knob	Glass filled polyamide
Valve	Brass / NBR
Seals	Nitrile NBR
Screws	Steel / zinc plated

Repair and Service Kits

Angle bracket + metal lock ring	P3YKA00MS
Panel mounting nut	P3YKA00MM
Diaphragm kit (relieving type)	P3YKA00RR
Diaphragm kit (non-relieving type)	P3YKA00RN
0 to 160 psig (0 to 10 bar), gauge 1/4" port	K4520N14160
0 to 300 psig (0 to 20 bar), gauge 1/4" port	K4520N14300

WARNING

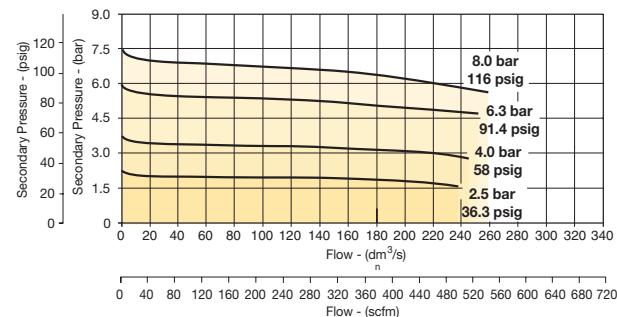
**Product rupture can cause serious injury.
Do not connect regulator to bottled gas.
Do not exceed Maximum primary pressure rating.**

CAUTION:

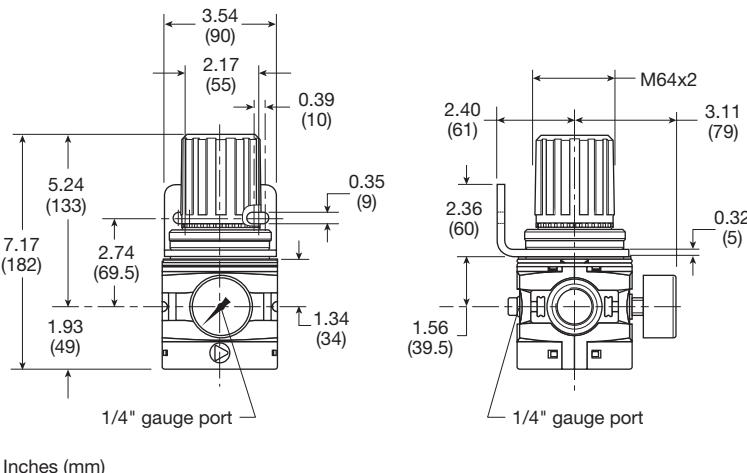
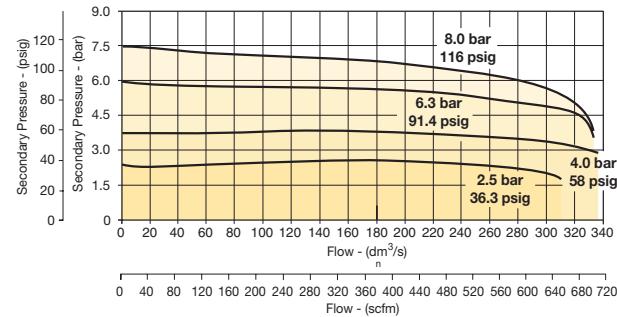
REGULATOR PRESSURE ADJUSTMENT – The working range of knob adjustment is designed to permit outlet pressures within their full range. Pressure adjustment beyond this range is also possible because the knob is not a limiting device. This is a common characteristic of most industrial regulators, and limiting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

(3/4") Regulator



(1") Regulator

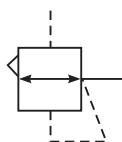


Inches (mm)



P3Y Pilot Operated Regulator

- Integral 3/4" or 1" ports (BSPP & NPT)
- Pilot controlled regulators can be mounted "out of reach" with pilot regulator installed in a convenient location
- Constant pilot bleed control for accurate pressure control
- Balanced poppet provides quick response
- High flow



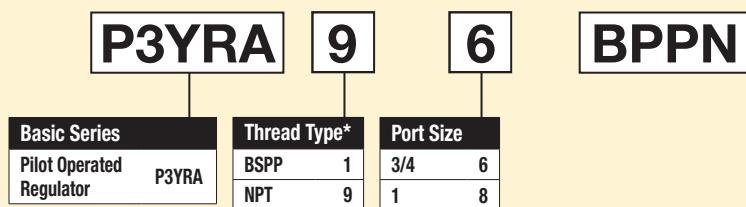
Port Size	Description	Part Number
3/4"	Pilot operated regulator	P3YRA96BPPN
1"	Pilot operated regulator	P3YRA98BPPN

Operating Information

Supply pressure (max):	254 psig (17.5 bar)				
Operating temperature:	-40°F to 140°F (-40°C to 60°C)				
Flow capacity [†] :	<table> <tr> <td>3/4"</td> <td>550 scfm (259.6 dm³/s, ANR)</td> </tr> <tr> <td>1"</td> <td>550 scfm (259.6 dm³/s, ANR)</td> </tr> </table>	3/4"	550 scfm (259.6 dm ³ /s, ANR)	1"	550 scfm (259.6 dm ³ /s, ANR)
3/4"	550 scfm (259.6 dm ³ /s, ANR)				
1"	550 scfm (259.6 dm ³ /s, ANR)				
Fluid:	Compressed air				
Weight:	2.6 lb (1.2 kg)				

[†] Inlet pressure 145 psig (10 bar) inlet pressure, 91.4 psig (6.3 bar) set pressure and 7.3 psig (0.5 bar) pressure drop.

Ordering Information



*** Note:** For 1-1/2" ported unit, please order P3YKA*BCP port block kit separately.

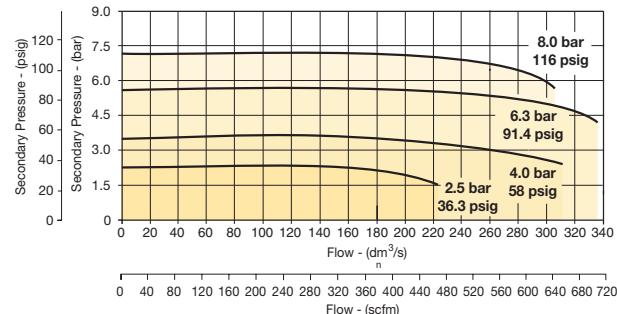
Most popular.



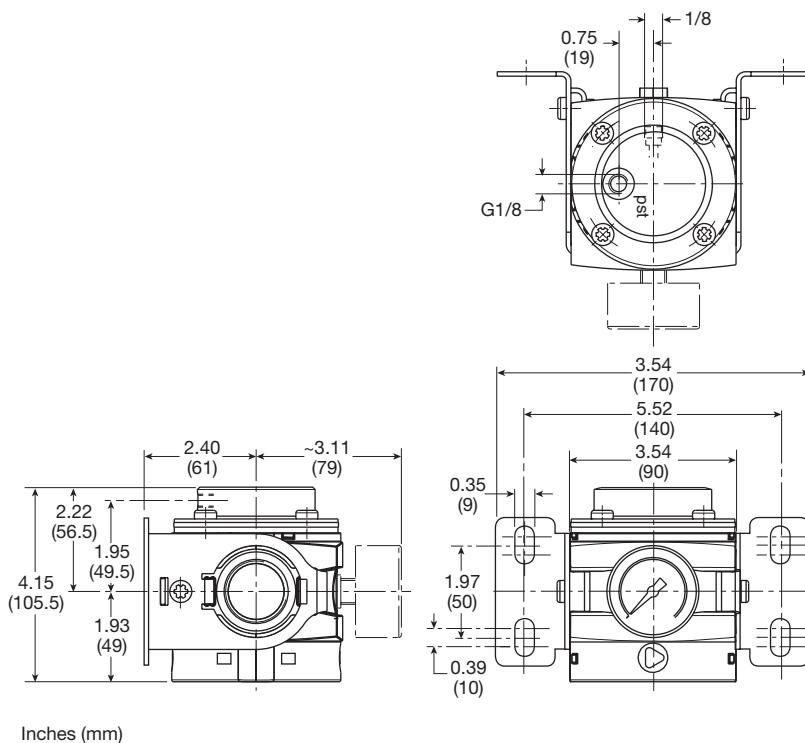
For inventory, lead times, and kit lookup, visit www.pdnplu.com

Material Specifications

Body	Aluminium
Body cover	ABS
Valve	Brass / NBR composite
Pilot valve booster	Aluminum
Seals	Nitrile NBR
Screws	Zinc plated steel

Flow Characteristics**3/4" and 1" Pilot Regulator****WARNING**

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



P3Y Proportional Pressure Regulator

- Integral 3/4" or 1" ports (BSPP & NPT)
- Accurate output pressure
- Very fast response times
- Robust but lightweight design



Port Size	Description	Part Number
3/4"	Normally Closed, 0 - 10 bar (0 to 145 psig)	P3YPA96BD2VA2A
1"	Normally Closed, 0 - 10 bar (0 to 145 psig)	P3YPA98BD2VA2A

Operating Information

Operating pressure:	P ₁ min	14.5 psig (1 bar)	Power consumption:	I _{Bmax}	0.15 A
Inlet pressure [†] :	P ₁ max	232 psig (16 bar)	Set value input:	U _w	V 0-10
Operating pressure:	P ₂ min	2.9 psig (0.2 bar)		I	mA 0-20
Outlet pressure	P ₂ max	145 psig (10 bar)			mA 4-20
Operating temperature:		32°F to 122°F (0°C to 50°C)	Input resistance:	R _E	243 K Ω
Flow capacity [†] :		706 scfm (33.2 dm ³ /s, ANR)	Actual valve output:	U _x	0 - 10 V
		l/min 20000	Output current:	I _{Amax}	10 mA
		m ³ /h 1200	Degree of protection:		IP65 to DIN 40050, EN 60529
Hysteresis:	P ₂ max	< 1%	Fluid:		Compressed air
Repeatability:	P ₂ max	< 0.5%	Weight:		1.2 lb (2.7 kg)
Sensitivity:	P ₂ max	< 0.5%			
Linearity:	P ₂ max	< 1%	1) p ¹ > p ² + 10% p ²		
Nominal voltage:		U _n V DC 24 V = ± 10%	2) at p ¹ - 10 bar to p ² - 6.3 bar		
Residual ripple:		10%	† Inlet pressure 91.4 psig (6.3 bar) inlet pressure and 7.3 psig (0.5 bar) pressure drop.		

Ordering Information

P3YPA	9	6	B	D	2	A	A	2	A				
Basic Series			Version			Control Signal		Input Connector					
Proportional Pressure Regulator	P3YPA		Side Exhaust, NC (Normally closed)	B		A 4-20 mA		2 M12 (5-pin)					
			Side Exhaust, NO (Normally open)	C		V 0-10 V							
					Power Supply		Output Signal						
					2 24 volts		A Analog 0-10 V						
Port Size <table border="1"> <tr> <td>3/4</td> <td>6</td> </tr> <tr> <td>1</td> <td>8</td> </tr> </table>										3/4	6	1	8
3/4	6												
1	8												
Pressure Range <table border="1"> <tr> <td>0-10 bar (0-145 psig)</td> <td>D</td> </tr> </table>										0-10 bar (0-145 psig)	D		
0-10 bar (0-145 psig)	D												

* Note: For 1-1/2" ported unit, please order P3YKA*BCP port block kit separately.

Most popular.



For inventory, lead times, and kit lookup, visit www.pdnplu.com

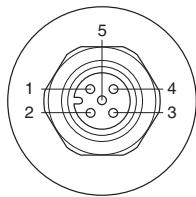
Material Specifications

Housing	Aluminium
Pilot valve booster	Brass / NBR composite aluminium
Standard seals	NBR
Body cover screws	Steel / zinc plated

Cables

Type	Part Number
M12, 5-pin female to flying lead cable, TPE; 2m (6.6 ft)	RKC 4.5T-2/S1587

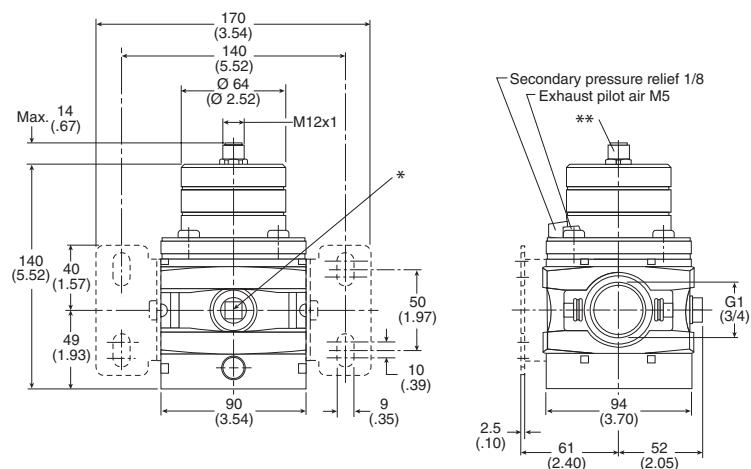
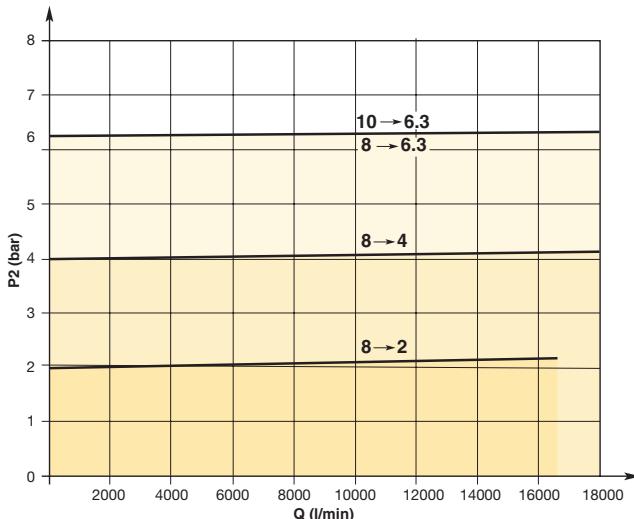
Connection Diagram



Connector M12 x 1

Pin No.	Function
1	24 V
2	0 V
3	0 - 10 V
4	0 V
5	0 - 10 V

Flow Characteristics



* Two opposite gauge ports 1/4, plug screw mounted

** Connection for 5-pin plug M12 x 1



P3Y Filter / Regulator

- Integral 3/4" or 1" ports (BSPP or NPT)
- High efficiency element as standard
- Excellent water removal efficiency
- Robust but lightweight aluminium construction
- Secondary pressure ranges 12 and 16 bar
- Rolling diaphragm for extended life
- Secondary aspiration plus balanced poppet provides quick response and accurate pressure regulation.
- Reverse flow / relieving option
- Low temperature -40°C (-40°F) with combined manual / semi-auto drain as standard



Port Size	Description (0 to 174 psi)	Part Number
3/4"	Relieving, COnbined Manual / Semi-Auto Drain	P3YEA96ESCBNEN
3/4"	Relieving, Auto Drain	P3YEA96ESABNEN
3/4"	Relieving, Gauge, COnbined Manual / Semi-Auto Drain	P3YEA96ESCBNFN
3/4"	Relieving, Gauge, Auto Drain	P3YEA96ESABNFN
1"	Relieving, COnbined Manual / Semi-Auto Drain	P3YEA98ESCBNEN
1"	Relieving, Auto Drain	P3YEA98ESABNEN
1"	Relieving, Gauge, COnbined Manual / Semi-Auto Drain	P3YEA98ESCBNFN
1"	Relieving, Gauge, Auto Drain	P3YEA98ESABNFN

Operating Information

Supply pressure (max)*:	254 psig (17.5 bar)	
Operating temperature:		
Auto drain	14°F to 140°F (-10°C to 60°C)	
Combined drain	-40°F to 140°F (-40°C to 60°C)	
Standard filtration:	5 micron	
Manual / semi-auto drain:	Closed at 11.6 psig (0.8 bar) G1/8 thread male	
Auto drain bowl pressure:	Closed at 11.6 psig (0.8 bar)	
Bowl capacity:	4.4 US oz. (130 cm ³)	
Standard filtration:	5 micron	
Flow capacity [†] :	3/4"	335 scfm (158.1 dm ³ /s, ANR)
	1"	465 scfm (219.5 dm ³ /s, ANR)
Fluid:	Compressed air	
Gauge port (x2):	1/4"	
Weight:	3.3 lb (1.5 kg)	

[†] Inlet pressure 91.4 psig (6.3 bar) inlet pressure and 7.3 psig (0.5 bar) pressure drop.

* Air supply must be dry enough to avoid ice formation at temperatures below 35.6°F (2°C).

Air quality:

Within ISO 8573-1: 1991 Class 3 and 5 (Particulates)

Within ISO 8573-1: 2001 Class 6 and 7 (Particulates)

Ordering Information

P3YEA	9	6	E	SA	B	N	E	N
Basic Series	Thread Type*		Drain Type		Relief	Lockable	Adjustment Range	
Filter / Regulator P3YEA	BSPP 1		Sc Combined Manual / Semi-Auto Drain		B Relieving	N Standard	0 to 174 psi (0 to 12 bar), No Gauge	
	NPT 9		Sa Auto Drain		R Reverse Flow / Relieving	A [†] Lockable	0 to 232 psi (0 to 16 bar), No Gauge	
Notes:	Port Size		Element				0 to 174 psi (0 to 12 bar), Gauge	
* For 1-1/2" ported unit, please order P3YKA [†] BCP port block kit separately.	3/4 6	1 8	E 5 micron				0 to 232 psi (0 to 16 bar), Gauge	
† Not field convertible.								

Most popular.



For inventory, lead times, and kit lookup, visit www.pdnplu.com

Material Specifications

Body	Aluminium
Sight glass and bowl	Polypropylene
Body cover	ABS
Element	Sintered polypropylene
Seals	Nitrile NBR
Manual / semi-auto drain	Acetal
Auto drain	PA / Ø 10mm brass connection
Bonnet	Glass filled polyamide
Control Knob	Glass filled polyamide
Valve	Brass / NBR
Screws	Steel / zinc plated

Repair and Service Kits

5 micron element kit	P3YKA00ESE
Bowl kit with combined manual/semi auto drain	P3YKA00BSC
Bowl kit with auto drain	P3YKA00BSA
Key lock kit	P3XKA00AS
Diaphragm kit (relieving type)	P3YKA00RR
Diaphragm kit (non-relieving type)	P3YKA00RN
Angle bracket + metal lock ring	P3YKA00MS
Panel mount nut	P3YKA00MM

⚠ WARNING

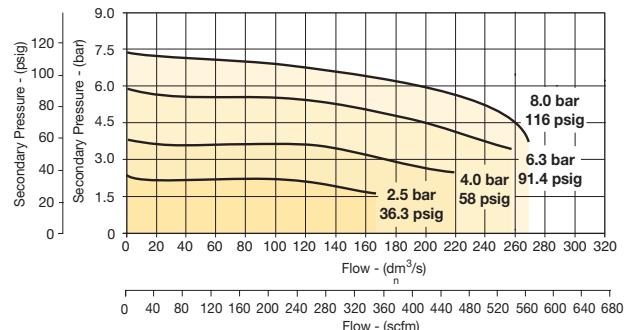
Product rupture can cause serious injury.
 Do not connect regulator to bottled gas.
 Do not exceed Maximum primary pressure rating.

CAUTION:

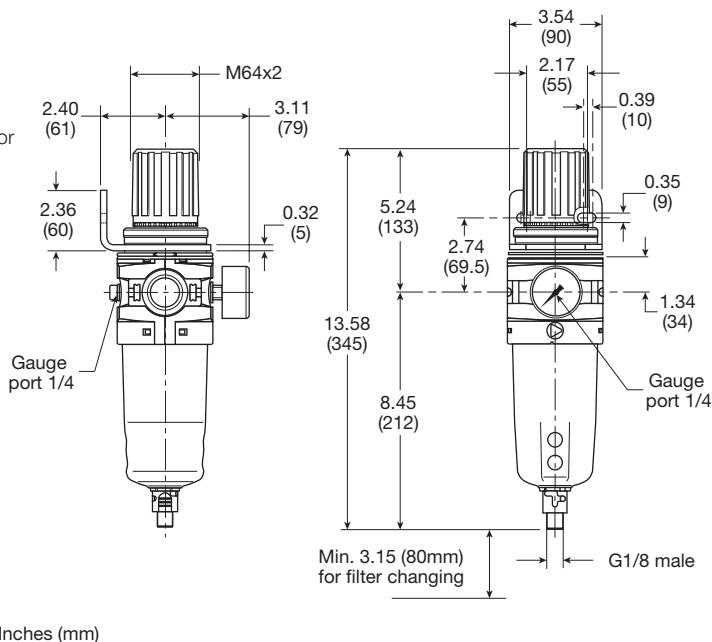
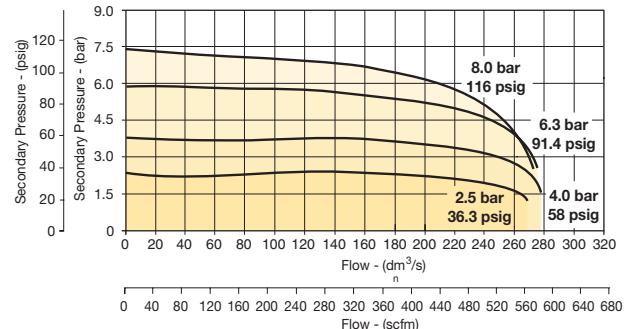
REGULATOR PRESSURE ADJUSTMENT – The working range of knob adjustment is designed to permit outlet pressures within their full range. Pressure adjustment beyond this range is also possible because the knob is not a limiting device. This is a common characteristic of most industrial regulators, and limiting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

(3/4") 5 Micron Filter / Regulator

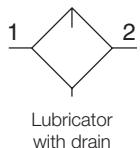


(1") 5 Micron Filter / Regulator



P3Y Lubricator

- Integral 3/4" or 1" ports (BSPP and NPT)
- Robust but lightweight aluminium construction
- Proportional oil delivery over a wide range of air flows
- Possible to fill under system pressure eliminating down time
- Large oil reservoir



Lubricator
with drain



Port Size	Description	Part Number
3/4"	Oil Mist, Fill Under Pressure	P3YLA96LSNN
1"	Oil Mist, Fill Under Pressure	P3YLA98LSNN

Operating Information

Supply pressure (max)*:	254 psig (17.5 bar)
Operating temperature*:	14°F to 140°F (-10°C to 60°C)
Flow capacity [†] :	3/4" 315 scfm (148.2 dm ³ /s, ANR) 1" 390 scfm (184.1 dm ³ /s, ANR)
Fluid:	Compressed air
Weight:	1.8 lb (0.8 kg)

[†] Inlet pressure 91.4 psig (6.3 bar) inlet pressure and 7.3 psig (0.5 bar) pressure drop.

* Air supply must be dry enough to avoid ice formation at temperatures below 35.6°F (2°C).

Low flow start point (lubrication pick-up): at 6.3 bar (91.4 psig) inlet pressure 0.5 dm³/s (1.1 scfm).

Ordering Information

P3YLA **9** **6** **LSNN**

Basic Series	P3YLA	Thread Type*	1	Port Size	3/4	6
Lubricator	P3YLA	BSPP	1			
		NPT	9		1	8

* Note: For 1-1/2" ported unit, please order P3YKA*BCP port block kit separately.

Most popular.



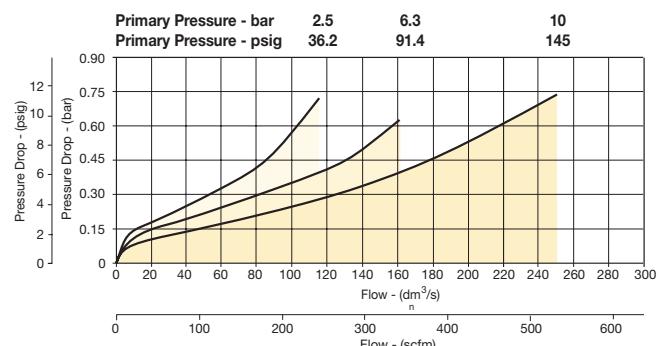
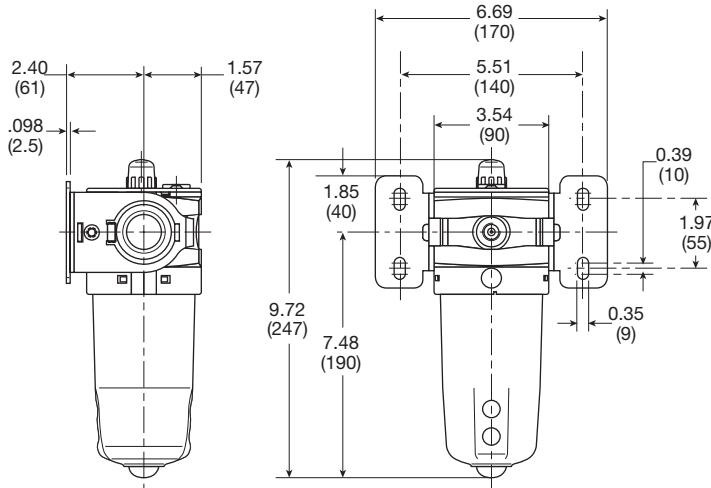
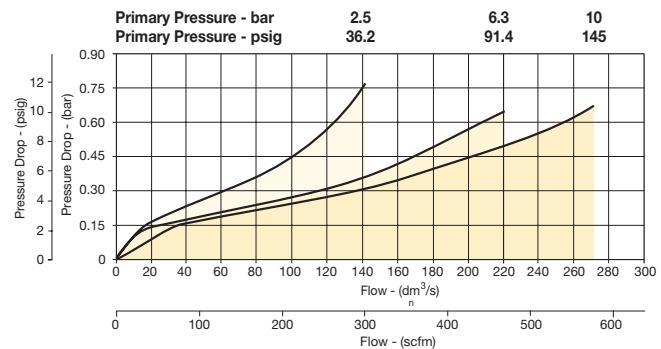
For inventory, lead times, and kit lookup, visit www.pdnplu.com

Material Specifications

Body	Aluminium
Sight glass and bowl	Polypropylene
Sight dome	Polyamide
Lubricator cover	ABS
Top & bottom end cap	Glass filled nylon
Bayonet support	Nylon
Seals	Nitrile NBR

Repair and Service Kits

Bowl kit	P3YKA00BSN
Refill plug	P3YKA00PL
Oil (1 quart)	F442001
Oil (1 gallon)	F442002
Oil (12 quart case)	F442003
Oil (4 gallon case)	F442005

Flow Characteristics**(3/4") Lubricator****(1") Lubricator**

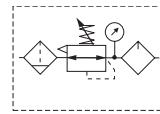
Inches (mm)



P3Y Combinations



Filter + Regulator + Lubricator Combinations 5 micron element, 12 bar (174 psig) regulator + gauge and wall mounting bracket



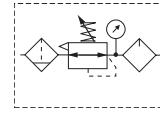
Port Size	Flow [‡] scfm	Weight lb (kg)	Combined Manual / Semi-Auto Drain [†]	Auto Drain [†]
3/4"	170	7.3 (3.3)	P3YCB96SECNFLNF	P3YCB96SEANFLNF
1"	170	7.3 (3.3)	P3YCB98SECNFLNF	P3YCB98SEANFLNF

[†] Standard part numbers shown in bold. For other models refer to Options chart below.

[‡] Flow with 10 bar (145 psig) inlet pressure, 6.3 bar (91.4 psig) set pressure and 1 bar (14.5 psig) pressure drop.



Filter / Regulator + Lubricator Combinations 5 micron element, 12 bar (174 psig) regulator + gauge and wall mounting bracket



Port Size	Flow [‡] scfm	Weight lb (kg)	Combined Manual / Semi-Auto Drain [†]	Auto Drain [†]
3/4"	315	6.2 (2.8)	P3YCA96SECNFLNF	P3YCA96SEANFLNF
1"	340	6.2 (2.8)	P3YCA98SECNFLNF	P3YCA98SEANFLNF

[†] Standard part numbers shown in bold. For other models refer to Options chart below.

[‡] Flow with 10 bar (145 psig) inlet pressure, 6.3 bar (91.4 psig) set pressure and 1 bar (14.5 psig) pressure drop.

Ordering Information:

P3YCA	9	6	SE	C	N	F	LNF
Basic Series							
Filter / Regulator + Lubricator	P3YCA	BSPP	1	3/4	6		
Filter + Regulator + Lubricator	P3YCB	NPT	9	1	8		
				Drain Type		Adjustment Range	
				C	Combined Manual / Semi-Auto Drain	F 0-12 bar (0 to 174 psi) with Gauge	
				A	Auto Drain	J 0-16 bar (0 to 232 psi) with Gauge	

* Note: For 1-1/2" ported unit, please order P3YKA*BCP port block kit separately.

⚠ 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 -

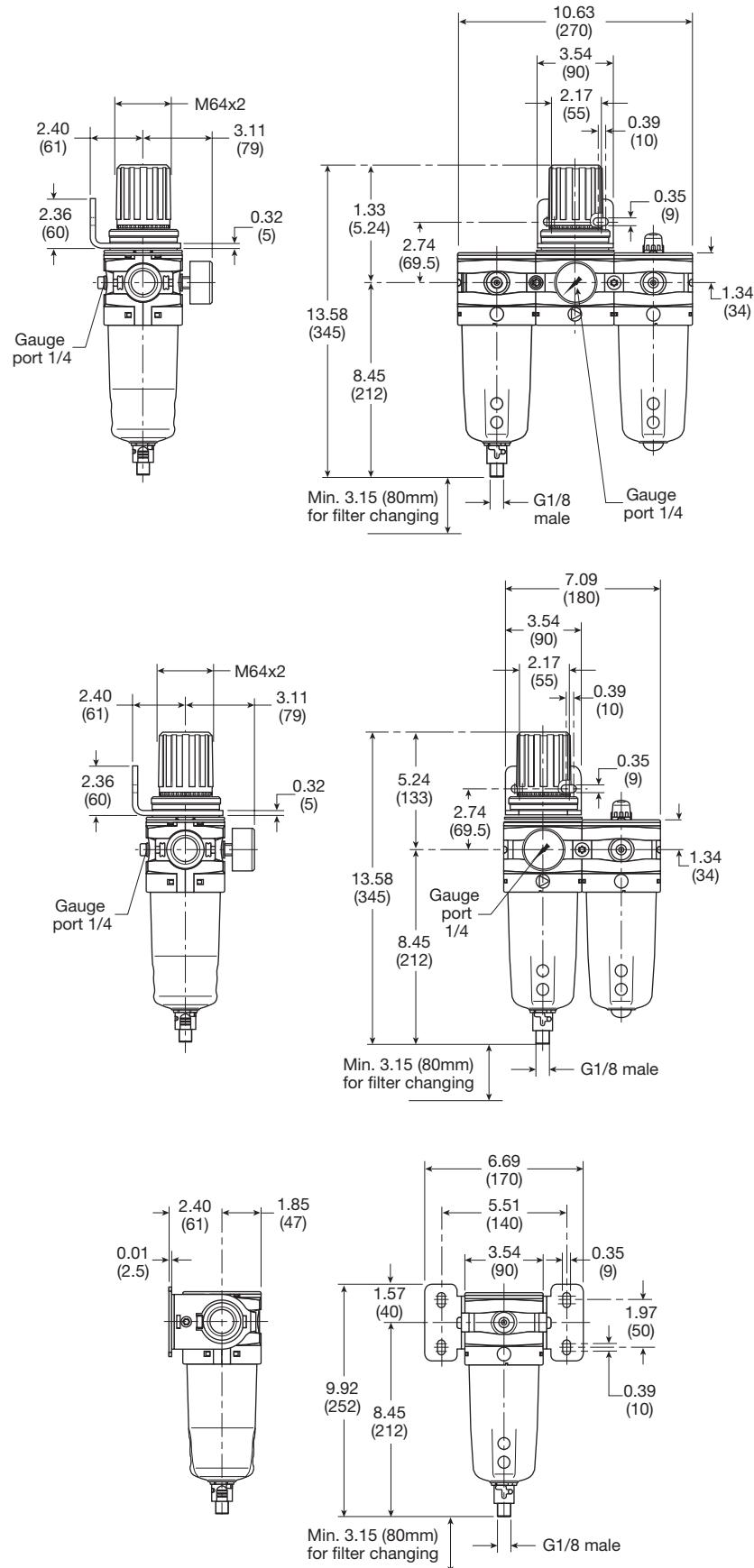
The working range of knob adjustment is designed to permit outlet pressures within their full range. Pressure adjustment beyond this range is also possible because the knob is not a limiting device. This is a common characteristic of most industrial regulators, and limiting devices may be obtained only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

Most popular.



For inventory, lead times, and kit lookup, visit www.pdnplu.com

P3Y Combinations

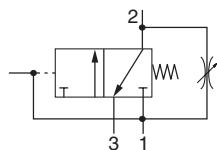


P3Y Combined Soft Start / Dump Valve

- Modular design with 3/4" & 1" integral ports (BSPP or NPT)
- Provides for the safe introduction of pressure
- Automatically dumps downstream pressure on the loss of pilot signal
- Adjustable slow start
- Solenoid or air pilot options
- High flow & exhaust capability

P3Y 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.



Port Size	Description	Part Number
3/4"	Air pilot operated	P3YTA96PPN
3/4"	24VDC 30mm coil	P3YTA96SCNA2CN
1"	Air pilot operated	P3YTA98PPN
1"	24VDC 30mm coil	P3YTA98SCNA2CN



Operating Information

Operating pressure (max):	232 psig (16 bar)
30mm coil	2.9 psig (0.2 bar)
Operating pressure (min):	
Operating temperature*:	
Solenoid operated	14°F to 140°F (-10°C to 60°C)
Air pilot operated	14°F to 140°F (-10°C to 60°C)
Air pilot port:	1/8"
Exhaust port:	NPT 3/4"
	BSPP 1"
Gauge port:	1/4"
Flow capacity [†] :	3/4" 371 scfm (175.1 dm ³ /s, ANR)
	1" 424 scfm (200.1 dm ³ /s, ANR)
Fluid:	Compressed air
Weight:	Air pilot 3.1 lb (1.4 kg)
	30mm coil 3.5 lb (1.6 kg)

[†] Inlet pressure 91.4 psig (6.3 bar) inlet pressure and 7.3 psig (0.5 bar) pressure drop.

* Air supply must be dry enough to avoid ice formation at temperatures below 35.6°F (2°C).

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

Ordering Information

P3YTA	9	6	P	C	N	A	2	C	N
Basic Series					Solenoid type only				
Soft Start / Dump Valve					Solenoid Voltage				
P3YTA					2CN 24VDC				
Thread Type*					Solenoid Type				
BSPP 1					A 30mm CNOMO Coil				
NPT 9					D 30mm CNOMO Coil (M12 connection)				
Port Size									
3/4 6									
1 8									
Actuator Interface									
30mm Operator C									
Threaded Air Pilot P									

* Note: For 1-1/2" ported unit, please order P3YKA*BCP port block kit separately.

Most popular.



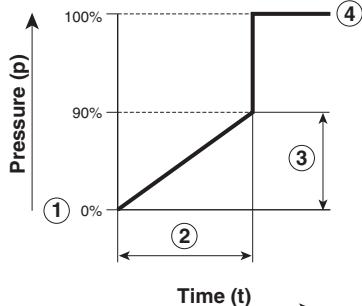
For inventory, lead times, and kit lookup, visit www.pdnplu.com

Material Specifications

Body	Aluminium
Body cover	ABS
Valve	Brass / NBR composite
Pilot valve booster	Aluminum
Seals	Nitrile NBR

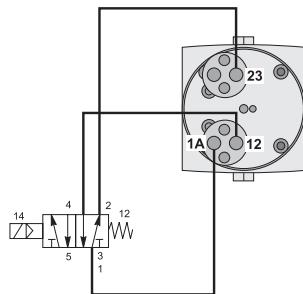
Note: For solenoid coil and cable plug options see solenoid operator pages.

Flow Characteristics

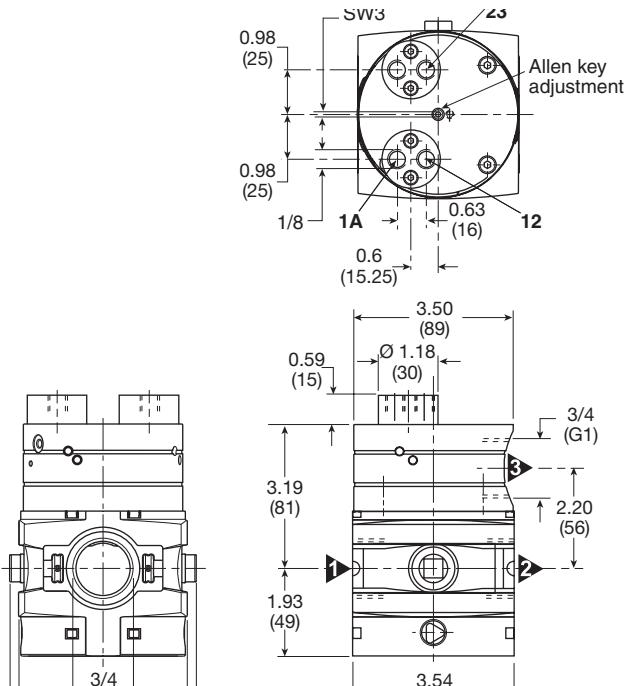
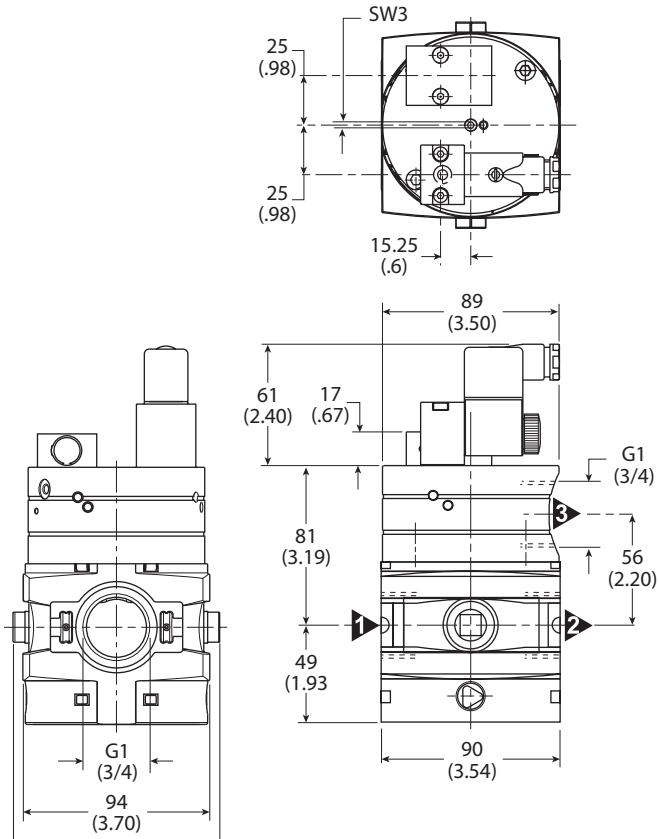
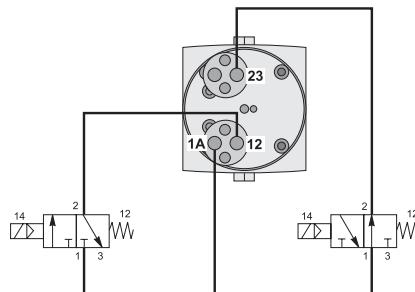


- ① Start signal
- ② Switching time delay
- ③ Gradual pressure build up
- ④ Operating pressure p^2 ($= p^1$)

Combined start / stop function

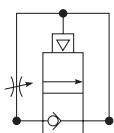


Combined start / stop function with acknowledgement



P3Y Soft Start Valve

- Integral 3/4" or 1" ports
- Smooth start-up of pneumatic system
- Air pilot operation
- Adjustable slow start
- High flow



Port Size	Description	Part Number
3/4"	Soft Start Valve	P3YSA96Y0N
1"	Soft Start Valve	P3YSA98Y0N

Material Specifications

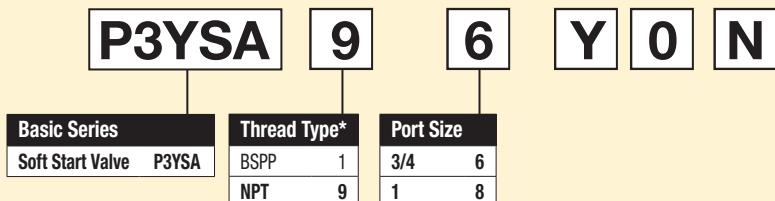
Body	Aluminium
Body cover	ABS
Valve	Brass / NBR composite
Pilot valve booster	Aluminum
Seals	Nitrile NBR



Operating Information

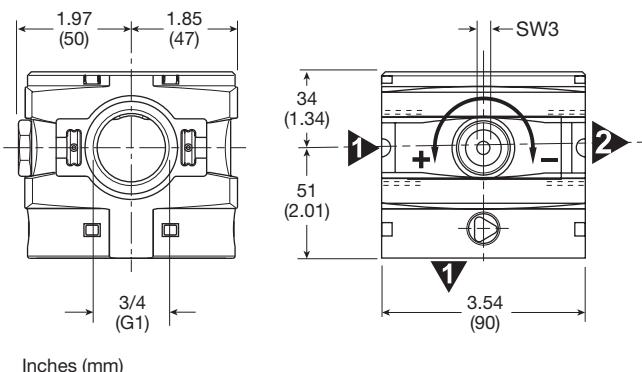
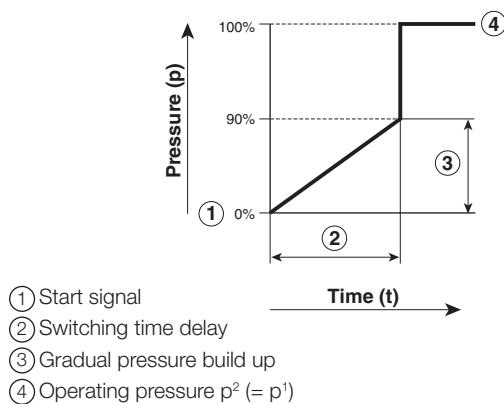
Operating pressure (max):	254 psig (17.5 bar)
Operating pressure (min):	29 psig (2 bar)
Operating temperature*:	
Solenoid operated	14°F to 140°F (-10°C to 60°C)
Air pilot operated	14°F to 140°F (-10°C to 60°C)
Flow capacity [†] :	
3/4"	324 scfm (152.9 dm ³ /s, ANR)
1"	324 scfm (152.9 dm ³ /s, ANR)
Fluid:	Compressed air
Weight:	1.8 lb (0.8 kg)
† Inlet pressure 91.4 psig (6.3 bar) inlet pressure and 7.3 psig (0.5 bar) pressure drop.	
* Air supply must be dry enough to avoid ice formation at temperatures below 35.6°F (2°C).	
Snap pressure: Full flow when downstream pressure reaches 50% of the inlet pressure.	

Ordering Information



* Note: For 1-1/2" ported unit, please order P3YKA*BCP port block kit separately.

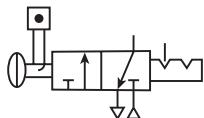
Flow Characteristics



For inventory, lead times, and kit lookup, visit www.pdnplu.com

P3Y Modular Ball Valve

- Positive bubble tight shut-off
- 90° turn handle to prevent unauthorized adjustment
- Pad lockable (up to 6 times)
- When the inlet pressure is turned off the downstream vents through the exhaust port



Ball / Lockout Valve shuts off downstream line pressure in the closed position with a 90° turn of the handle. In the closed position, inlet air pressure is blocked and downstream / system air is exhausted through a threaded port. To prevent unauthorized adjustment, the padlock slide may be assembled on either side. It is recommended that this slide is installed after final system assembly.

The Safety Lockout valves conform to OSHA #29 CFR part 1910 – control of hazardous energy source (lockout / tagout).

Operating Information

Operating pressure (max):	254 psig (17.5 bar)
Operating pressure (min):	29 psig (2 bar)
Operating temperature:	14°F to 140°F (-10°C to 60°C)
Flow capacity [†] :	705.6 scfm (333 dm ³ /s, ANR)
	705.6 scfm (333 dm ³ /s, ANR)
Weight:	2.4 lb (1.1 kg)
	2.4 lb (1.1 kg)

Ordering Information

P3YVA

9

6

LBN

Basic Series
Modular Ball Valve P3YVA

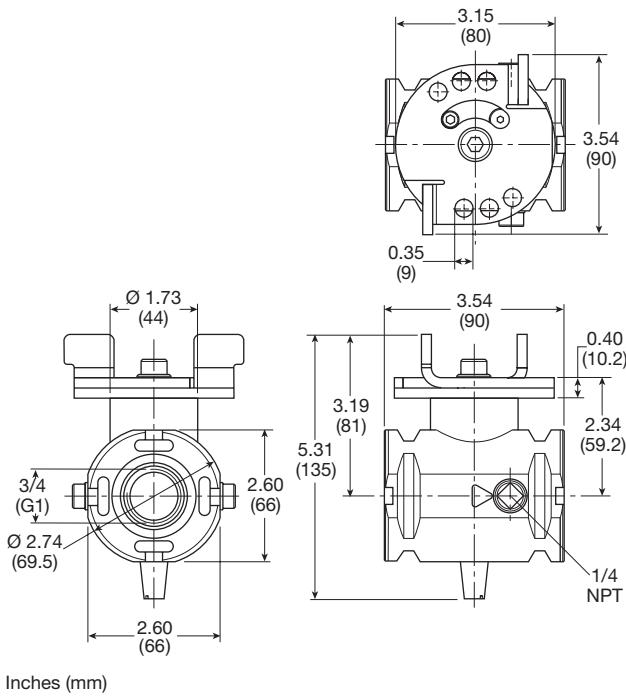
Thread Type*
BSPP 1
NPT 9

Port Size
3/4 6
1 8

* Note: For 1-1/2" ported unit, please order P3YKA*BCP port block kit separately.

Material Specifications

Body	Aluminium
Valve ball	Brass / nickel plated
Handle	Aluminum
Seals	Nitrile NBR
Exhaust silencer	Sintered bronze



Inches (mm)



For inventory, lead times, and kit lookup, visit www.pdnplu.com

Modular Manifold



P3Y Series Manifolds provide up to 4 extra outlet ports. They may be assembled at any position in a combination e.g. before the lubricator to provide oil free take off or at the end of a combination to provide extra outlet ports.

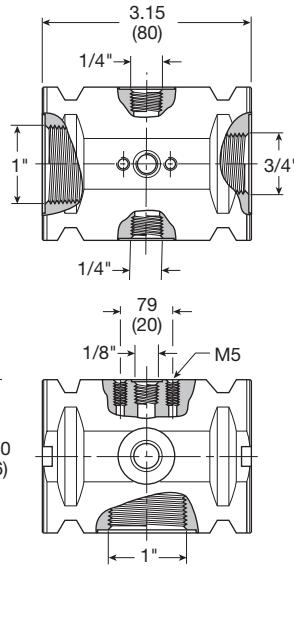
Thread Type	Part Number
BSPP	P3YMA1V0N
NPT	P3YMA9V0N

Port sizes

Inlet Port	Top	Bottom	Front and Back
3/4"	1/8"	1"	1/4"
1"	1/8"	1"	1/4"

Material Specifications

Body	Aluminium
Weight	0.7 kg (1.5 lb)



Optional Port Block Kits

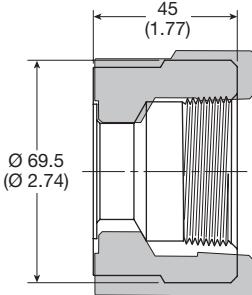


Ordering Information

P3YKA	9	B	CP
Basic Series			
Port Blocks P3YKA	Thread Type BSPP 1	Port Size 1-1/2 B	
	NPT 9		

Material Specifications

Body	Aluminium
Weight	0.65 kg (1.43 lb)



Inches (mm)



Solenoid Operators - CNOMO

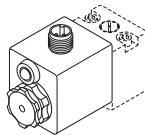
Technical Data -

Solenoid operators, coil combinations

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

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

Solenoid Coils with M12 Connection



Voltage	Part Number	Weight (Kg)
Direct current 24VDC	P2FC6449	0.065

Transients

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

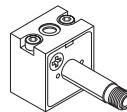
Materials

Pilot Valve

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

Coil

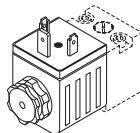
Encapsulation material:	Thermoplastic as standard Duroplast for M12 connection
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Spare Base Solenoid Pilot Operator
CNOMO NC

Description	Part Number	Weight (Kg)
Non-lock Manual Override	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 DIN A or Industrial B Connection



Voltage	22mm x 30mm Part Number B Industrial Standard	Weight (Kg)	30mm x 30mm Part Number 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

Most popular.

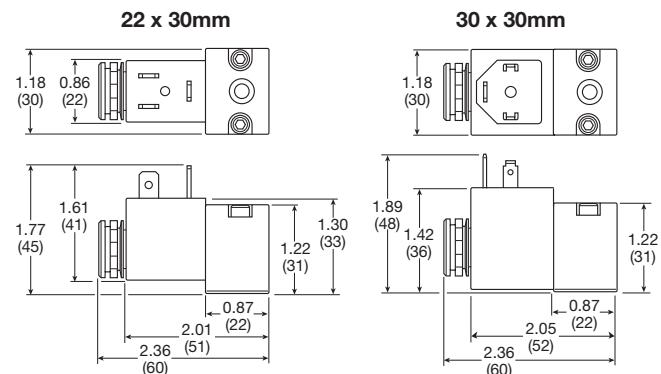


For inventory, lead times, and kit lookup, visit www.pdnplu.com

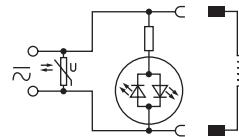
Solenoid Connectors / Cable Plugs EN175301-803

Description		Part Number 22mm Form B Industrial	Part Number 30mm Form A DIN 43650A
With standard screw	Standard IP65 without flying lead	PS2429BP	PS2028BP
	With LED and protection 24VAC/DC	PS243079BP	PS203279BP
	With LED and protection 110VAC	PS243083BP	PS203283BP
With cable	Standard with 2m cable IP65	PS2429JBP	PS2028JCP
	24VAC/DC, 2m cable LED and protection IP65	PS2430J79BP	PS2032J79CP
	110VAC/DC, 2m cable LED and protection IP65	PS2430J83BP	PS2032J83CP

Solenoid Coil Dimensions mm (inches)



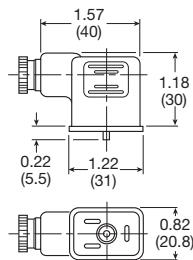
Electrical Schematics



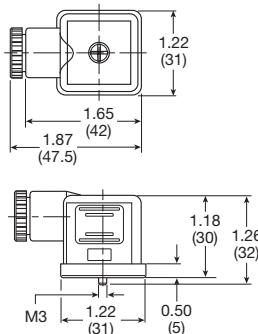
PS243079BP	PS203279BP
PS2430J79BP	PS2032J79CP
PS243083BP	PS203283BP
PS2430J83BP	PS2032J83CP
PS294679BP	PS294683BP
PS2946J79BP	PS2946J83BP

Cable Plug Dimensions mm (inches)

22mm Form B industrial cable plugs

PS2429BP

30mm DIN 43650A cable plugs

PS2028BP

Most popular.



For inventory, lead times, and kit lookup, visit www.pdnplu.com

Description	Connection	Weight lb (kg)	Part Number		
0.01 micron Element Kit			P3YKA00ESC		
5 micron Element Kit			P3YKA00ESE		
Adsorber Element Kit			P3YKA00ESA		
Angle Bracket + Metal Lock Ring			P3YKA00MS		
Bowl Kit With Combined Manual / Semi-Auto Drain			P3YKA00BSC		
Bowl Kit With Auto Drain			P3YKA00BSA		
Bowl Kit			P3YKA00BSN		
Connector O-Ring Kit	Qty: 5		P3YKA08CY		
Differential Pressure Indicator Kit			P3YKA00RQ		
Diaphragm Kit (Relieving Type)			P3YKA00RR		
Diaphragm Kit (Non-Relieving Type)			P3YKA00RN		
Key Lock (Replacement)			P3XKA00AS		
Lubricator Oil	F442001 - 1 Qt. F442002 - 1 Gal	2.03 (0.92)	F442001 F442002		
Neck Mounting Bracket Kit		8.27 (3.75)	P3YKA00MS		
P3y Connecting Kit		0.11 (0.05)	P3YKA00CB		
Panel Mounting Nut (Aluminium)		1.54 (0.70)	P3YKA00MM		
Pressure Gauge	0 to 160 psig (0 to 10 bar)	1/4"	0.13 (0.06)	K4520N14160	
	0 to 300 psig (0 to 20 bar)	1/4"	0.13 (0.06)	K4520N14300	
Refill Plug			P3YKA00PL		
Wall Mounting Brackets		0.44 (0.2)	P3YKA00CW		

 Most popular.

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 Glasses: To avoid potential polycarbonate bowl failures:

- Do not locate polycarbonate bowls or sight glasses in areas where they could be subject to direct sunlight, impact blow, or temperatures outside of the rated range.
- Do not expose or clean polycarbonate bowls with detergents, chlorinated hydro-carbons, ketones, esters or certain alcohols.
- Do not use polycarbonate bowls or sight glasses in air systems where compressors are lubricated with fire resistant fluids such as phosphate ester and di-ester lubricants.



For inventory, lead times, and kit lookup, visit www.pdnplu.com

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 4.9.

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.

PARKER-HANNIFIN CORPORATION
OFFER OF SALE

1. Definitions. As used herein, the following terms have the meanings indicated.

Buyer: means any customer receiving a Quote for Products.

Goods: means any tangible part, system or component to be supplied by Seller.

Products: means the Goods, Services and/or Software as described in a Quote.

Quote: means the offer or proposal made by Seller to Buyer for the supply of Products.

Seller: means Parker-Hannifin Corporation, including all divisions and businesses thereof.

Services: means any services to be provided by Seller.

Software: means any software related to the Goods, whether embedded or separately downloaded.

Terms: means the terms and conditions of this Offer of Sale.

2. Terms. All sales of Products by Seller are expressly conditioned upon, and will be governed by the acceptance of, these Terms. These Terms are incorporated into any Quote provided by Seller to Buyer. Buyer's order for any Products whether communicated to Seller verbally, in writing, by electronic data interface or other electronic commerce, shall constitute acceptance of these Terms. Seller objects to any contrary or additional terms or conditions of Buyer. Reference in Seller's order acknowledgement to Buyer's purchase order or purchase order number shall in no way constitute an acceptance of any of Buyer's terms or conditions of purchase. No modification to these Terms will be binding on Seller unless agreed to in writing and signed by an authorized representative of Seller.

3. Price; Payment. The Products set forth in the Quote are offered for sale at the prices indicated in the Quote. Unless otherwise specifically stated in the Quote, prices are valid for thirty (30) days and do not include any sales, use, or other taxes or duties. Seller reserves the right to modify prices at any time to adjust for any raw material price fluctuations. Unless otherwise specified by Seller, all prices are F.C.A. Seller's facility (INCOTERMS 2020). All sales are contingent upon credit approval and full payment for all purchases is due thirty (30) days from the date of invoice (or such date as may be specified in the Quote). Unpaid invoices beyond the specified payment date incur interest at the rate of 1.5% per month or the maximum allowable rate under applicable law.

4. Shipment; Delivery; Title and Risk of Loss. All delivery dates are approximate, and Seller is not responsible for damages resulting from any delay. Regardless of the manner of shipment, delivery occurs and title and risk of loss or damage pass to Buyer, upon placement of the Products with the carrier at Seller's facility. Unless otherwise agreed prior to shipment and for domestic delivery locations only, Seller will select and arrange, at Buyer's sole expense, the carrier and means of delivery. When Seller selects and

arranges the carrier and means of delivery, freight and insurance costs for shipment to the designated delivery location will be prepaid by Seller and added as a separate line item to the invoice. Buyer shall be responsible for any additional shipping charges incurred by Seller due to Buyer's acts or omissions. Buyer shall not return or repackage any Products without the prior written authorization from Seller, and any return shall be at the sole cost and expense of Buyer.

5. Warranty. The warranty for the Products is as follows: (i) Goods are warranted against defects in material or workmanship for a period of twelve (12) months from the date of delivery or 2,000 hours of use, whichever occurs first; (ii) Services shall be performed in accordance with generally accepted practices and using the degree of care and skill that is ordinarily exercised and customary in the field to which the Services pertain and are warranted for a period of six (6) months from the date of completion of the Services; and (iii) Software is only warranted to perform in accordance with applicable specifications provided by Seller to Buyer for ninety (90) days from the date of delivery or, when downloaded by a Buyer or end-user, from the date of the initial download. All prices are based upon the exclusive limited warranty stated above, and upon the following disclaimer:

EXEMPTION CLAUSE; DISCLAIMER OF WARRANTY, CONDITIONS, REPRESENTATIONS: THIS WARRANTY IS THE SOLE AND ENTIRE WARRANTY, CONDITION, AND REPRESENTATION, PERTAINING TO PRODUCTS. SELLER DISCLAIMS ALL OTHER WARRANTIES, CONDITIONS, AND REPRESENTATIONS, WHETHER STATUTORY, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THOSE RELATING TO DESIGN, NONINFRINGEMENT, MERCHANTABILITY, AND FITNESS FOR A PARTICULAR PURPOSE. SELLER DOES NOT WARRANT THAT THE SOFTWARE IS ERROR-FREE OR FAULT-TOLERANT, OR THAT BUYER'S USE THEREOF WILL BE SECURE OR UNINTERRUPTED. UNLESS OTHERWISE AUTHORIZED IN WRITING BY SELLER, THE SOFTWARE SHALL NOT BE USED IN CONNECTION WITH HAZARDOUS OR HIGH RISK ACTIVITIES OR ENVIRONMENTS. EXCEPT AS EXPRESSLY STATED HEREIN, ALL PRODUCTS ARE PROVIDED "AS IS".

6. Claims; Commencement of Actions. Buyer shall promptly inspect all Products upon receipt. No claims for shortages will be allowed unless reported to Seller within ten (10) days of delivery. Buyer shall notify Seller of any alleged breach of warranty within thirty (30) days after the date the non-conformance is or should have been discovered by Buyer. Any claim or action against Seller based upon breach of contract or any other theory, including tort, negligence, or otherwise must be commenced within twelve (12) months from the date of the alleged breach or other alleged event, without regard to the date of discovery.

7. Limitation of Liability. IN THE EVENT OF A BREACH OF WARRANTY, SELLER WILL, AT ITS OPTION, REPAIR OR REPLACE THE NON-CONFORMING PRODUCT, RE-PERFORM THE SERVICES, OR REFUND THE PURCHASE PRICE PAID WITHIN A REASONABLE PERIOD OF TIME. **IN NO EVENT IS SELLER LIABLE FOR**

ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES INCLUDING ANY LOSS OF REVENUE OR PROFITS, WHETHER BASED IN CONTRACT, TORT OR OTHER LEGAL THEORY. IN NO EVENT SHALL SELLER'S LIABILITY UNDER ANY CLAIM MADE BY BUYER EXCEED THE PURCHASE PRICE PAID FOR THE PRODUCTS.

8. Confidential Information. Buyer acknowledges and agrees that any technical, commercial, or other confidential information of Seller, including, without limitation, pricing, technical drawings or prints and/or part lists, which has been or will be disclosed, delivered or made available, whether directly or indirectly, to Buyer ("Confidential Information"), has been and will be received in confidence and will remain the property of Seller. Buyer further agrees that it will not use Seller's Confidential Information for any purpose other than for the benefit of Seller.

9. Loss to Buyer's Property. Any tools, patterns, materials, equipment or information furnished by Buyer or which are or become Buyer's property ("Buyer's Property"), will be considered obsolete and may be destroyed by Seller after two (2) consecutive years have elapsed without Buyer ordering the Products manufactured using Buyer's Property. Furthermore, Seller shall not be responsible for any loss or damage to Buyer's Property while it is in Seller's possession or control.

10. Special Tooling. "Special Tooling" includes but is not limited to tools, jigs, fixtures and associated manufacturing equipment acquired or necessary to manufacture Goods. Seller may impose a tooling charge for any Special Tooling. 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 the Special Tooling, even if such Special Tooling has been specially converted or adapted for manufacture of Goods for Buyer and notwithstanding any charges paid by Buyer. Unless otherwise agreed, Seller has the right to alter, discard or otherwise dispose of any Special Tooling or other property owned by Seller in its sole discretion at any time.

11. Security Interest. To secure payment of all sums due from Buyer, Seller retains a security interest in all Products delivered to Buyer and, Buyer's acceptance of these Terms is deemed to be 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 Seller's security interest.

12. User Responsibility. Buyer, through its own analysis and testing, is solely responsible for making the final selection of the Products and assuring that all performance, endurance, maintenance, safety and warning requirements of the application of the Products are met. Buyer must analyze all aspects of the application and follow applicable industry standards, specifications, and any technical information provided with the Quote or the Products, such as Seller's instructions, guides and specifications. If Seller provides options of or for Products based upon data or specifications provided by Buyer, Buyer is responsible for determining that such data and specifications are suitable and sufficient for all applications and reasonably foreseeable uses of the Products. In the event Buyer is not the end-user

of the Products, Buyer will ensure such end-user complies with this paragraph.

13. Use of Products, Indemnity by Buyer. Buyer shall comply with all instructions, guides and specifications provided by Seller with the Quote or the Products.

Unauthorized Uses. If Buyer uses or resells the Products in any way prohibited by Seller's instructions, guides or specifications, or Buyer otherwise fails to comply with Seller's instructions, guides and specifications, Buyer acknowledges that any such use, resale, or non-compliance is at Buyer's sole risk. Further, Buyer shall indemnify, defend, and hold Seller harmless from any losses, claims, liabilities, damages, lawsuits, judgments and costs (including attorney fees and defense costs), whether for personal injury, property damage, intellectual property infringement or any other claim, arising out of or in connection with: (a) improper selection, design, specification, application, or any misuse of Products; (b) any act or omission, negligent or otherwise, of Buyer; (c) Seller's use of patterns, tools, equipment, plans, drawings, designs, specifications or other information or things furnished by Buyer; (d) damage to the Products from an external cause, repair or attempted repair by anyone other than Seller, failure to follow instructions, guides and specifications provided by Seller, use with goods not provided by Seller, or opening, modifying, deconstructing, tampering with or repackaging the Products; or (e) Buyer's failure to comply with these Terms. Seller shall not indemnify Buyer under any circumstance except as otherwise provided in these Terms.

14. Cancellations and Changes. Buyer may not cancel or modify, including but not limited to movement of delivery dates for the Products, any order 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 and any additional expense. Seller, at any time, may change features, specifications, designs and availability of Products.

15. Limitation on Assignment. Buyer may not assign its rights or obligations without the prior written consent of Seller.

16. Force Majeure. Seller is not liable for delay or failure to perform any of its obligations by reason of events or circumstances beyond its reasonable control. Such circumstances include without limitation: accidents, labor disputes or stoppages, government acts or orders, acts of nature, pandemics, epidemics, other widespread illness, or public health emergency, delays or failures in delivery from carriers or suppliers, shortages of materials, war (whether declared or not) or the serious threat of same, riots, rebellions, acts of terrorism, fire or any reason whether similar to the foregoing or otherwise. Seller will resume performance as soon as practicable after the event of force majeure has been removed. All delivery dates affected by force majeure shall be tolled for the duration of such force majeure and rescheduled for mutually agreed dates as soon as practicable after the force majeure condition ceases to exist. Force majeure shall not include financial distress, insolvency, bankruptcy, or other similar conditions affecting one of the parties, affiliates and/or sub-contractors.

17. Waiver and Severability. Failure to enforce any provision of these Terms will not invalidate that provision; nor will any such failure prejudice either party's right to enforce that provision in the future. Invalidation of any provision of these Terms shall not invalidate any other provision herein and, the remaining provisions will remain in full force and effect.

18. Termination. Seller may terminate any agreement governed by or arising from these Terms for any reason and at any time by giving Buyer thirty (30) days prior written notice. Seller may immediately terminate, in writing, if Buyer: (a) breaches any provision of these Terms, (b) becomes or is deemed insolvent, (c) appoints or has appointed a trustee, receiver or custodian for all or any part of Buyer's property, (d) files a petition for relief in bankruptcy on its own behalf, or one is filed against Buyer by a third party, (e) makes an assignment for the benefit of creditors; or (f) dissolves its business or liquidates all or a majority of its assets.

19. Ownership of Software. Seller retains ownership of all Software supplied to Buyer hereunder. In no event shall Buyer obtain any greater right in and to the Software than a right in the nature of a license limited to the use thereof and subject to compliance with any other terms provided with the Software.

20. Indemnity for Infringement of Intellectual Property Rights. Seller is not liable for infringement of any patents, trademarks, copyrights, trade dress, trade secrets or similar rights ("Intellectual Property Rights") except as provided in this Section. 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 a third party claim that one or more of the Products sold hereunder infringes the Intellectual Property Rights of a third party in the country of delivery of the Products by Seller to Buyer. Seller's obligation to defend and indemnify Buyer is contingent on Buyer notifying Seller within ten (10) days after Buyer becomes aware of any such claim, and Seller having sole control over the defense of the claim including all negotiations for settlement or compromise. If one or more Products sold hereunder is subject to such a claim, Seller may, at its sole expense and option, procure for Buyer the right to continue using the Products, replace or modify the Products so as to render them non-infringing, or offer to accept return of the Products and refund the purchase price less a reasonable allowance for depreciation. Seller has no obligation or liability for any claim of infringement: (i) arising from information provided by Buyer; or (ii) directed to any Products provided hereunder for which the designs are specified in whole or part by Buyer; or (iii) resulting from the modification, combination or use in a system of any Products provided hereunder. The foregoing provisions of this Section constitute Seller's sole and exclusive liability and Buyer's sole and exclusive remedy for claims of infringement of Intellectual Property Rights.

21. Governing Law. These Terms and the sale and delivery of all Products are 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 the sale and delivery of the Products.

22. Entire Agreement. These Terms, along with the terms set forth in the main body of any Quote, forms the entire agreement between the Buyer and Seller and constitutes the final, complete and exclusive expression of the terms of sale and purchase. In the event of a conflict between any term set forth in the main body of a Quote and these Terms, the terms set forth in the main body of the Quote shall prevail. All prior or contemporaneous written or oral agreements or negotiations with respect to the subject matter shall have no effect. These Terms may not be modified unless in writing and signed by an authorized representative of Seller.

23. Compliance with Laws. Buyer agrees to comply with all applicable laws, regulations, and industry and professional standards, including those of the United States of America, and the country or countries in which Buyer may operate, including without limitation the U.S. Foreign Corrupt Practices Act ("FCPA"), the U.S. Anti-Kickback Act ("Anti-Kickback Act"), U.S. and E.U. export control and sanctions laws ("Export Laws"), the U.S. Food Drug and Cosmetic Act ("FDCA"), and the rules and regulations promulgated by the U.S. Food and Drug Administration ("FDA"), each as currently amended. Buyer agrees to indemnify, defend, and hold harmless Seller from the consequences of any violation of such laws, regulations and standards by Buyer, its employees or agents. Buyer acknowledges that it is familiar with all applicable provisions of the FCPA, the Anti-Kickback Act, Export Laws, the FDCA and the FDA and certifies that Buyer will adhere to the requirements thereof and not take any action that would make Seller violate such requirements. Buyer represents and agrees that Buyer will not make any payment or give anything of value, directly or indirectly, to any governmental official, foreign political party or official thereof, candidate for foreign political office, or commercial entity or person, for any improper purpose, including the purpose of influencing such person to purchase Products or otherwise benefit the business of Seller. Buyer further represents and agrees that it will not receive, use, service, transfer or ship any Products from Seller in a manner or for a purpose that violates Export Laws or would cause Seller to be in violation of Export Laws. Buyer agrees to promptly and reliably provide Seller all requested information or documents, including end-user statements and other written assurances, concerning Buyer's ongoing compliance with Export Laws.

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