



Air Preparation Products
Regulators Products

General	K2-K41
Dial	K42-K49
Pilot	K50-K63
Proportional	K64-K89
Precision	K90-K103
Water	K104-K109

Regulator
Products

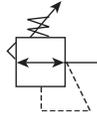
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For inventory, lead time, and kit lookup, visit www.pdnplu.com

14R Regulators – Miniature

- Unbalanced poppet standard
- Solid control piston with lip seal for extended life
- Non-rising adjusting knob
- Compact design
- Very easy to service
- 1/8", 1/4" ports (NPT, BSPP, BSPT)



Port size	Description	Part number
1/8"	Without gauge	14R013FC
1/8"	With gauge	14R018FC
1/4"	Without gauge	14R113FC
1/4"	With gauge	14R118FC

NOTE: 1.218 Dia. (31 mm) hole required for panel mounting.

Operating information

Supply pressure (max):	0 to 300 psig (0 to 20.7 bar)
Secondary pressure ranges	
Standard	2 to 125 psig (0 to 8.6 bar)
Medium	1 to 60 psig (0 to 4.1 bar)
Medium	1 to 30 psig (0 to 2.1 bar)
Low	1 to 15 psig (0 to 1 bar)
Operating temperature:	32°F to 125°F (0°C to 52°C)
Low temperature	-4°F to 125°F (-20°C to 52°C)
Flow capacity†:	
High flow	1/8" 13 scfm (6.1 dm³/s, ANR)
Low flow	1/4" 15 scfm (7.1 dm³/s, ANR)
Gauge ports (2):	1/8 or 1/4 inch
Weight:	0.3 lb (0.14 kg)

† scfm = Standard cubic feet per minute at 100 psig inlet, 90 psig no flow secondary setting and 10 psig pressure drop.

Ordering information:

14R 1 13 F C

Port Size	
1/8 inch pipe, 1/8 inch gauge port	0
1/4 inch pipe, 1/8 inch gauge port	1
1/4 inch pipe, 1/4 inch gauge port	B
1/8 inch pipe, no gauge port	C
Manifold mounting	M

Port Type	
Blank	NPT
1	BSPP
2	BSPT

Preset / Pressure Limited	
Blank	None
XXX*	Preset pressure
XXX*	Pressure limited

* Available preset / pressure limited range, 10 to 90 psig in 5 psig increments. For higher pressures, contact factory.
(Example: 065 = 65 psig)

Pressure Range			
Yellow Knob		Black Knob	
Without gauge			
30 psig	10	30 psig	B0
60 psig	11	60 psig	B1
15 psig	12	15 psig	B2
125 psig	13	125 psig	B3
With gauge*			
30 psig	15	30 psig	B5
60 psig	16	60 psig	B6
15 psig	17	15 psig	B7
125 psig	18	125 psig	B8

* Not available with BSPP or BSPT port types.

Engineering Level	
C	Current

Relief	
F	Relieving
G	Non-relieving
H	Low temp. relieving
J	Low temp. non-relieving

Options	
Blank	No options
L†	Preset non-adjustable
P†	Preset adjustable
S†	Pressure limiter max. adjustable
T†	Pressure limiter max. non-adjustable

† Inlet pressure is 100 psig. For other pressures contact factory.

Spring Type by Preset / Limited Pressure:
 For Preset / Limited Pressure 10 to 25 use 30 psi spring
 For Preset / Limited Pressure 26 to 50 use 60 psi spring
 For Preset / Limited Pressure 51 to 90 use 125 PSI Spring

Most popular.



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

Miniature Regulators

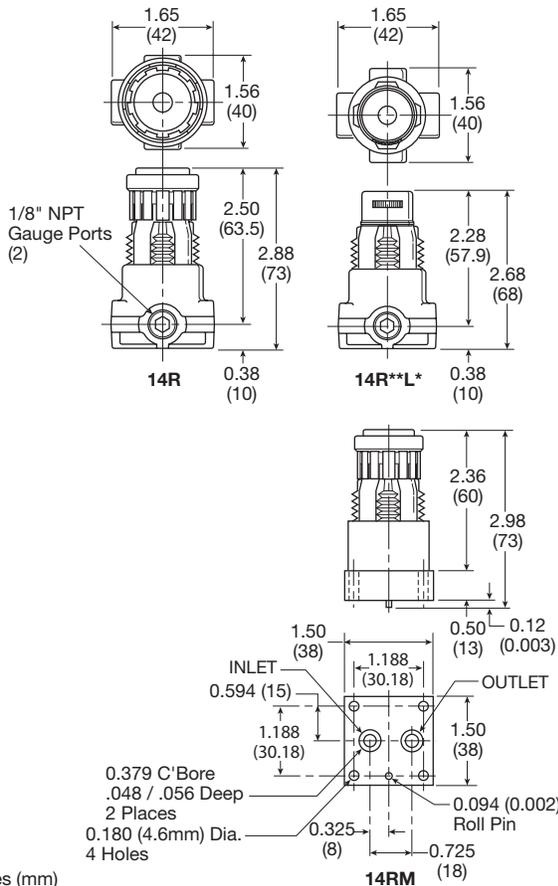
Material Specifications

Adjusting nut	Brass
Adjusting stem & spring	Steel
Body	Zinc
Bonnet, seat, piston & valve poppet	Plastic
Seals	Nitrile

Repair and Service Kits

Bonnet assembly kit	L01369
Bonnet tamperproof kit	P01265
30 psig gauge, 1/8" NPT (0 to 2.1 bar)	K4515N18030
60 psig gauge, 1/8" NPT (0 to 4.1 bar)	K4515N18060
160 psig gauge, 1/8" NPT (0 to 11.0 bar)	K4515N18160
60 psig gauge, 1/4" NPT (0 to 4.1 bar)	K4520N14060
160 psig gauge, 1/4" NPT (0 to 11.0 bar)	K4520N14160
Mounting bracket kit* (includes panel mount nut)	PS417BP
Plastic panel mount nuts*	P78652
Metal panel mount nuts*	P01531
Unbalanced non-relieving, poppet / piston kit	PS428P
Unbalanced relieving, poppet / piston kit	PS426P
1-15 psig spring (yellow)	P01176
1-30 psig spring (black)	P01175
1-60 psig spring (white)	P01174
2-125 psig spring (gold)	P01173

* Tighten panel mount nut 2.8 to 3.4 Nm (25 to 30 in-lbs) of torque.

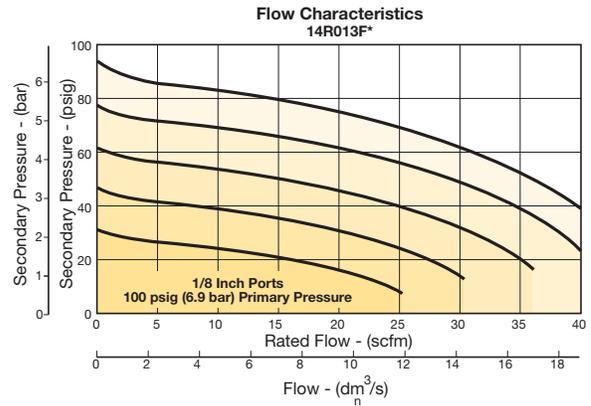


Inches (mm)

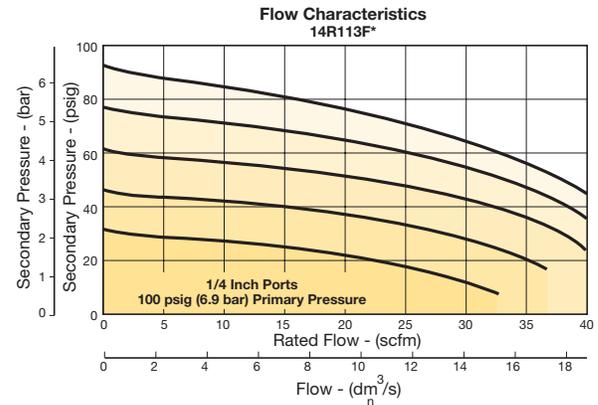
Air Preparation Products Regulator Products

Flow Charts

1/8" Ports



1/4" Ports



⚠ 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.



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General

Dial

Pilot

Proportional

Precision

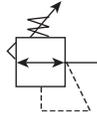
Water

K

Regulator
Products

P3A-R Regulators – Miniature

- Lightweight plastic body
- Non-rising adjusting knob
- Solid control piston with lip seal for extended life
- Unbalanced poppet standard
- Two full flow 1/8" gauge ports
- Reverse flow capability
- 1/8", 1/4" ports (NPT)



Port size	Description	Part number
1/8"	Without gauge	P3A-RN91YNNN
1/8"	With gauge	P3A-RN91YGNN
1/4"	Without gauge	P3A-RN92YNNN
1/4"	With gauge	P3A-RN92YGNN

NOTE: 1.218 Dia. (31 mm) hole required for panel mounting.

Operating information

Supply pressure (max):	120 psig (8.3 bar)	
Secondary pressure:	15 psig spring 1 to 15 psig (0.07 to 1.0 bar)	
	30 psig spring 6 to 30 psig (0.4 to 2.1 bar)	
	60 psig spring 6 to 60 psig (0.4 to 4.1 bar)	
	110 psig spring 6 to 110 psig (0.4 to 7.6 bar)	
Operating temperature:	32°F to 125°F (0°C to 52°C)	
Flow capacity†:	1/8" 13 scfm (6.1 dm³/s, ANR)	
	High flow	1/4" 15 scfm (7.1 dm³/s, ANR)
Gauge ports (2):	1/8 inch	
Weight:	0.3 lb (0.14 kg)	

† scfm = Standard cubic feet per minute at 100 psig inlet, 90 psig no flow secondary setting and 10 psig pressure drop.

Ordering information:

P3A-RN 9 1 Y N N N

Port Type	Port Size	Relief	Pressure / Gauge	Option	Preset / Pressure Limited
NPT Female	1/8 inch	Non-relieving, black knob	Without gauge	N	Blank
	1/4 inch	Relieving, black knob	15 psig (0 to 1 bar)	L†	XXX*
		Non-relieving, yellow knob	30 psig (0 to 2 bar)	P†	XXX*
		Relieving, yellow knob	60 psig (0 to 4 bar)	S†	
			120 psig (0 to 8 bar)	T†	
			With gauge		
			15 psig (0 to 1 bar)		
			30 psig (0 to 2 bar)		
			60 psig (0 to 4 bar)		
			120 psig (0 to 8 bar)		

* Available preset / pressure limited range, 10 to 90 psig in 5 psig increments. For higher pressures, contact factory. (Example: 065 = 65 psig)

† Inlet pressure is 100 psig. For other pressures contact factory.

Most popular.



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Miniature Regulators

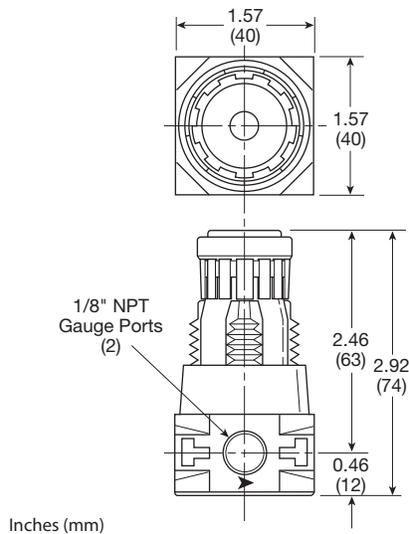
Material Specifications

Adjusting nut	Brass
Adjusting stem & spring	Steel
Poppet return spring	Stainless Steel
Body	Plastic
Bonnet, seat & piston	Plastic
Seals	Nitrile
Valve poppet	Plastic & nitrile

Repair and Service Kits

30 psig gauge, 1/8" NPT (0 to 2.1 bar)	K4515N18030
60 psig gauge, 1/8" NPT (0 to 4.1 bar)	K4515N18060
160 psig gauge, 1/8" NPT (0 to 11.0 bar)	K4515N18160
Mounting bracket kit* (includes panel mount nut)	PS417BP
Panel mount nut*	P78652
Unbalanced non-relieving, poppet / piston kit	PS428P
Unbalanced relieving, poppet / piston kit	PS426P
1-15 psig Spring (yellow)	P01176
1-30 psig spring (black)	P01175
1-60 psig spring (white)	P01174
5-110 psig spring (gold)	P01173

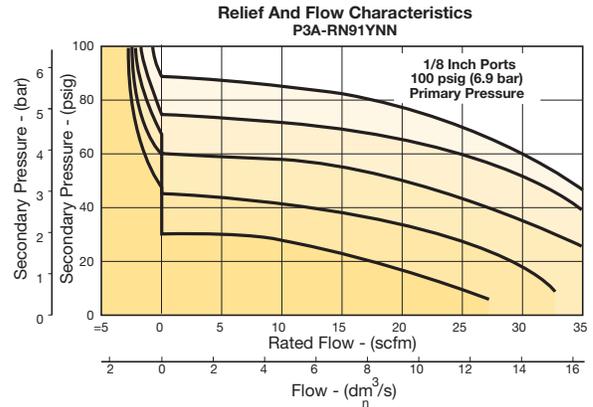
* Tighten panel mount nut 2.8 to 3.4 Nm (25 to 30 in-lbs) of torque.



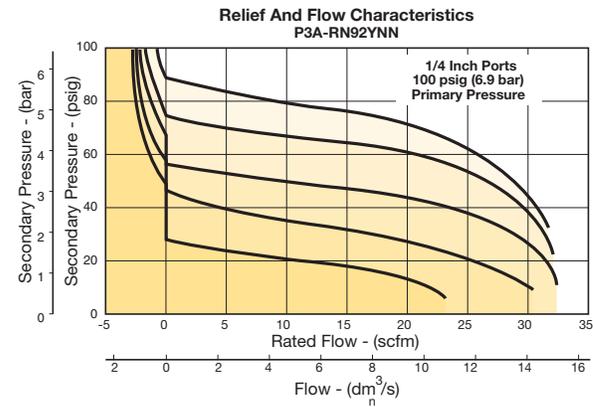
Air Preparation Products Regulator Products

Flow Charts

1/8" port



1/4" port



⚠ 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.

General

Dial

Pilot

Proportional

Precision

Water

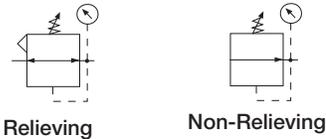
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Regulator
Products



R34 Regulators – Miniature

- Diaphragm operated for fast response
- Large diaphragm to valve area ratio for precise regulation and high flow capacity
- Balanced valve design for precise regulation
- Available in 2 or 4 port design
- Available with a manifold mount to minimize plumbing
- Suitable for low temperature applications
- Non-rising adjusting knob
- 1/8", 1/4" ports (NPT, BSPP)



R344-02C



R342-0MC

Port size	Description	Part number	
		Without gauge	With gauge
1/8"	Relieving, 0 to 30 psig	R344-01A	R344-01AG
1/8"	Relieving, 0 to 60 psig	R344-01B	R344-01BG
1/8"	Relieving, 0 to 125 psig	R344-01C	R344-01CG
1/4"	Relieving, 0 to 30 psig	R344-02A	R344-02AG
1/4"	Relieving, 0 to 60 psig	R344-02B	R344-02BG
1/4"	Relieving, 0 to 125 psig	R344-02C	R344-02CG
Manifold	Relieving, 0 to 30 psig	R342-0MA	-
Manifold	Relieving, 0 to 60 psig	R342-0MB	-
Manifold	Relieving, 0 to 125 psig	R342-0MC	-

Operating information

Supply pressure (max):	300 psig (0 to 20.7 bar)
Operating temperature:	-40°F to 150°F (-40°C to 65.5°C)
Flow capacity†:	
High flow	1/8" 17 scfm (8.0 dm³/s, ANR)
	1/4" 19 scfm (8.9 dm³/s, ANR)
Gauge ports (2):	1/8 inch (no gauge port version available)
Weight:	0.25 lb (0.11 kg)

† scfm = Standard cubic feet per minute at 100 psig inlet, 90 psig no flow secondary setting and 10 psig pressure drop.

Ordering information:

R34 4 - 02 C G

Number of Ports	
2 Ports	2
4 Ports	4*

* Not available with manifold mount.

Thread	
NPT	-
BSPP	G

Port	
1/8 inch	01
1/4 inch	02
Manifold mount	0M

Pressure range	
0 to 30 psi	A
0 to 60 psi	B
0 to 125 psi	C

Preset	
Blank	None
XXX*	Preset pressure

* Available preset / pressure limited range, 10 to 90 psig in 5 psig increments. For higher pressures, contact factory. (Example: 065 = 65 psig)

Options	
Blank	No options
L†	Preset non-adjustable
M†	Preset adjustable

† Inlet pressure is 100 psig. For other pressures contact factory.

Options	
Blank	No option
G	Gauge
K	Non-relieving diaphragm
N	Unbalanced
P	Panel mount nut
X64	Fluorocarbon elastomers

Most popular.



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

Miniature Regulators

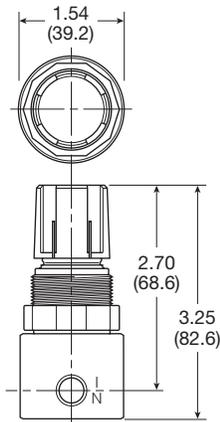
Material Specifications

Body	Aluminum
Bonnet	Acetal
Diaphragm & seals	Nitrile
Valve assembly	Brass
Springs	Steel
Panel Nut	Acetal

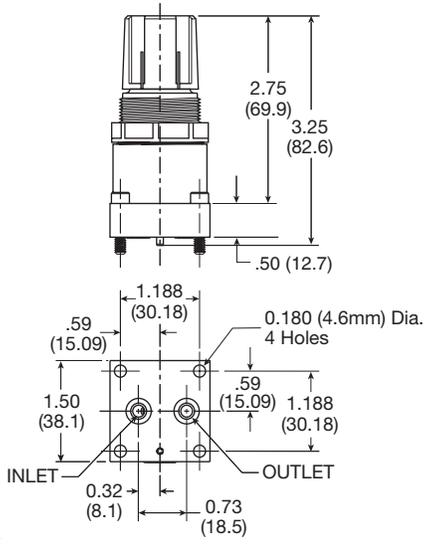
Repair and Service Kits

Diaphragm assembly, non-relieving	GRP-96-726
Diaphragm assembly, relieving	GRP-96-725
0 to 30 psig (0 to 2.1 bar), spring, regulating	GRP-95-111
0 to 60 psig (0 to 4.1 bar) spring, regulating	GRP-96-718
0 to 125 psig (0 to 8.6 bar) spring, regulating	GRP-96-717
Panel mount nut, aluminum	R05X51-A
Panel mount nut, plastic	R05X51-P
Mounting bracket kit (includes panel mount nut)	SA161X57
1-1/2" Dial Face, 1/8 NPT, CBM, 0 to 60 psig (0 to 4.1 bar), gauge	K4515N18060
1-1/2" Dial Face, 1/8 NPT, CBM, 0 to 160 psig (0 to 11.0 bar), gauge	K4515N18160
Tamperproof knob kit	P31KB00AT

R342 / R344



R342-0MC

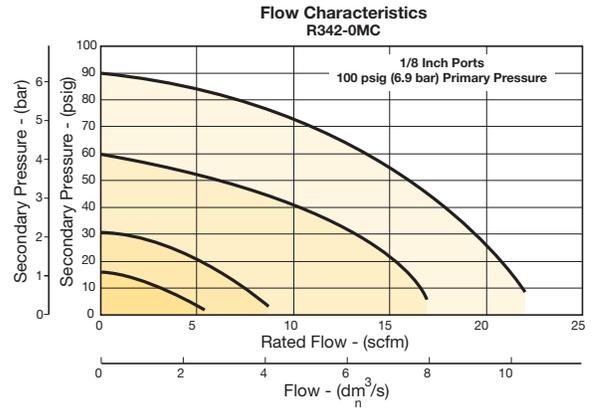


Inches (mm)

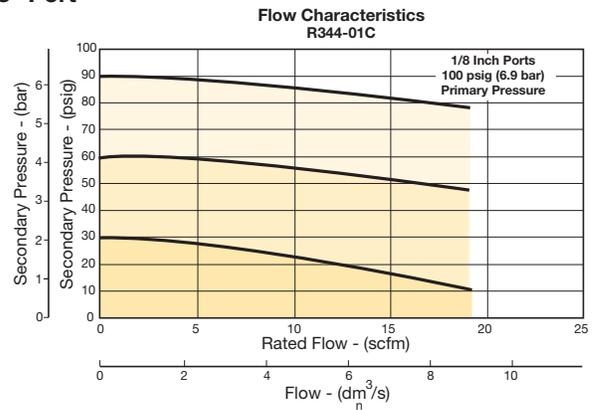
Air Preparation Products Regulator Products

Flow Charts

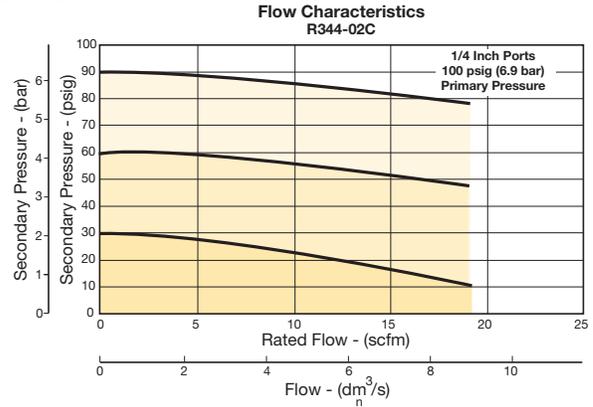
1/8" Manifold Mount



1/8" Port



1/4" Port



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

CAUTION:

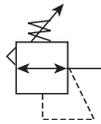
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R25 Regulators – Miniature

- Lightweight plastic body
- Unbalanced poppet standard
- Non-rising, push-to-lock adjusting knob
- Compact, 3.10 Inch (79 mm) high by 1.60 Inch (41 mm) wide
- Lightweight
- Diaphragm operated
- 1/8", 1/4" ports (NPT)



Operating information

Supply pressure (max):	Inlet 150 psig (10.0 bar)
Operating temperature:	40°F to 125°F (4°C to 52°C)
Gauge ports (2):	1/8 inch (can be used for full flow)
Weight:	0.25 lb (0.11 kg)

Port size	Description	Part number
1/8"	Relieving, 0-125 reduced pressure, without gauge	R25-01C
1/4"	Relieving, 0-125 reduced pressure, without gauge	R25-02C

NOTE: 1.250 Dia. (31.8 mm) hole required for panel mounting.

Ordering information:

R25		-		02		C		 	
Type		Port Size		Relief		Pressure Range			
Buna Elastomers R25		1/8 inch 01 1/4 inch 02		Blank Relieving P Panel Mount Nut		A 0 to 25 psig (0 to 2 bar) B 0 to 60 psig (0 to 4 bar) C 0 to 125 psig (0 to 125 (0 to 8 bar)			

Most popular.



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

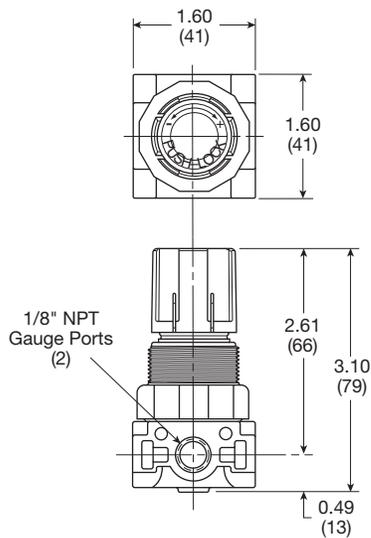
Miniature Regulators

Material Specifications

Adjusting screw	Steel
Body	Acetal
Bonnet and seat	Acetal
Diaphragm	Buna N
Seals	Buna N
Springs	Stainless steel
Valve poppet	Buna N

Repair and Service Kits

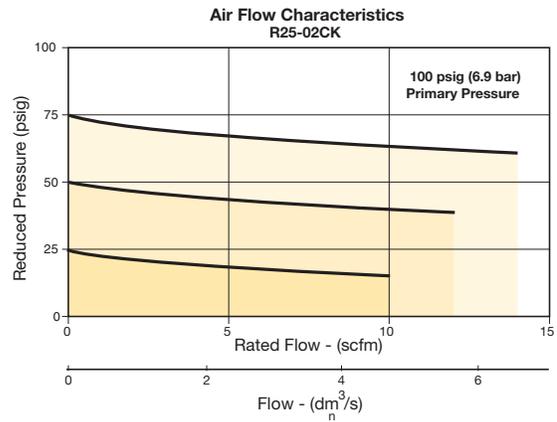
Panel mount nut, plastic	R05X51-P
Panel mount nut, aluminum	R05X51-A
Mounting bracket and nut	SA161X57
Relieving (Buna)	RKR25Y
Non-Relieving (Buna)	RKR25KY
0-25 psig spring	SPR-375-1
0-60 psig spring	SPR-376
0-125 psig spring	SPR-377



Inches (mm)

Air Preparation Products Regulator Products

Flow Charts



WARNING

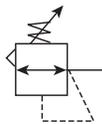
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R45 Regulators – Miniature

- Lightweight plastic body
- Unbalanced poppet standard
- Non-rising, push-to-lock adjusting knob
- Compact, 3.43 inch (87.1 mm) high by 2.06 inch (52.3 mm) wide
- Lightweight
- Diaphragm operated
- 1/4", 3/8" ports (NPT, BSPP)



Operating information

Supply pressure (max):	Inlet 150 psig (10.0 bar)
Operating temperature:	40°F to 125°F (4°C to 52°C)
Gauge ports (2):	1/4 inch (can be used for full flow)
Weight:	0.38 lb (0.17 kg)

Port size	Description	Part number
1/4"	Relieving, 0-125 reduced pressure, without gauge	R45-02C
3/8"	Relieving, 0-125 reduced pressure, without gauge	R45-03C

NOTE: 1.250 Dia. (31.8 mm) hole required for panel mounting.

Ordering information:

R45 - 02 C

Type Buna Elastomers R45	Port Size 1/4 inch 02 3/8 inch 03	Relief Blank Relieving P Panel Mount Nut
Pressure Range		
A 0 to 25 psig (0 to 2 bar)		
B 0 to 60 psig (0 to 4 bar)		
C 0 to 125 psig (0 to 8 bar)		

Most popular.



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

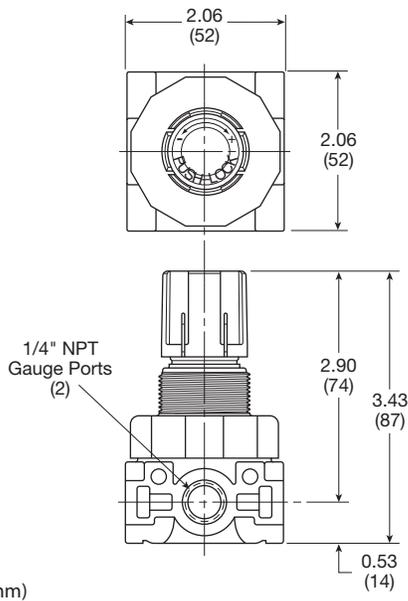
Miniature Regulators

Material Specifications

Adjusting screw	Steel
Body	Acetal
Bonnet and seat	Acetal
Diaphragm	Buna N
Seals	Buna N
Springs	Stainless steel
Valve Poppet	Buna N

Repair and Service Kits

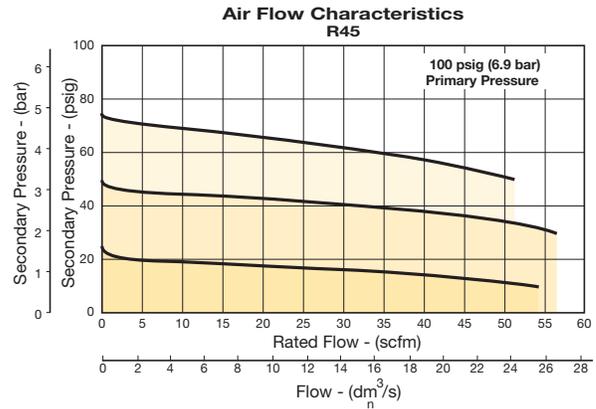
Panel mount nut, plastic	R05X51
Panel mount nut, aluminum	R05X51-A
Mounting bracket and nut	SA161X57
Relieving	RKR45Y
Non-Relieving	RKR45KY
0-25 psig spring	SPR-46
0-60 psig spring	SPR-47
0-125 psig spring	SPR-48



Inches (mm)

Air Preparation Products Regulator Products

Flow Charts



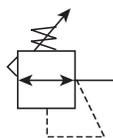
WARNING
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15R Regulators – Economy

- Solid control piston with resilient seat for service-free operation
- Non-rising “locking” adjusting knob
- Compact, 3.30 inch (84 mm) high by 2.12 inch (54 mm) wide
- Easily serviced
- 1/4", 3/8" ports (NPT)



Port size	Description	Part number
1/4"	Without gauge	15R113FB
1/4"	With gauge	15R118FB
3/8"	Without gauge	15R213FB
3/8"	With gauge	15R218FB

NOTE: 1.218 Dia. (31 mm) hole required for panel mounting.

Operating information

Supply pressure (max):	0 to 250 psig (0 to 17.2 bar)	
Secondary pressure ranges	Standard	2 to 125 psig (0 to 8.6 bar)
	Medium	1 to 60 psig (0 to 4.1 bar)
	Medium	1 to 30 psig (0 to 1.7 bar)
	Low	1 to 15 psig (0 to 1 bar)
Operating temperature:	32°F to 125°F (0°C to 52°C)	
	Low temperature	-4°F to 125°F (-20°C to 52°C)
Flow capacity†:	High flow	1/4" 21 scfm (9.9 dm³/s, ANR)
		3/8" 28 scfm (13.2 dm³/s, ANR)
Gauge ports (2):	1/4 inch	
	(can be used at full flow)	
Weight:	0.5 lb (0.23 kg)	

† scfm = Standard cubic feet per minute at 100 psig inlet, 90 psig no flow secondary setting and 10 psig pressure drop.

Ordering information:

15R
1
13
F
B

Port Size	Engineering Level
1/4 inch 1	B Current
3/8 inch 2	

Pressure Range	Relief
Without gauge	
15 psig 12	F Relieving
30 psig 10	G Non-relieving
60 psig 11	H Low temp relieving
125 psig 13	J Low temp non-relieving
With gauge	
15 psig 17	
30 psig 15	
60 psig 16	
125 psig 18	

Most popular.



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

Economy Regulators

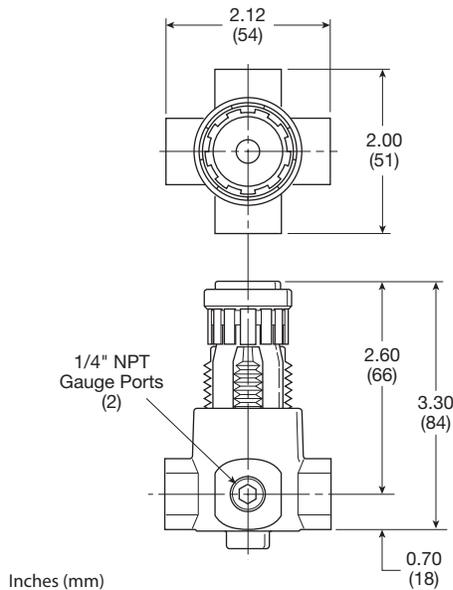
Material Specifications

Adjusting nut	Brass
Adjusting stem & spring	Steel
Body	Zinc
Bonnet, seat, piston & valve poppet	Plastic
Seals	Nitrile

Repair and Service Kits

Body Service Kit – Unbalanced	PS424BP
Bonnet Assembly Kit	L01369
30 psig, 1/8" NPT (0 to 2.1 bar) gauge	K4515N18030
60 psig, 1/8" NPT (0 to 4.1 bar) gauge	K4515N18060
160 psig, 1/8" NPT (0 to 11.0 bar) gauge	K4515N18160
60 psig, 1/4" NPT (0 to 4.1 bar) gauge	K4520N14060
160 psig, 1/4" NPT (0 to 11.0 bar) gauge	K4520N14160
Mounting bracket kit* (Includes panel mount nut)	PS417BP
Panel mount nuts*, plastic	P78652
Panel mount nuts*, metal	P01531
Poppet / piston kit, unbalanced, non-relieving	PS428P
Poppet / piston kit, unbalanced, relieving	PS426P
Seal, unbalanced	PS454B
1-15 psig spring (yellow)	P01176
1-30 psig spring (black)	P01175
1-60 psig spring (white)	P01174
2-125 psig spring (gold)	P01173

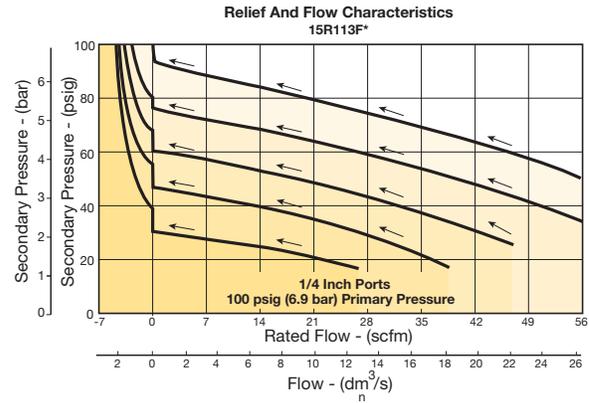
* Tighten panel mount nut 2.8 to 3.4 Nm (25 to 30 in-lbs) of torque.



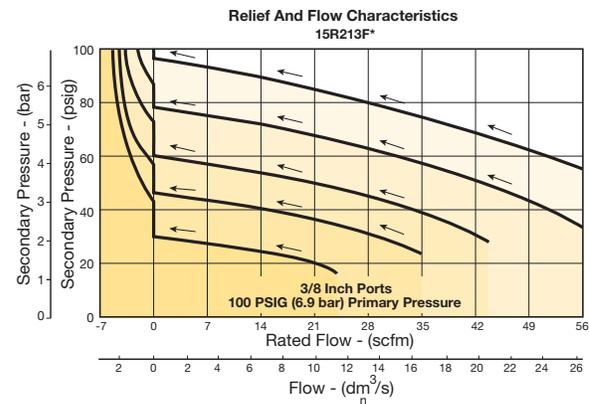
Air Preparation Products Regulator Products

Flow Charts

1/4" Regulator



3/8" 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.

General

Dial

Pilot

Proportional

Precision

Water

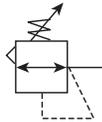
K

Regulator
Products

Semi-Precision Regulators

27R Regulators – Semi-Precision

- Fine adjustment sensitivity
- Good repeatability and minimal pressure drop
- High flow capacity
- Two 1/4" gauge ports
- Brass Poppet for long life
- Modular with 05 Series FRL
- Non-rising, removable knob
- Multiple porting options
- 1/4", 3/8" ports (NPT, BSPP, BSPT)



Port size	Description	Part number
1/4"	15 psig	27R112AD
1/4"	30 psig	27R110AD
1/4"	60 psig	27R114AD
1/4"	125 psig	27R113AD

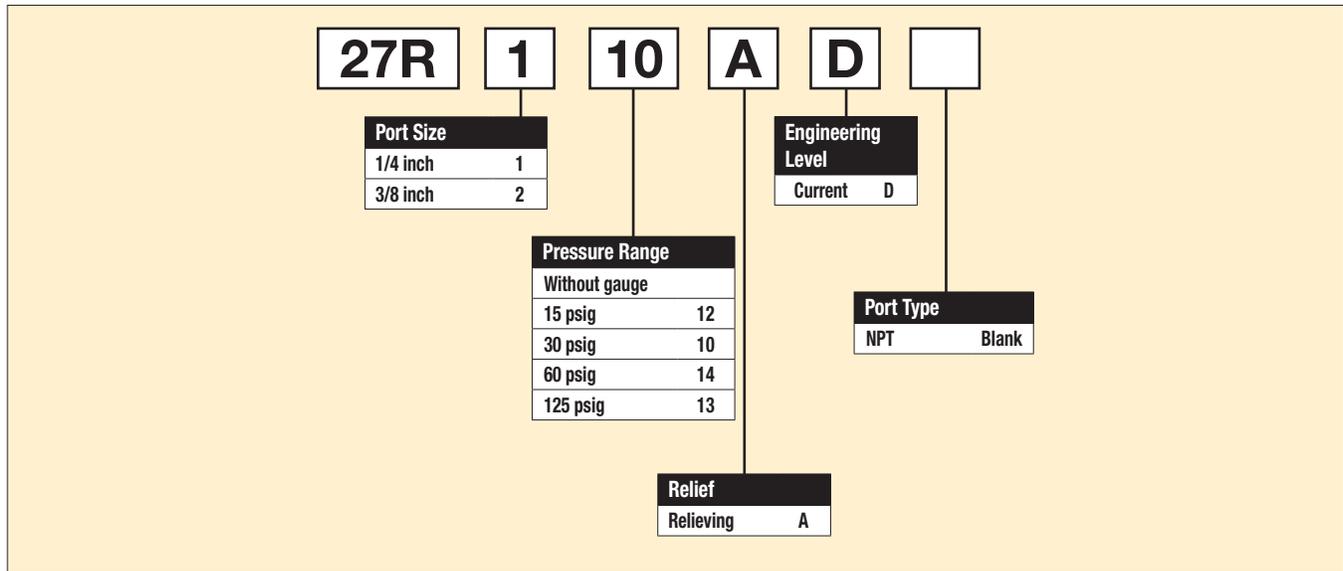
NOTE: 1.53 Dia. (39 mm) hole required for panel mounting. Max panel thickness 1/4"

Operating information

Bleed rate:	0.033 scfm (0.016 dm ³ /s, ANR)
Effect of supply variation:	0.5 psig (0.04 bar) for 25 psig (1.7 bar) change P ¹
Relief capacity:	0.5 scfm (0.24 dm ³ /s, ANR) @ 5 psig (0.4 bar) increase P ²
Flow capacity [†] :	28 scfm (13.2 dm ³ /s, ANR) @ 100 psig (6.9 bar) P ¹ and 20 psig (1.4 bar) P ²
Inlet pressure (max):	250 psig (17.2 bar)
Temperature rating:	32°F to 175°F (0°C to 80°C)
Relief flow:	5.0 scfm (2.4 dm ³ /s, ANR)
Repeatability:	± .5 psig (±0.034 bar)
Response:	510 ms The valve will open to full flow and fill a volume of 100 in ³
Gauge ports (2):	1/4 inch
Weight:	1.0 lb (0.45 kg)

[†] scfm = Standard cubic feet per minute at 150 psig inlet, 90 psig no flow secondary setting and 5 psig pressure drop.

Ordering information:



 Most popular.



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

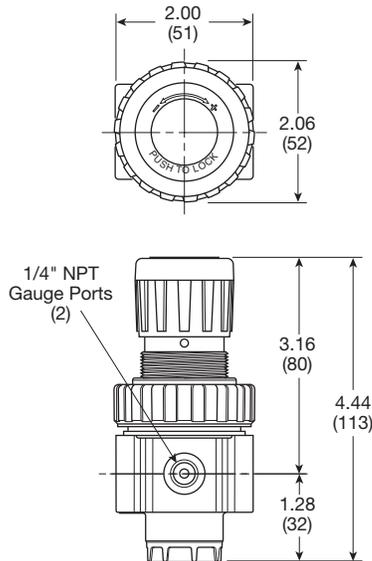
Semi-Precision Regulators

Material Specifications

Poppet	Brass
Bonnet	Plastic
Body	Zinc
Collar, knob	Plastic
Diaphragm	Nitrile
Bottom Cap	Plastic
Seals	Nitrile
Springs – poppet & control	Steel

Repair and Service Kits

Bonnet assembly kit	PS910P
Control knob	P0442001
1-1/2" dial face 30 psig (0 to 2.1 bar), gauge	K4515N14030
1-1/2" dial face 60 psig (0 to 4.1 bar), gauge	K4515N14060
1-1/2" dial face 160 psig (0 to 11.0 bar), gauge	K4515N14160
1-1/2" dial face 300 psig (0 to 20.7 bar), gauge	K4515N14300
2" dial face 60 psig (0 to 4.1 bar), gauge	K4520N14060
2" dial face 160 psig (0 to 11.0 bar), gauge	K4520N14160
2" dial face 300 psig (0 to 20.7 bar), gauge	K4520N14300
Mounting bracket kit	PS963P
Panel mount nut, metal	PS964P
Service kit	PS907P
1-30 psig spring	P04427
1-15 psig spring	P04428
0-60 psig spring	P04426
2-125 psig spring	P04425



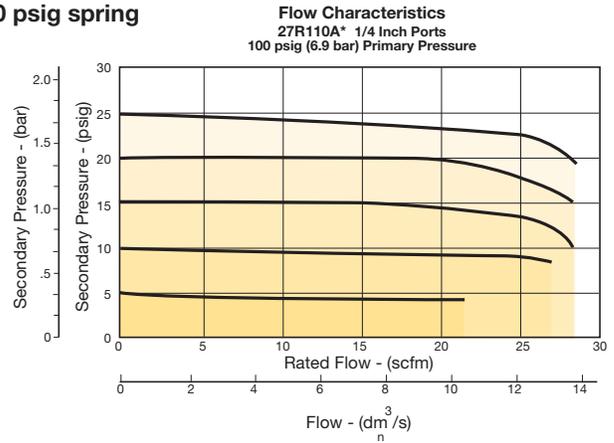
WARNING

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

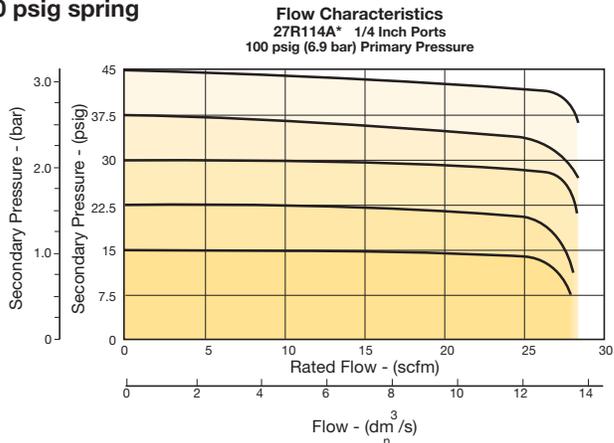
Air Preparation Products Regulator Products

Flow Charts

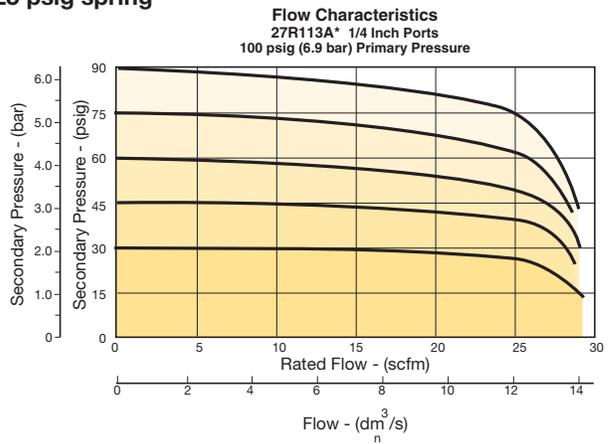
1/4" Regulator 30 psig spring



1/4" Regulator 60 psig spring



1/4" Regulator 125 psig spring



CAUTION:

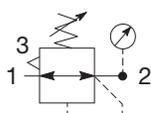
REGULATOR PRESSURE ADJUSTMENT – The working range of knob adjustment is designed to permit outlet pressures within their full range. Pressure adjustment beyond this range is also possible because the knob is not a limiting device. This is a common characteristic of most industrial regulators, and limiting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



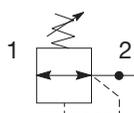
For inventory, lead time, and kit lookup, visit www.pdnplu.com

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

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).
 ** Non-gauge option only.
 † Units with square gauges: 5°F to 150°F (-15°C to 65.5°C)

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

Ordering Information:

P31RB 9 2 B N 5 P

Basic series Global modular mini regulator P31RB	Thread type BSPP 1 BSPT 2 NPT 9	Port size 1/4 2	Relief Relieving B Non-relieving N Reverse flow-relieving R	Mounting P Plastic panel mount nut
---------------------------------------------------------------	-------------------------------------------------	---------------------------	-----------------------------------------------------------------------------	----------------------------------------------

With square gauge		With round gauge	
psig	bar	Z	M
1 = 30*	V = 2*	30 psig; 2 bar; 0.2 MPa	60 psig; 4 bar; 0.4 MPa
3 = 60	S = 4	G 125 psig; 8 bar; 0.8 MPa	J 232 psig; 16 bar; 1.6 MPa
5 = 125	T = 8	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.



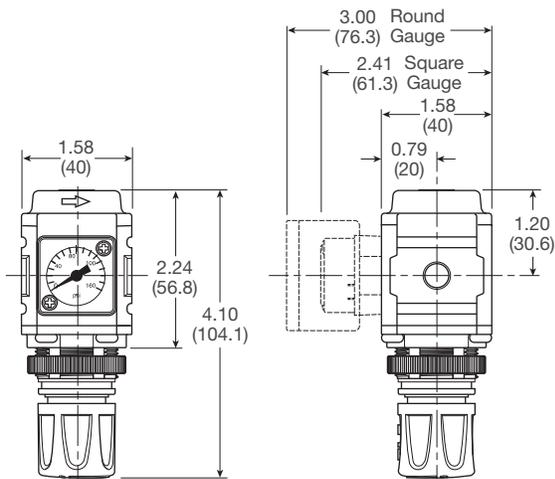
For inventory, lead times, and kit lookup, visit www.pdnplu.com

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

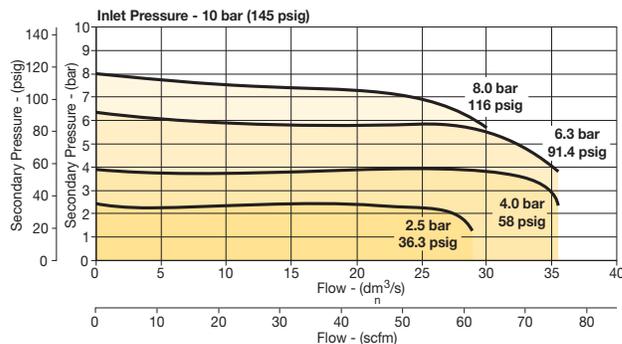


Inches (mm)

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

Flow Charts

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
1.00" Round 1/8" center back mount	0-60 psig / 0-4 bar	K4510N18060
	0-160 psig / 0-11 bar	K4510N18160
	0-30 psig / 0-2 bar	K4515N18030
40mm Round 1/8" center back mount (Not for use with common port regulators)	0-60 psig / 0-4 bar	K4515N18060
	0-160 psig / 0-11 bar	K4515N18160

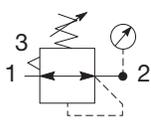
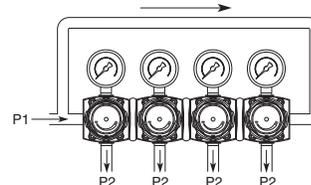
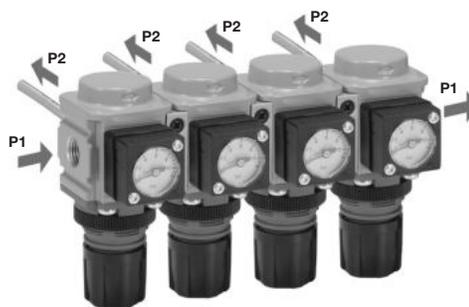
For best performance, regulated pressure should always be set by increasing the pressure up to the desired setting.

General
Dial
Pilot
Proportional
Precision
Water
K
Regulator Products

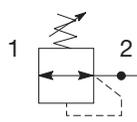


P31 Common P1 Regulators – Mini

- 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

Operating information

- Flow capacity*: 1/4 42 scfm (20 dm³/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)
- 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).

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

Ordering Information:

P31HB 9 2 B N 5 P

- Basic series**
Global modular mini common regulator **P31HB**
- Thread type**
BSPP 1
BSPT 2
NPT 9
- Port size †**
1/4 2
† Working port 1/8".
- Relief**
Relieving B
Non-relieving N
Reverse flow-relieving R
- Mounting**
P Plastic panel mount nut
- Adjustment**
N Non-rising knob
- Adjustment range**

With square gauge		With round gauge	
psig	bar	Z	M
1 = 30*	V = 2*	30 psig; 2 bar; 0.2 MPa	60 psig; 4 bar; 0.4 MPa
3 = 60	S = 4	125 psig; 8 bar; 0.8 MPa	232 psig; 16 bar; 1.6 MPa
5 = 125	T = 8	Without gauge	
		Y	L
		30 psig; 2 bar; 0.2 MPa	60 psig; 4 bar; 0.4 MPa
		N	H
		125 psig; 8 bar; 0.8 MPa	232 psig; 16 bar; 1.6 MPa

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

Most popular.



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

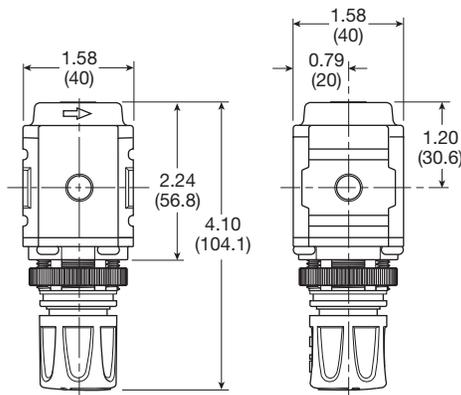
Mini Common P1 Regulators

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



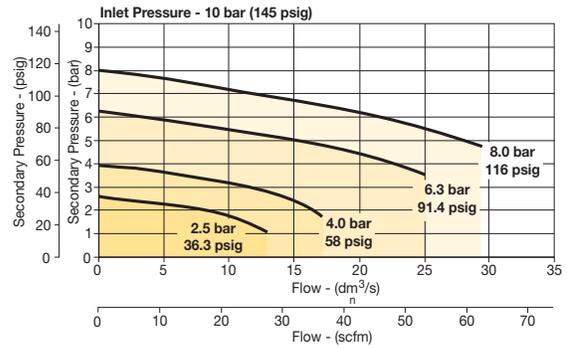
Inches (mm)

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

Air Preparation Products Regulator Products

Flow Charts

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.

General

Dial

Pilot

Proportional

Precision

Water

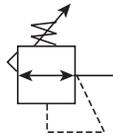
K

Regulator Products

Economy Regulators

05R Regulators – Economy

- Secondary aspiration plus balanced poppet provides quick response and accurate pressure regulation.
- Rolling diaphragm for extended life.
- Removable non-rising knob for panel mounting and tamper resistance.
- Easily serviced.
- Reverse Flow.
- 1/4", 3/8" ports (NPT, BSPP)



Port size	Description	Part number
1/4"	Without gauge	05R113A*
1/4"	With 160 psi gauge	05R118A*
3/8"	Without gauge	05R213A*
3/8"	With 160 psi gauge	05R218A*

NOTE: 1.53 Dia. (39 mm) hole required for panel mounting.

Operating information

Supply pressure (max):	0 to 300 psig (0 to 20.7 bar)	
	For secondary pressure ranges see charts next page.	
Operating temperature:	32°F to 175°F (0°C to 80°C)	
Low temperature	-4°F to 125°F (-20°C to 52°C)	
Flow capacity [†] :		
High flow	1/4"	30 scfm (14.2 dm ³ /s, ANR)
	3/8"	40 scfm (18.9 dm ³ /s, ANR)
Gauge ports (2):	1/4 inch	
Weight:	1.1 lb (0.49 kg)	

[†] scfm = Standard cubic feet per minute at 100 psig inlet, 90 psig no flow secondary setting and 10 psig pressure drop.

Ordering information:

05R

Port Size
1/4 inch
3/8 inch

1

Pressure Range
Without gauge
60 psig
125 psig
200 psig
With gauge*
60 psig
125 psig
200 psig

* Includes 1-1/2" dial face gauge.

13

Port Type
Blank
NPT

A

Relief
A
Relieving

D

Engineering Level
D
Current

Blank

Port Type
Blank
NPT

 Most popular.



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

K20

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

Economy Regulators

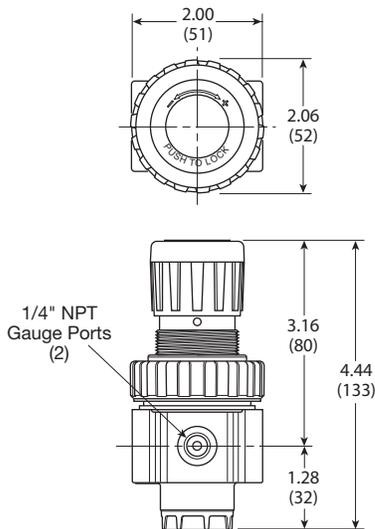
Material Specifications

Adjusting stem	Brass
Bonnet	Plastic
Body	Zinc
Collar, Knob	Plastic
Diaphragm	Nitrile
Poppet & cap	Plastic
Seals	Nitrile
Springs – poppet & control	Steel

Repair and Service Kits

Bonnet assembly kit **PS915P**

Control knob	P04420
1-1/2" dial face 30 psig (0 to 2.1 bar), gauge	K4515N14030
1-1/2" dial face 60 psig (0 to 4.1 bar), gauge	K4515N14060
1-1/2" dial face 160 psig (0 to 11.0 bar), gauge	K4515N14160
1-1/2" dial face 300 psig (0 to 20.7 bar), gauge	K4515N14300
2" dial face 60 psig (0 to 4.1 bar), gauge	K4520N14060
2" dial face 160 psig (0 to 11.0 bar), gauge	K4520N14160
2" dial face 300 psig (0 to 20.7 bar), gauge	K4520N14300
Mounting bracket kit	PS963P
Panel mount nut – metal	PS964P
1-30 psig spring	P04427
1-60 psig spring	P04426
2-125 psig spring	P04425
2-200 psig spring	P02934
Relieving service kit	PS908P

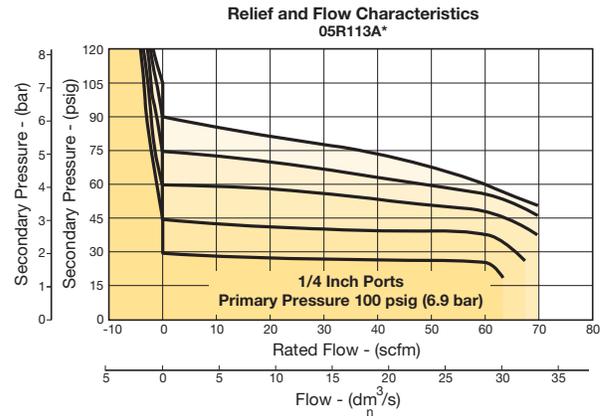


Inches (mm)

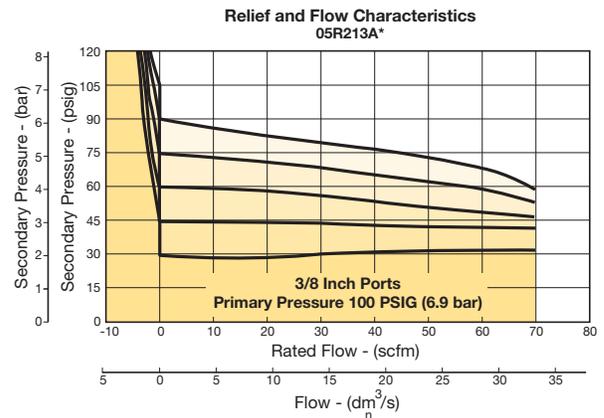
Air Preparation Products Regulator Products

Flow Charts

1/4" Regulator



3/8" Regulator



WARNING

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

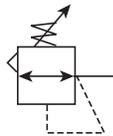
CAUTION:

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.

Compact Regulators

06R Regulators – Compact

- Secondary aspiration plus balanced poppet provides quick response and accurate pressure regulation
- Rolling diaphragm for extended life
- Two high flow 1/4" gauge ports can be used as additional outlets
- Easily serviced
- Removable non-rising knob for panel mounting and tamper resistance
- 1/4", 3/8", 1/2" ports (NPT, BSPP)



Port size	Description	Part number
1/4"	Without gauge	06R113AC
1/4"	With 160 psi gauge	06R118AC
3/8"	Without gauge	06R213AC
3/8"	With 160 psi gauge	06R218AC
1/2"	Without gauge	06R313AC
1/2"	With 160 psi gauge	06R318AC

NOTE: 2.0 Dia. (51 mm) hole required for panel mounting.

Operating information

Supply pressure (max):	250 psig (17.2 bar)
Secondary pressure ranges:	
Standard	2 to 125 psig (0 to 8.6 bar)
Low	1 to 60 psig (0 to 4.1 bar)
High	5 to 250 psig (0.4 to 17.2 bar)
Operating temperature:	32°F to 175°F (0°C to 80°C)
Low temperature	-4°F to 125°F (-20°C to 52°C)
Flow capacity [†] :	
High flow	1/4" 53 scfm (25 dm ³ /s, ANR)
	3/8" 60 scfm (28.3 dm ³ /s, ANR)
	1/2" 75 scfm (35.4 dm ³ /s, ANR)
Gauge ports (2):	1/4 inch (can be used as additional full flow 1/4 inch outlet ports)
Weight:	1.6 lb (0.7 kg)

[†] scfm = Standard cubic feet per minute at 100 psig inlet, 90 psig no flow secondary setting and 10 psig pressure drop.

Ordering information:

06R

Port Size	
1/4 inch	1
3/8 inch	2
1/2 inch	3

1

13

Pressure Range	
Without gauge	
60 psig	11
125 psig	13
250 psig	15
With gauge*	
60 psig	16
125 psig	18
250 psig	21

* Includes 1-1/2" dial face gauge.

A

Relief	
Relieving	A
Non-relieving	L

C

Engineering Level	
Current	C

Port Type

Blank	NPT
1*	BSPP

* 1/4 & 3/8 inch meet ISO 1179-1 Standard.

Preset / Pressure Limited

Blank	None
XXX*	Preset pressure

* Available preset / pressure limited range, 10 to 90 psig in 5 psig increments. For higher pressures, contact factory.
(Example: 065 = 65 psig)

Options

Blank	No option
L [†]	Preset non-adjustable
P [†]	Preset adjustable
R	Reverse Flow

[†] Inlet Pressure is 100 psig. For other pressures, contact factory.

Spring Type by Preset / Limited Pressure:
 For Preset / Limited Pressure 26 to 50 use 60 psi spring
 For Preset / Limited Pressure 51 to 90 use 125 psi spring

Most popular.



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

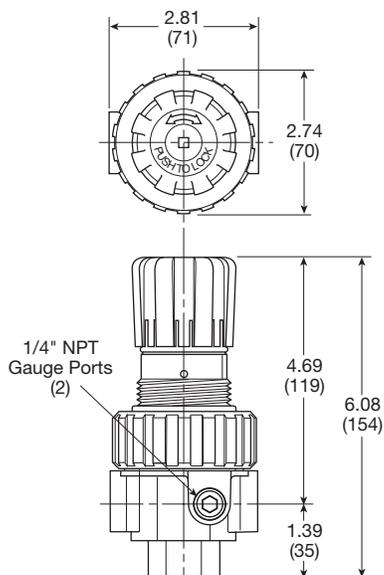
Compact Regulators

Material Specifications

Adjusting stem	Steel
Body	Zinc
Bonnet, piston stem, valve poppet & cap	Plastic
Collar, knob	Plastic
Diaphragm	Nitrile
Seals	Nitrile
Spring, poppet	Stainless
Spring, control	Steel

Repair and Service Kits

Bonnet assembly kit	PS715P
Control knob	P04069B
2" dial face 60 psig (0 to 4.1 bar), gauge	K4520N14060
2" dial face 160 psig (0 to 11.0 bar), gauge	K4520N14160
2" dial face 300 psig (0 to 20.7 bar), gauge	K4520N14300
1-3/4" digital round face 160 psig (0 to 11.0 bar) gauge	K4517N14160D
Mounting bracket kit (includes panel mount nut)	PS707P
Panel mount nut, plastic	P04082
Panel mount nut, metal	P04079B
Reverse flow service conversion kit, relieving	PS708RP
Relieving (includes poppet)	PS708P
Non-relieving (includes poppet)	PS709P
1-30 psig spring	P01698
1-60 psig spring	P04062
2-125 psig spring	P04063
5-250 psig spring	P04064
Tamperproof kit	PS737P

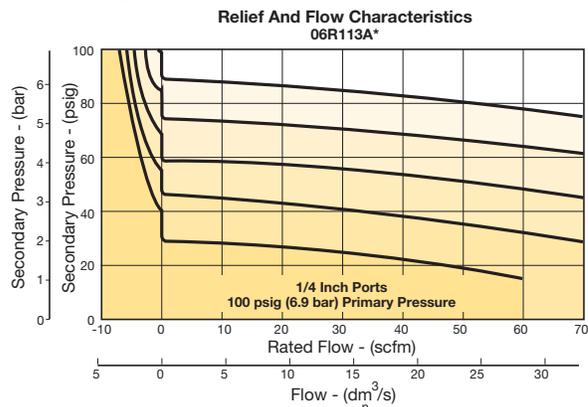


Inches (mm)

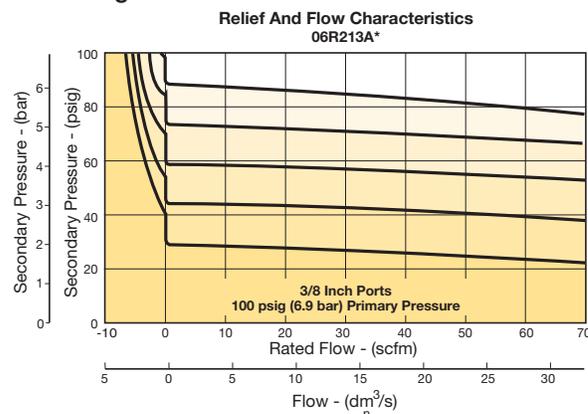
Air Preparation Products Regulator Products

Flow Charts

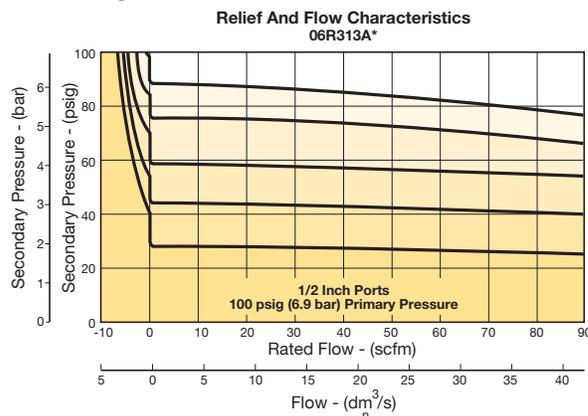
06R 1/4" Regulator



06R 3/8" Regulator



06R 1/2" Regulator



WARNING

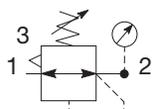
Product rupture can cause serious injury.
Do not connect regulator to bottled gas.
Do not exceed Maximum primary pressure rating.

CAUTION:

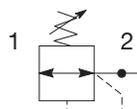
REGULATOR PRESSURE ADJUSTMENT – The working range of knob adjustment is designed to permit outlet pressures within their full range. Pressure adjustment beyond this range is also possible because the knob is not a limiting device. This is a common characteristic of most industrial regulators, and limiting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

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
- 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	
Operating temperature:	-13°F to 150°F (-25°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)
	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).

Ordering Information:

P32RB	9	2	B	N	G	P
Basic series 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		Adjustment N Non-rising knob T T-Handle	Mounting P Plastic panel mount nut
					Adjustment range	
					With square gauge	With round gauge
					psig bar	Z 30 psig; 2 bar; 0.2 MPa
					1 = 30* V = 2*	M 60 psig; 4 bar; 0.4 MPa
					3 = 60 S = 4	G 125 psig; 8 bar; 0.8 MPa
					5 = 125 T = 8	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

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

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

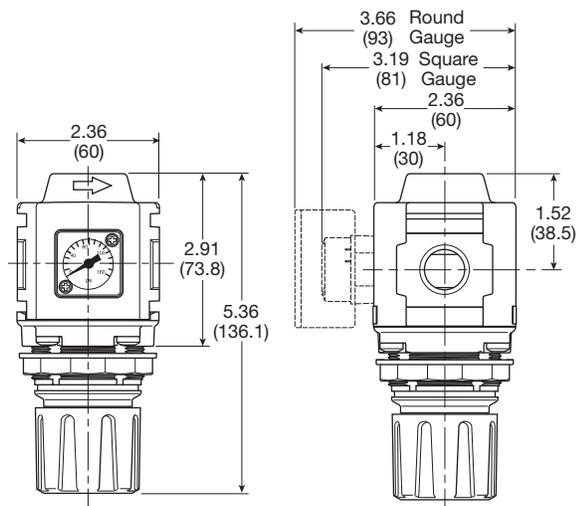
Diaphragm repair kit - relieving	P32KB00RB
Diaphragm repair kit - non-relieving	P32KB00RC
Panel mount nut - aluminum	P32KA00MM
Panel mount nut - plastic	P32KA00MP
Angle bracket (attaches via panel nut)	P32KB00MR
T-bracket with body connector	P32KA00MT
T-bracket	P32KA00MB
Body connector	P32KA00CB

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.

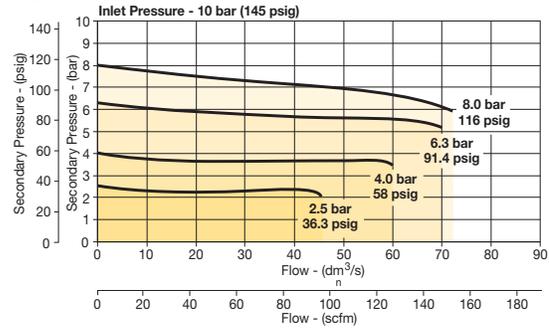


Inches (mm)

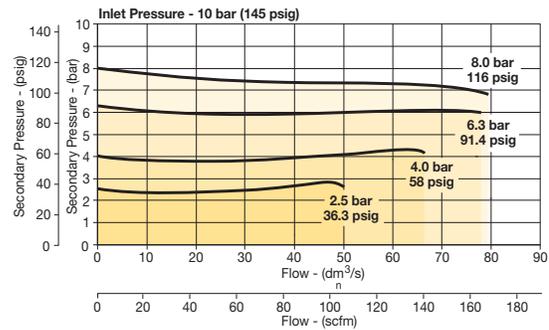
NOTE: 1.90 in. (48mm) hole required for panel nut mounting.

Flow Charts

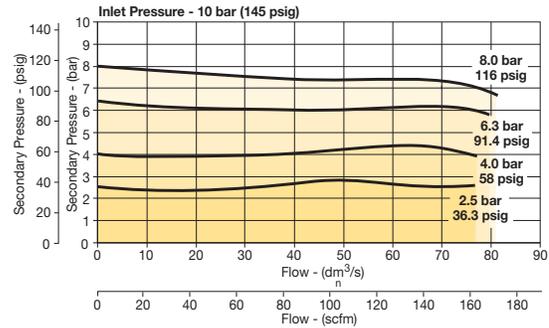
1/4 Regulator



3/8 Regulator



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.

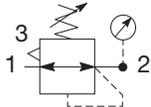
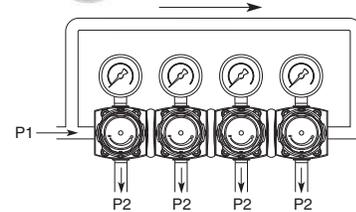


For inventory, lead time, and kit lookup, visit www.pdnplu.com

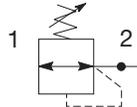
Compact Common P1 Precision Regulator

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
- 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*: 1/4, 3/8, 1/2 30 dm³/s (64 scfm)
 Operating temperature: -25°C to 65.5°C (-13°F to 150°F)
 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 232 psig (0 to 16 bar)
 Gauge port (2 each): 1/4 NPT, BSPP, BSPT
 Weight: 0.50 lb (1.10 kg)
 * Inlet pressure 145 psig (10 bar). Secondary pressure 91.3 psig (6.3 bar).

Ordering Information:

P32HB 9 2 B N N P

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".

Mounting
P Plastic panel mount nut

Relief
Relieving B
Non-relieving N

Adjustment
N Non-rising knob
T T-Handle

Adjustment range

With square gauge		With round gauge	
psig	bar	Z	M
1 = 30*	V = 2*	30 psig; 2 bar; 0.2 MPa	60 psig; 4 bar; 0.4 MPa
3 = 60	S = 4	G 125 psig; 8 bar; 0.8 MPa	250 psig; 17 bar; 1.7 MPa
5 = 125	T = 8	J 250 psig; 17 bar; 1.7 MPa	

* 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
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

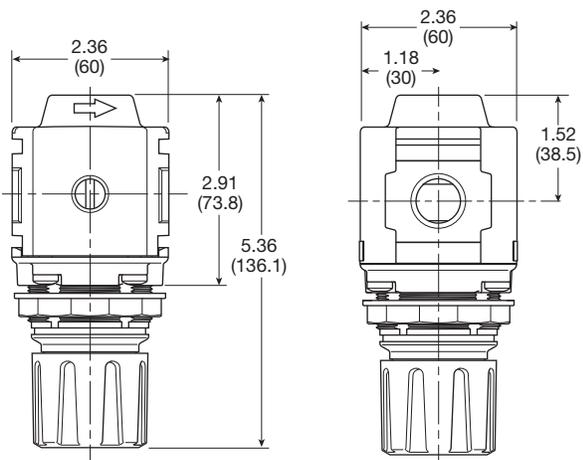
Compact Common P1 Precision Regulator

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



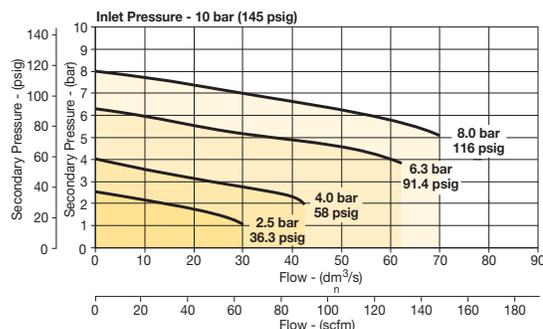
Inches (mm)

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

Air Preparation Products Regulator Products

Flow Charts

P32 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.

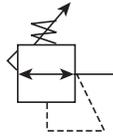


For inventory, lead time, and kit lookup, visit www.pdnplu.com

General
 Dial
 Pilot
 Proportional
 Precision
 Water
 K
 Regulator Products

07R Regulators – Standard

- Secondary aspiration plus balanced poppet provides quick response and accurate pressure regulation
- Rolling diaphragm for extended life
- Two high flow 1/4" gauge ports can be used as additional outlets
- Easily serviced
- Removable non-rising knob for panel mounting and tamper resistance
- 1/2", 3/4" ports (NPT, BSPP)



Port size	Description	Part number
1/2"	Without gauge	07R313AC
1/2"	With 160 psi gauge	07R318AC
3/4"	Without gauge	07R413AC
3/4"	With 160 psi gauge	07R418AC

NOTE: 2.0 Dia. (51 mm) hole required for panel mounting.

Operating information

Supply pressure (max):	250 psig (17.2 bar)	
Secondary pressure ranges	Standard 2 to 125 psig (0 to 8.6 bar) Low 1 to 60 psig (0 to 4.1 bar) High 5 to 250 psig (0.4 to 17.2 bar)	
Operating temperature:	32°F to 175°F (0°C to 80°C)	
Low temperature	-4°F to 125°F (-20°C to 52°C)	
Flow capacity†:	High flow 1/2" 90 scfm (42.5 dm³/s, ANR) 3/4" 90 scfm (42.5 dm³/s, ANR)	
Gauge ports (2):	1/4 inch (can be used as additional full flow 1/4 inch outlet ports)	
Weight:	2.5 lb (1.1 kg)	

† scfm = Standard cubic feet per minute at 100 psig inlet, 90 psig no flow secondary setting and 10 psig pressure drop.

Ordering information:

07R **3** **13** **A** **C** [] [] []

Port Size	
1/2 inch	3
3/4 inch	4

Pressure Range	
Without gauge	
60 psig	11
125 psig	13
250 psig	15
With gauge*	
60 psig	16
125 psig	18
250 psig	21

* Includes 1-1/2" dial face gauge.

Relief	
Relieving	A
Non-relieving	L

Engineering Level	
Current	C

Preset / Pressure Limited	
Blank	None
XXX*	Preset pressure

* Available preset / pressure limited range, 10 to 90 psig in 5 psig increments. For higher pressures, contact factory.
(Example: 065 = 65 psig)

Options	
Blank	No option
L †	Preset non-adjustable
P †	Preset Adjustable
R	Reverse Flow

† Inlet Pressure is 100 psig. For other pressures, contact factory.

Port Type	
Blank	NPT
1*	BSPP

* 1/4 & 3/8 inch meet ISO 1179-1 Standard.

Spring Type by Preset / Limited Pressure:
 For Preset / Limited Pressure 26 to 50 use 60 psi spring
 For Preset / Limited Pressure 51 to 90 use 125 psi spring

☐ Most popular.

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

K26

Parker Hannifin Corporation
 Pneumatic Division
 Richland, Michigan
www.parker.com/pneumatics

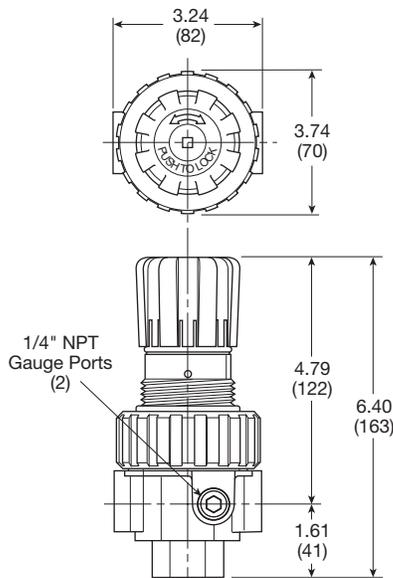
Standard Regulators

Material Specifications

Adjusting stem	Steel
Body	Zinc
Bonnet, piston stem, valve poppet & cap	Plastic
Collar, knob	Plastic
Diaphragm	Nitrile
Seals	Nitrile
Spring, poppet	Stainless
Spring, control	Steel

Repair and Service Kits

Bonnet assembly kit	PS715P
Control knob	P04069B
2" dial face 60 psig (0 to 4.1 bar), gauge	K4520N14060
2" dial face 160 psig (0 to 11.0 bar), gauge	K4520N14160
2" dial face 300 psig (0 to 20.7 bar), gauge	K4520N14300
1-3/4" digital round face 160 psig (0 to 11.0 bar), gauge	K4517N14160D
Mounting bracket kit (includes panel mount nut)	PS807P
Panel mount nut, plastic	P04082
Panel Mount nut, metal	P04079B
Reverse flow service conversion kit, relieving	PS808RP
Relieving (includes poppet)	PS808P
Non-relieving (includes poppet)	PS809P
1-30 psig spring	P01698
1-60 psig spring	P04062
2-125 psig spring	P04063
5-250 psig spring	P04064
Tamperproof kit	PS737P

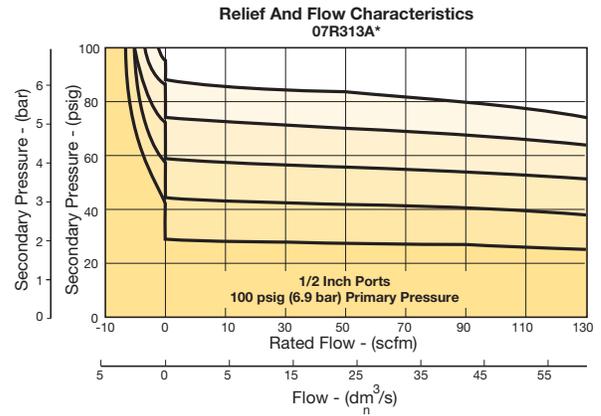


Inches (mm)

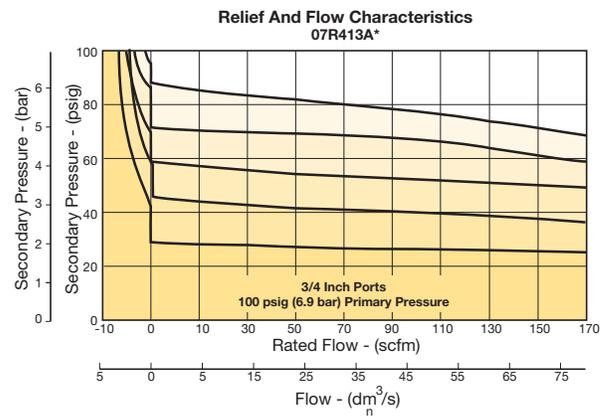
Air Preparation Products Regulator Products

Flow Charts

1/2" Regulator



3/4" Regulator



⚠ WARNING

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

CAUTION:

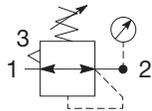
REGULATOR PRESSURE ADJUSTMENT – The working range of knob adjustment is designed to permit outlet pressures within their full range. Pressure adjustment beyond this range is also possible because the knob is not a limiting device. This is a common characteristic of most industrial regulators, and limiting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



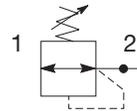
For inventory, lead time, and kit lookup, visit www.pdnplu.com

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*:	1/2, 3/4	233 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:		1.61 lb (0.62 kg)
* Inlet pressure 145 psig (10 bar). Secondary pressure 91.3 psig (6.3 bar).		

Ordering Information:

P33RA 9 6 B N G P

Basic series Global modular standard regulator P33RA	Thread type BSPP 1 BSPT 2 NPT 9	Port size 1/2 4 3/4 6	Relief Relieving B Non-relieving N Reverse flow-relieving R	Adjustment Non-rising knob N	Mounting P Plastic panel mount nut
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				

Most popular.



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

K28

Parker Hannifin Corporation
 Pneumatic Division
 Richland, Michigan
www.parker.com/pneumatics

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

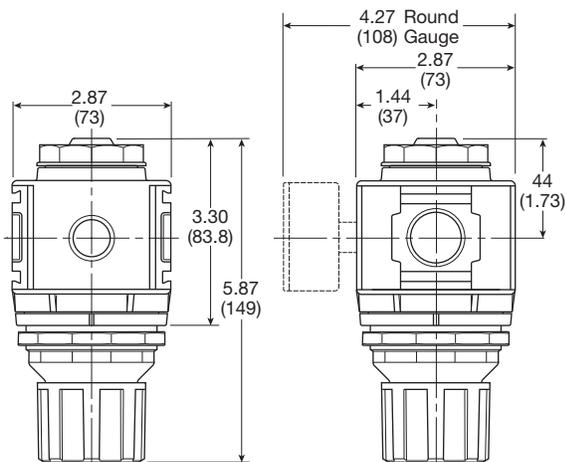
Diaphragm repair kit - relieving	P33KA00RB
Diaphragm repair kit - non-relieving	P33KA00RC
Panel mount nut - aluminum	P33KA00MM
Panel mount nut - plastic	P33KA00MP
Angle bracket (attaches via panel nut)	P33KA00MR
T-bracket with body connector	P32KA00MT
T-bracket	P32KA00MB
Body connector	P32KA00CB

⚠ 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.

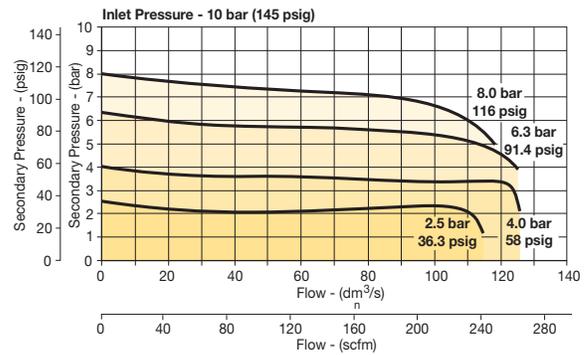


Inches (mm)

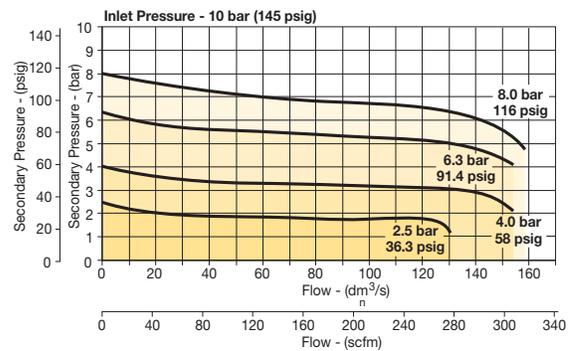
NOTE: 2.40 in. (61mm) hole required for panel nut mounting.

Flow Charts

1/2 Regulator



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

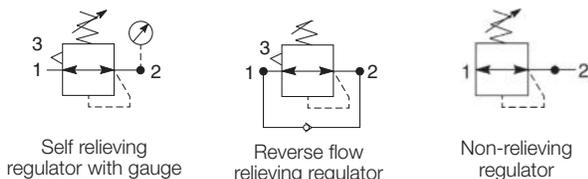
For best performance, regulated pressure should always be set by increasing the pressure up to the desired setting.



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

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)



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 dm³/s, ANR) 1" 550 scfm (259.6 dm³/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).

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

Ordering information

P3YRA 9 6 B N E N

Basic series	Thread type*	Port size	Relief	Lockable	Adjustment range
Regulator P3YRA	BSPP 1 NPT 9	3/4 6 1 8	B Relieving R Reverse flow / relieving	N Standard A† Lockable	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

Regulators

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

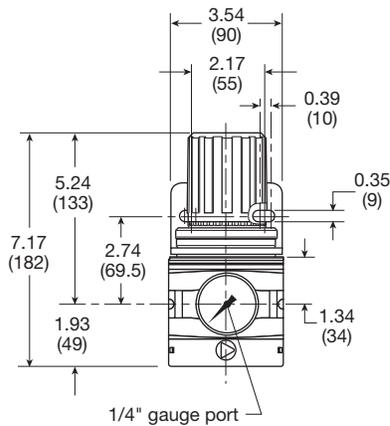
Angle bracket + metal lock ring	P3YKA00MS
Panel mounting nut	P3YKA00MM
Diaphragm kit (relieving type)	P3YKA00RR
Diaphragm kit (non-relieving type)	P3YKA00RN
0 to 160 psig (0 to 10 bar), gauge 1/4" port	K4520N14160
0 to 300 psig (0 to 20 bar), gauge 1/4" port	K4520N14300

⚠ 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.

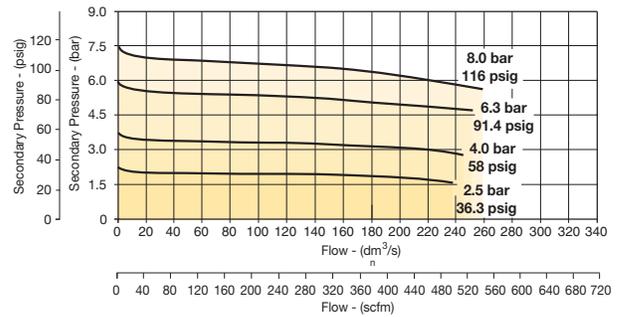


Inches (mm)

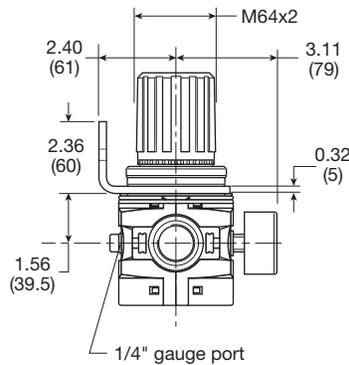
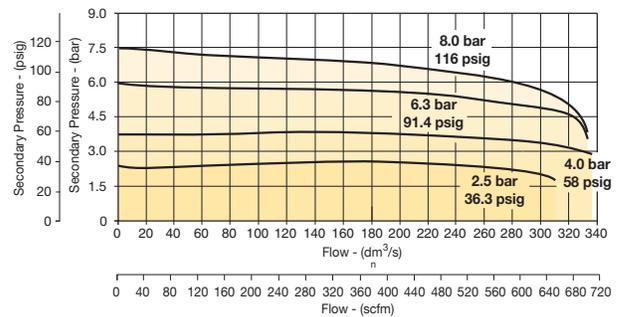
Air Preparation Products Regulator Products

Flow characteristics

(3/4") Regulator



(1") Regulator



General

Dial

Pilot

Proportional

Precision

Water

K

Regulator
Products



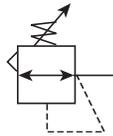
For inventory, lead time, and kit lookup, visit www.pdnplu.com

K31

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

P3NR Regulators – Hi-Flow

- Port blocks (PB) available to provide 1-1/2" port extension to 1" ported bodies
- Self relieving feature plus balanced poppet provides quick response and accurate pressure regulation
- Solid control piston for extended life
- 3/4", 1", 1-1/2" ports (NPT, BSPP)



Port size	Description	Part number
3/4"	Without gauge	P3NRA96BNN
3/4"	With 160 psi gauge	P3NRA96BNG
1"	Without gauge	P3NRA98BNN
1"	With 160 psi gauge	P3NRA98BNG
1-1/2" #	Without gauge	P3NRA9PBNN
1-1/2" #	With 160 psi gauge	P3NRA9PBNG

1" port body with 1-1/2" port block.
 NOTE: 2.0 Dia. (51 mm) hole required for panel mounting.

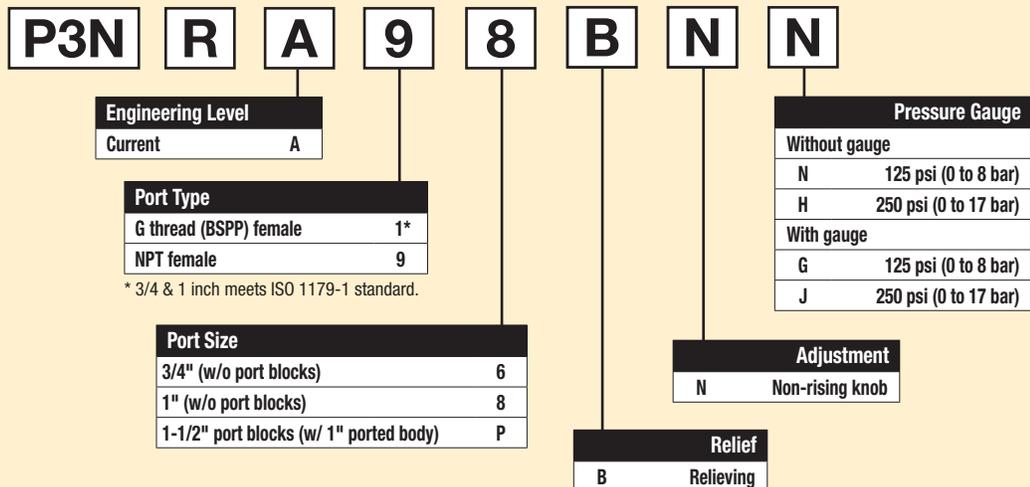
Operating information

Supply pressure (max):	250 psig (17.2 bar)
Operating temperature:	32°F to 175°F (0°C to 80°C)
Flow capacity†:	
High flow	3/4" 200 scfm (94.4 dm³/s, ANR)
	1" 300 scfm (141.6 dm³/s, ANR)
	1-1/2" 300 scfm (141.6 dm³/s, ANR)
Gauge ports (2):	1/4 inch (can be used as additional full flow 1/4 inch outlet ports)
Weight:	3/4", 1" 4.2 lb (1.9 kg)
	1-1/2" # 5.3 lb (2.4 kg)

† scfm = Standard cubic feet per minute at 100 psig inlet, 90 psig no flow secondary setting and 10 psig pressure drop.

1" port body with 1-1/2" port block

Ordering information:



Note: BSPP ported units supplied using NPT ported bodies and BSPP port block kits.

Most popular.



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

K32

Parker Hannifin Corporation
 Pneumatic Division
 Richland, Michigan
www.parker.com/pneumatics

Hi-Flow Regulators

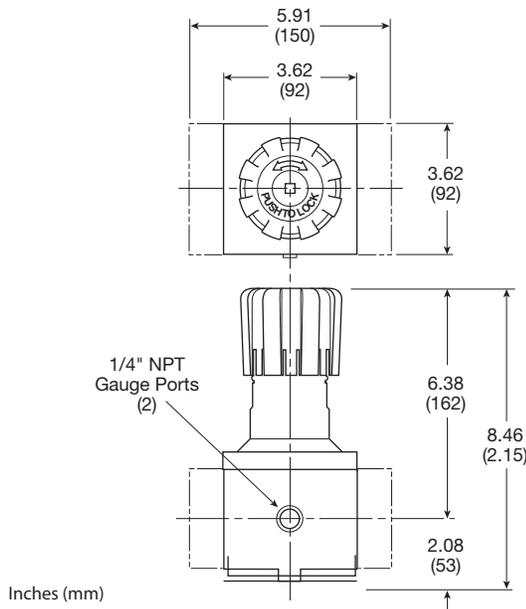
Material Specifications

Adjusting stem	Steel
Body	Aluminum
Bonnet	Aluminum
Knob	Plastic
Piston	Plastic
Poppet assembly	Brass
Seals	Nitrile
Springs, poppet & control	Steel

Repair and Service Kits

Control knob	P3NKA00PN
2" dial face 60 psig (0 to 4.1 bar), gauge	K4520N14060
2" dial face 160 psig (0 to 11.0 bar), gauge	K4520N14160
2" dial face 300 psig (0 to 20.7 bar), gauge	K4520N14300
1-3/4" digital round face 160 psig (0 to 11.0 bar), gauge	K4517N14160D
Mounting bracket kit*	P3NKA00MW
Relieving	P3NKA00RR
Non-relieving	P3NKA00RN
1-60 psig spring	C10A1304
2-125 psig spring	C10A1308
5-250 psig spring	C10A1317

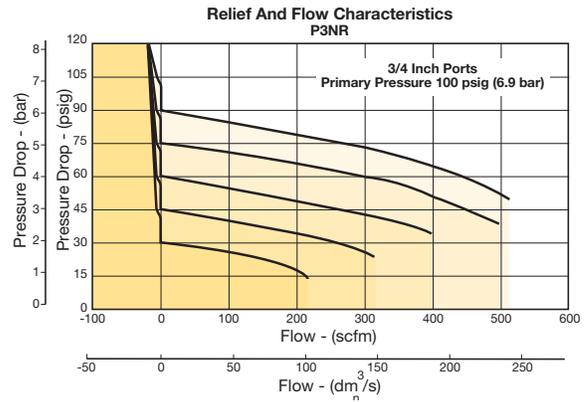
* If 1-1/2 BSPP E02 fittings are required, use P3NKA00BMW.



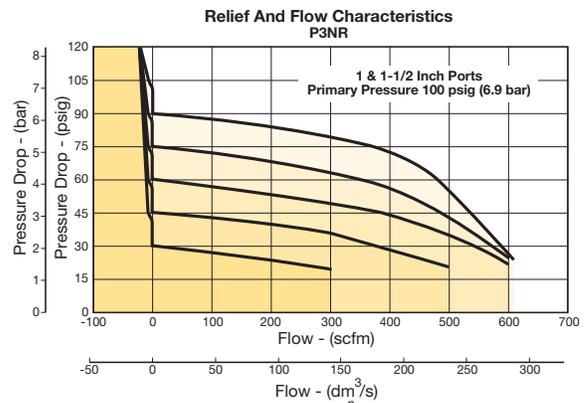
Air Preparation Products Regulator Products

Flow Charts

3/4" Regulator



1" & 1-1/2" Regulator



⚠ WARNING

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

CAUTION:

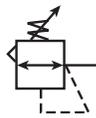
REGULATOR PRESSURE ADJUSTMENT – The working range of knob adjustment is designed to permit outlet pressures within their full range. Pressure adjustment beyond this range is also possible because the knob is not a limiting device. This is a common characteristic of most industrial regulators, and limiting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



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

R119 Regulators – Standard

- High flow performance featuring rugged design for the most demanding applications
- Ideal for those installations calling for constant pressure with wide variation in flow
- Diaphragm operated design with balanced poppet design for quick and accurate regulation
- Secondary aspiration plus balanced poppet provides quick response and accurate pressure regulation
- Heavy duty tee handle adjustment
- Reverse flow version available
- Panel mount version available
- 1/4", 3/8", 1/2" ports (NPT, BSPP)



Port size	Description (0-125 psig reduced pressure)	Part number
1/4"	Without gauge, relieving, NPT	R119-02C
1/4"	With gauge, relieving, NPT	R119-02CG
3/8"	Without gauge, relieving, NPT	R119-03C
3/8"	With gauge, relieving, NPT	R119-03CG
1/2"	Without gauge, relieving, NPT	R119-04C
1/2"	With gauge, relieving, NPT	R119-04CG

Operating information

Supply pressure (max):	300 psig (0 to 20.7 bar)	
Reduced pressure range:	2 to 125 psig (0.15 to 8.5 bar)	
Operating temperature:	40°F to 125°F (4.4°C to 52°C)	
Flow capacity†:		
High flow	1/4"	100 scfm (47.2 dm³/s, ANR)
	3/8"	110 scfm (51.9 dm³/s, ANR)
	1/2"	150 scfm (70.8 dm³/s, ANR)
Gauge ports (2):	1/4 inch	
Weight:	1/4"	1.8 lb (0.82 kg)
	3/8"	1.8 lb (0.82 kg)
	1/2"	3.2 lb (1.45 kg)

† scfm = Standard cubic feet per minute at 100 psig inlet, 75 psig no flow secondary setting and 20 psig pressure drop.

Ordering information:

R119
-
02
C
/M2

Port Threads

NPT	-
G BSPP	G

Port Size

1/4 inch	02
3/8 inch	03
1/2 inch	04

Reduced Pressure Range

0-25 psig	A
0-60 psig	B
0-125 psig	C
0-250 psig	D

Engineering Level

/M2	Current
-----	---------

Options

Blank	None
G	Gauge
K†	Non-relieving
X64**	Fluorocarbon o-rings and diaphragm
X80*	Reverse flow
X7	Brass bottom plug

* Reverse flow for use downstream of control valves.
 ** Brass bottom plug standard with X64 option.
 † Not available with 250 psig spring.

 Most popular.



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

Standard Regulators

Material Specifications

Adjusting screw, springs	Steel
Body, spring cage	Zinc
Bottom plug	Nylon
Innervalve	Brass
Seals	Buna N

Repair and Service Kits

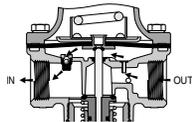
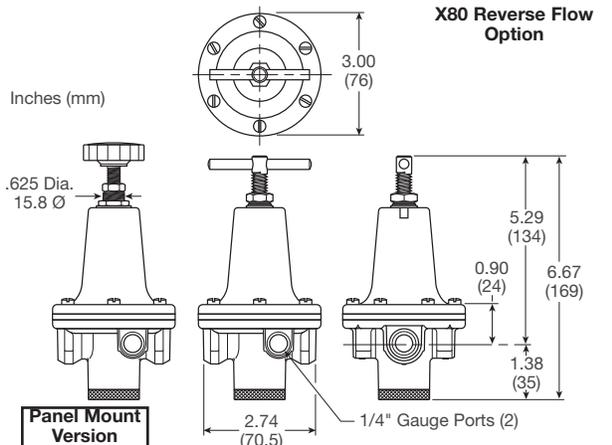
2" dial face 60 psig (0 to 4.1 bar), gauge	K4520N14060
2" dial face 160 psig (0 to 11.0 bar), gauge	K4520N14160
2" dial face 300 psig (0 to 20.7 bar), gauge	K4520N14300
1-3/4" digital round face 160 psig (0 to 11.0 bar), gauge	K4517N14160D
Mounting bracket, 1/4", 3/8"	SA15Y57
Mounting bracket, 1/2"	18A57
Panel mount conversion kit, 1/4", 3/8"	4202
Panel mount conversion kit, 1/2"	4204
Non-relieving diaphragm, valve assembly (1/4", 3/8"; all psig)	RK118Y
Relieving diaphragm, valve assembly (1/4", 3/8"; all psig)	RK119Y
Non-Relieving diaphragm, valve assembly (1/2"; 25, 60, 125 psig)	RK118A
Relieving diaphragm, valve assembly (1/2"; 25, 60, 125 psig)	RK119A
Relieving diaphragm, valve assembly (1/2"; 250 psig)	RK119A250
Spring cage & T-handle kit (1/4 & 3/8)	RKC119Y
Spring cage & insert only kit (1/2)	SAC18A3/BK

For fluorocarbon repair kits, add X64 to kit number suffix.

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.

R119-02C, R119-03C

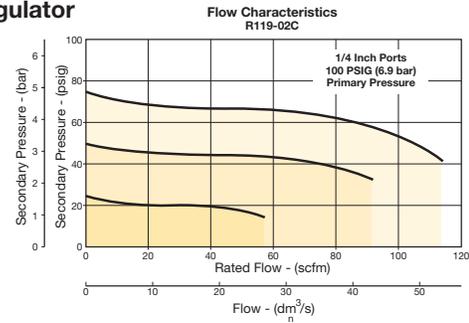


X80 Reverse Flow Option

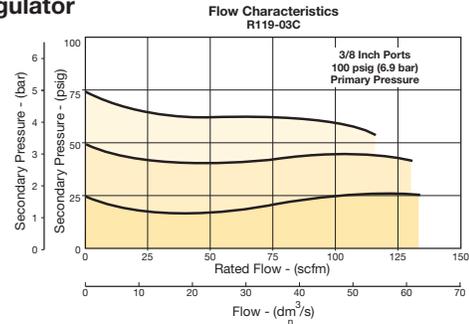
Air Preparation Products Regulator Products

Flow Charts

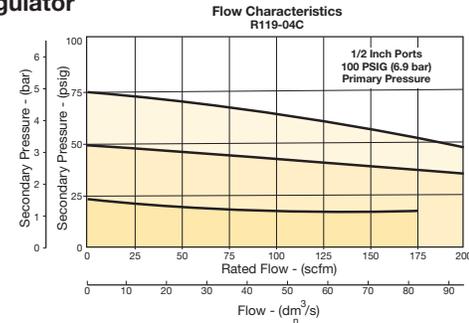
1/4" Regulator



3/8" Regulator



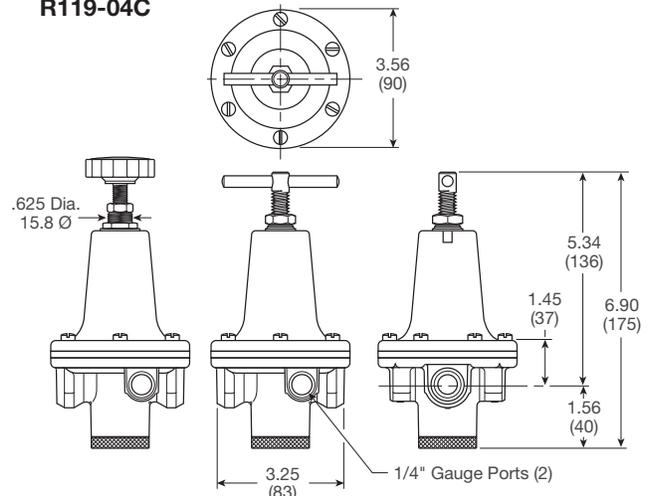
1/2" Regulator



⚠ WARNING

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

R119-04C



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

K35

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

General

Dial

Pilot

Proportional

Precision

Water

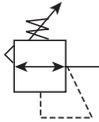
K

Regulator Products

Hi-Flow Regulators

R119 Regulators – Hi-Flow

- High flow performance featuring rugged design for the most demanding applications
- Ideal for those installations calling for constant pressure with wide variation in flow
- Diaphragm operated design with balanced poppet design for quick and accurate regulation
- Secondary aspiration plus balanced poppet provides quick response and accurate pressure regulation
- Heavy duty tee handle adjustment
- Reverse flow version available
- 3/4", 1", 1-1/2" ports (NPT, BSPP)



Port size	Description (0-125 psig reduced pressure)	Part number
3/4"	Without gauge, relieving, NPT	R119-06C
3/4"	With gauge, relieving, NPT	R119-06CG
1"	Without gauge, relieving, NPT	R119-08C
1"	With gauge, relieving, NPT	R119-08CG
1-1/2"	Without gauge, relieving, NPT	R119-12C
1-1/2"	With gauge, relieving, NPT	R119-12CG

Operating information

Supply pressure (max):	300 psig (0 to 20.7 bar)	
Reduced pressure range:	2 to 125 psig (0.15 to 8.5 bar)	
Operating temperature:	40°F to 125°F (4.4°C to 52°C)	
Flow capacity†:		
High flow	3/4"	300 scfm (141.6 dm³/s, ANR)
	1"	400 scfm (188.8 dm³/s, ANR)
	1-1/2"	500 scfm (236 dm³/s, ANR)
Gauge ports (2):	1/4 inch	
Weight:	3/4"	6.2 lb (2.81 kg)
	1"	6.2 lb (2.81 kg)
	1-1/2"	7.2 lb (3.27 kg)

† scfm = Standard cubic feet per minute at 100 psig inlet, 75 psig no flow secondary setting and 20 psig pressure drop.

Ordering information:

R119

Port Threads
NPT
G BSPP

-

Port Size
3/4 inch
1 inch
1-1/2 inch

06

Reduced Pressure Range
0-125 psig
0-250 psig

C

/**

Options
Blank
G
K
X64**
X80*

Engineering Level

**

* Reverse flow for use downstream of control valves.
** Brass bottom plug standard with X64 option.

Most popular.



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

Hi-Flow Regulators

Material Specifications

Adjusting screw, springs	Steel
Body, spring cage	Zinc
Bottom plug	Nylon
Innervalve	Brass
Seals	Buna N

Repair and Service Kits

2" dial face 60 psig (0 to 4.1 bar), gauge	K4520N14060
2" dial face 160 psig (0 to 11.0 bar), gauge	K4520N14160
2" dial face 300 psig (0 to 20.7 bar), gauge	K4520N14300
1-3/4" digital round face 160 psig (0 to 11.0 bar), gauge	K4517N14160D
Mounting bracket kit	18B57
Non-relieving diaphragm, valve assembly (3/4", 1")	RK118B
Non-relieving diaphragm, valve assembly (1-1/2")	RK118D
Relieving diaphragm, valve assembly (3/4", 1")	RK119B
Relieving diaphragm, valve assembly (1-1/2")	RK119D

For Fluorocarbon Repair Kits, add X64 to kit number suffix.

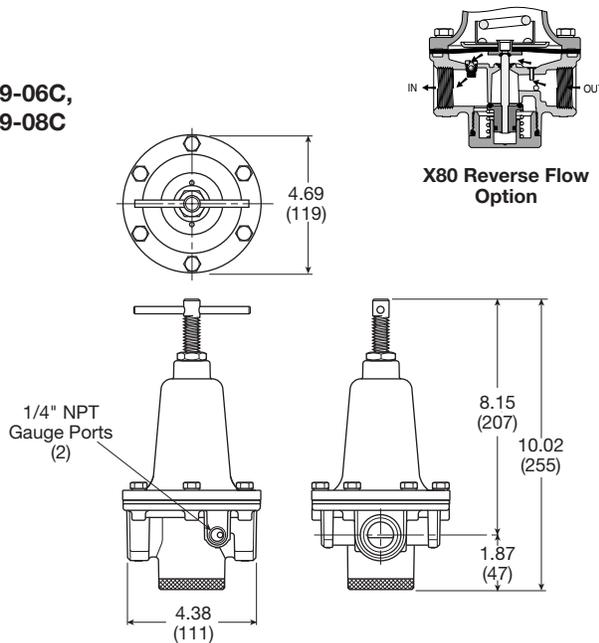
WARNING

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

CAUTION:

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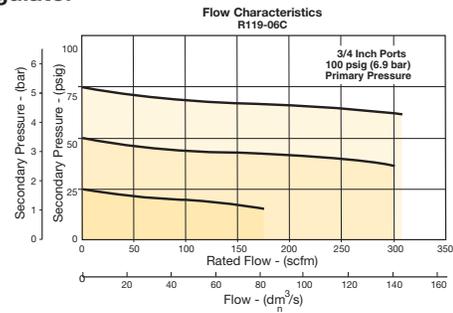
**R119-06C,
R119-08C**



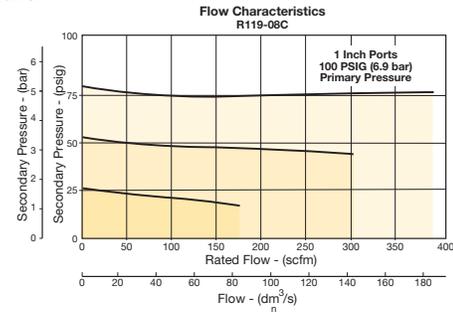
Inches (mm)

Flow Charts

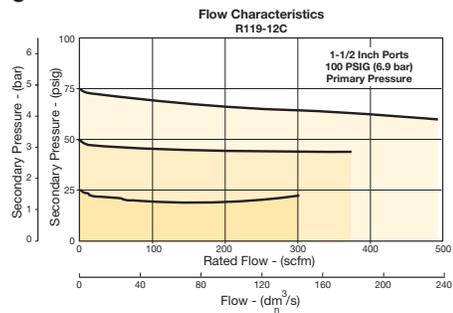
3/4" Regulator



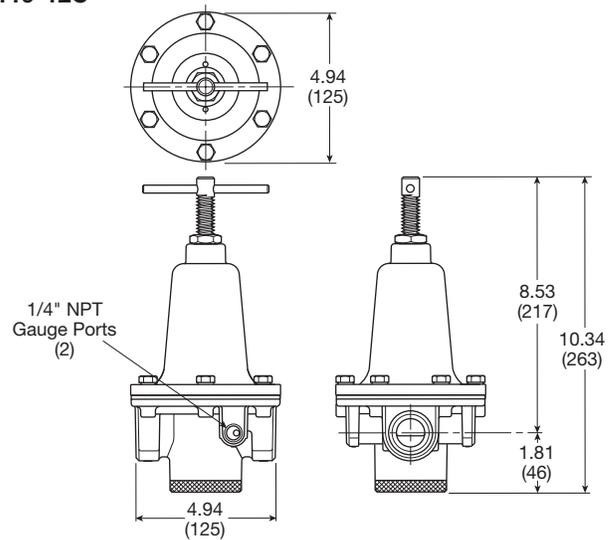
1" Regulator



1-1/2" Regulator



R119-12C



General

Dial

Pilot

Proportional

Precision

Water

K

Regulator
Products



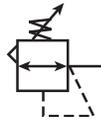
For inventory, lead time, and kit lookup, visit www.pdnplu.com

Semi-Precision Regulators

General
Dial
Pilot
Proportional
Precision
Water
K
Regulator Products

R216 Semi-Precision Regulators

- High flow performance featuring rugged design for the most demanding applications
- Ideal for those installations calling for constant pressure with wide variation in flow
- Diaphragm operated with large surface area and aspirator for quick and precise regulation
- Heavy duty tee handle adjustment
- Panel mount version available
- 1/4", 3/8" ports (NPT BSPP)



Port size	Description (Relieving Type)	Part number
1/4"	Tee Handle, Without Gauge, NPT	R216-02F
1/4"	Hand Wheel Knob, Without Gauge, NPT	R216-02FP
3/8"	Tee Handle, Without Gauge, NPT	R216-03F
3/8"	Hand Wheel Knob, Without Gauge, NPT	R216-03FP

Operating information

Supply pressure:	300 psig (20.7 bar)
Reduced pressure range:	0.5 to 20 psig (0.03 to 1.4 bar)
Operating temperature:	40°F to 125°F (4.4°C to 52°C)
Flow capacity†:	40 scfm (19.3 dm³/s, ANR)
Gauge ports (1):	1/8 inch
Weight:	2.2 lb (100 kg)

† scfm = Standard cubic feet per minute at 100 psig inlet, 75 psig no flow secondary setting and 20 psig pressure drop.

Ordering information:

R216 - 02 F [] /*

Port Threads	
NPT	-
BSPP	G

Pressure Range	
1/4 inch	02
3/8 inch	03

Reduced Pressure Range	
0 to 8 psig (0.6 bar)	E
0 to 20 psig (1.4 bar)	F
0 to 50 psig (3.4 bar)	H

Engineering Level	
Will be entered at factory.	

Options	
K	Non-relieving
P	Panel mount with nut

☐ Most popular.



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

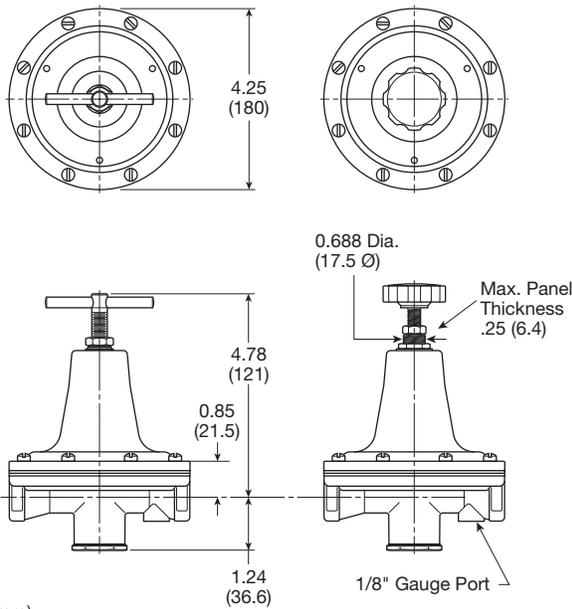
Semi-Precision Regulators

Material Specifications

Body, spring cage	Zinc
Bottom plug	Brass
Seals	Buna N

Repair and Service Kits

Round plastic knob	118Y51
Panel mount conversion kit (Spring cage, knob, hardware)	4206
Non-relieving diaphragm, valve assembly (1/4", 3/8")	RK216KY
Relieving diaphragm, valve assembly (1/4", 3/8")	RK216Y

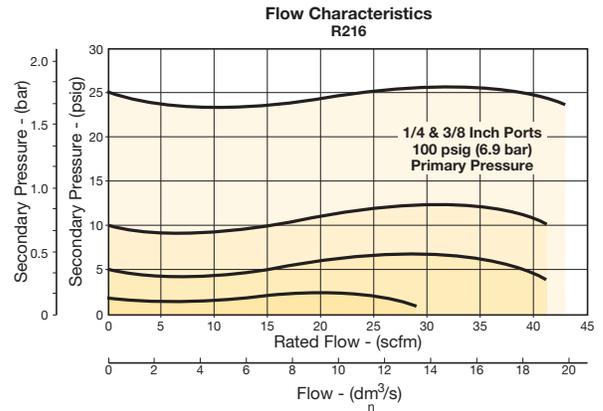


Inches (mm)

Air Preparation Products Regulator Products

Flow Charts

R216 1/4" & 3/8" Regulator



⚠ WARNING

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

CAUTION:

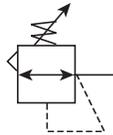
REGULATOR PRESSURE ADJUSTMENT – The working range of knob adjustment is designed to permit outlet pressures within their full range. Pressure adjustment beyond this range is also possible because the knob is not a limiting device. This is a common characteristic of most industrial regulators, and limiting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



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

09R Regulators – Hi-Flow

- Piston design for reduced downtime
- High flow
- Balanced poppet for quick and accurate regulation.
- Two full flow 1/4" gauge ports which can be used as additional outlets
- Self relieving piston standard
- 2" ports (NPT)



Port size	Description	Part number
2"	Without gauge, relieving	09R813BA

Operating information

Supply pressure (max):	300 psig (0 to 20.7 bar)
Secondary pressure range:	10 to 125 psig (0.7 to 8.6 bar) 10 to 180 psig (0.7 to 12.4 bar)
Operating temperature:	32°F to 150°F (0°C to 65.6°C)
Flow capacity†:	
High flow	1000 scfm (472 dm³/s, ANR)
Gauge ports (2):	1/4 inch (can be used as additional full flow 1/4 inch outlet ports)
Weight:	10.82 lb (53 kg)

† scfm = Standard cubic feet per minute at 100 psig inlet, 90 psig no flow secondary setting and 10 psig pressure drop.

Ordering information:

09R 8 13 B A

Port Threads		Engineering Level	
2 inch	8	A	Current
Pressure Range		Relief	
125 psig	13	B	Relieving
180 psig	15	M	Non-relieving

Most popular.



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

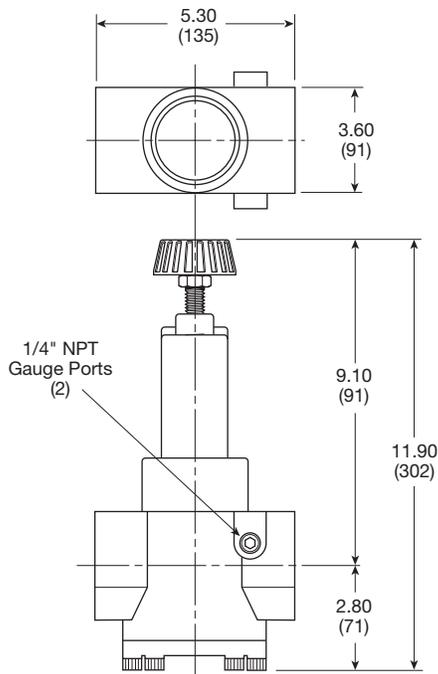
Hi-Flow Regulators

Material Specifications

Adjusting stem & springs	Steel
Body	Zinc Alloy
Bonnet, piston stem, valve poppet & cap	Aluminum
Piston, cap	Plastic
Seals	Nitrile

Repair and Service Kits

Body service kit	PS603P
2" dial face 160 psig (0 to 11.0 bar), gauge	K4520N14160
2" dial face 300 psig (0 to 20.7 bar), gauge	K4520N14300
1-3/4" digital round face 160 psig (0 to 11.0 bar), gauge	K4517N14160D
Mounting bracket kit	PS605P
Non-relieving	PS604P
Relieving	PS626P
0 to 125 psig spring	PS602P
0 to 180 psig spring	PS627

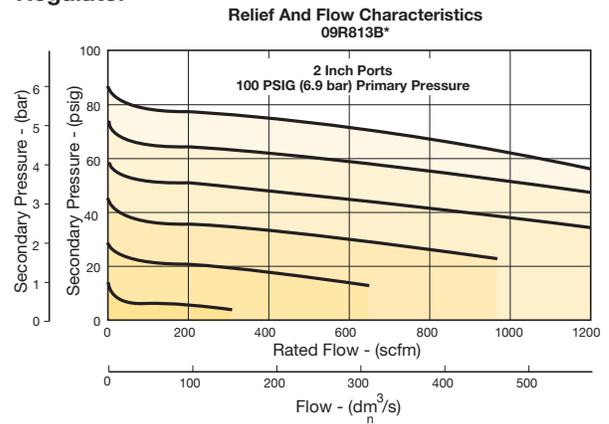


Inches (mm)

Air Preparation Products Regulator Products

Flow Charts

2" Regulator



⚠ WARNING

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

CAUTION:

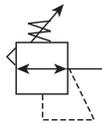
REGULATOR PRESSURE ADJUSTMENT – The working range of knob adjustment is designed to permit outlet pressures within their full range. Pressure adjustment beyond this range is also possible because the knob is not a limiting device. This is a common characteristic of most industrial regulators, and limiting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



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

51R Regulators – Relieving

- Pressure reference indicating dial face
- Non-rising, pressure-adjustment dial
- Self-relieving
- Full pressure adjustment in less than one full turn
- Recommended for pilot-air applications
- Constant bleed, piston operated
- 1/4" port (NPT, BSPP)



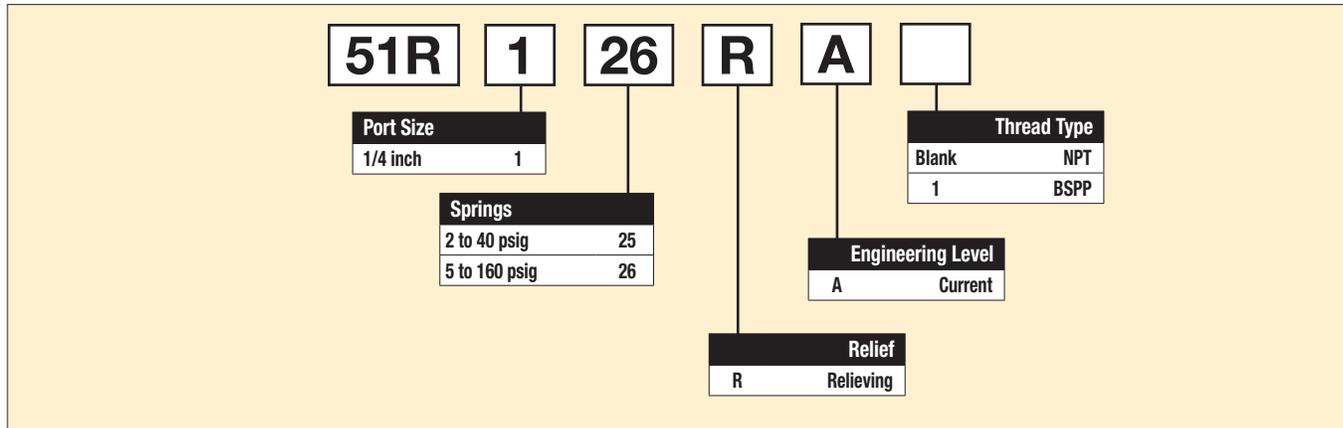
Port size	Description	Part number
1/4"	Standard pressure 5 to 160 psig (0.34 to 11 bar)	51R126RA
1/4"	Low pressure 2 to 40 psig (0.14 to 3 bar)	51R125RA

Operating information

Adjusting pressure range:	2 to 40 psig (0 to 2.8 bar) 5 to 160 psig (0 to 11.0 bar)
Bleed Rate:	0.05 scfm (0.02 dm ³ /s, ANR)
Operating temperature (max):	32°F to 150°F (0°C to 65.6°C)
Supply pressure (max):	300 psig (20.7)
Flow capacity [†] :	0.7 scfm (0.3 dm ³ /s, ANR)
Weight:	1.3 lb (0.5 kg)

[†] scfm = Inlet pressure 100 psig (6.9 bar) inlet. Secondary pressure 90 psig (6.2 bar).

Ordering information:



Most popular.



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

Semi-Precision Regulators

Material Specifications

Body	Zinc
Bonnet	Zinc / brass
Piston	Acetal
Seals	Nitrile
Springs	Steel
Valve assembly	Brass / nitrile / acetal

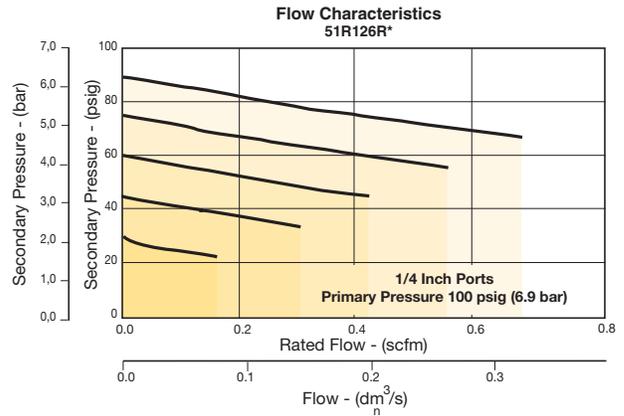
Repair and Service Kits

Adjustment dial knob	RRP-16-024
O-ring, repair kit	GRP-95-260
Piston and bonnet repair kit	RRP-95-765
Spring, regulation, belleville washer, 2 to 40 psig (2.8 bar)	RRP-95-906
Spring, regulation, belleville washer, 5 to 160 psig (11.0 bar)	RRP-95-905
Tamper resistant kit	RRP-95-585
Valve, pilot with o-ring and valve spring	RRP-96-934

Air Preparation Products Regulator Products

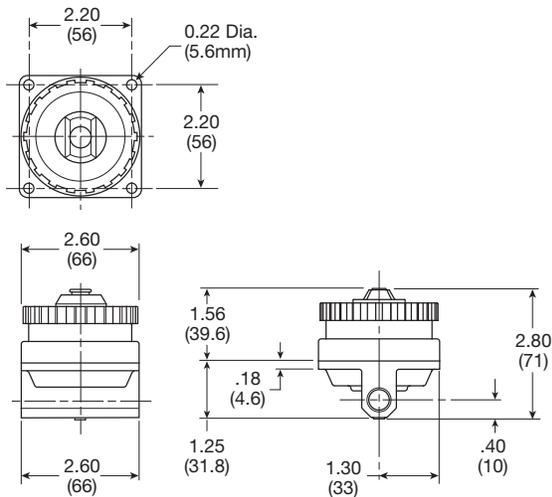
Flow Charts

51R 1/4" Regulator



WARNING

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



Inches (mm)

General

Dial

Pilot

Proportional

Precision

Water

K

Regulator Products



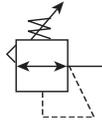
For inventory, lead time, and kit lookup, visit www.pdnplu.com

K43

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

52R Regulators – Relieving

- Balanced poppet design
- Non-rising, pressure-adjusting dial
- High-relief flow (3/16" relief orifice)
- Two 1/4" gauge ports
- Constant bleed, piston operated
- 1/4", 3/8", 1/2", 3/4" ports (NPT, BSPP)



Port size	Description	Part number
1/4"	Standard pressure 5 to 160 psig (0.34 to 11 bar)	52R126RA
1/4"	Low pressure 2 to 40 psig (0.14 to 3 bar)	52R125RA
3/8"	Standard pressure 5 to 160 psig (0.34 to 11 bar)	52R226RA
3/8"	Low pressure 2 to 40 psig (0.14 to 3 bar)	52R225RA
1/2"	Standard pressure 5 to 160 psig (0.34 to 11 bar)	52R326RA
1/2"	Low pressure 2 to 40 psig (0.14 to 3 bar)	52R325RA
3/4"	Standard pressure 5 to 160 psig (0.34 to 11 bar)	52R426RA
3/4"	Low pressure 2 to 40 psig (0.14 to 3 bar)	52R425RA

Operating information

Adjusting pressure range:	2 to 40 psig (0 to 2.8 bar) 5 to 160 psig (0 to 11.0 bar)
Bleed Rate:	0.05 scfm (0.02 dm ³ /s, ANR)
Operating temperature (max):	32°F to 150°F (0°C to 65.6°C)
Supply pressure (max):	300 psig (20.7)
Flow capacity [†] :	1/4" 117 scfm (55.2 dm ³ /s, ANR) 3/8" 180 scfm (85 dm ³ /s, ANR) 1/2" 195 scfm (92 dm ³ /s, ANR) 3/4" 220 scfm (103.8 dm ³ /s, ANR)
Gauge ports:	Two ports 1/4" (can be used as additional high flow 1/4 inch outlet ports)
Weight:	2.3 lb (1.04 kg)

[†] scfm = Inlet pressure 100 psig (6.9 bar) inlet. Secondary pressure 90 psig (6.2 bar).

Ordering information:

52R 1 26 R A

Port Size	
1/4 inch	1
3/8 inch	2
1/2 inch	3
3/4 inch	4

Thread Type	
Blank	NPT
1	BSPP

Springs	
2 to 40 psig	25
5 to 160 psig	26

Engineering Level	
A	Current

Relief	
R	Relieving

Most popular.



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

Semi-Precision Regulators

Material specifications

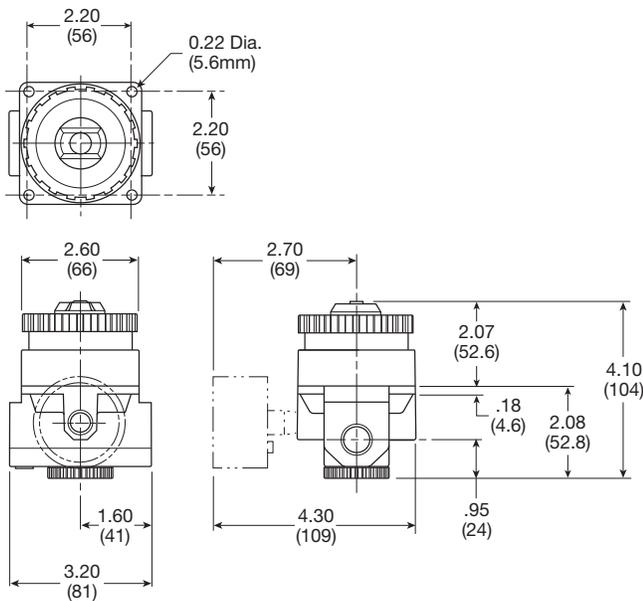
Body	Zinc
Bonnet	Zinc / brass
Piston	Acetal
Seals	Nitrile
Springs	Steel
Valve assembly	Brass / nitrile / acetal

Repair and Service Kits

Adjustment dial knob	RRP-16-024
O-ring, repair kit	GRP-95-260
Piston bottom and o-ring seal	RRP-95-192
Pistons and bonnet repair kit	RRP-95-766
Spring, regulation, belleville washer – 2 to 40 psig range	RRP-95-906
Spring, regulation, belleville washer – 5 to 160 psig range	RRP-95-905
Tamper resistant kit	RRP-95-585
Valve, main with U-cup seal & bottom plug	RRP-95-914
Valve, main with U-cup seal	RRP-95-151
Valve, pilot with o-ring and valve spring	RRP-96-934

WARNING

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

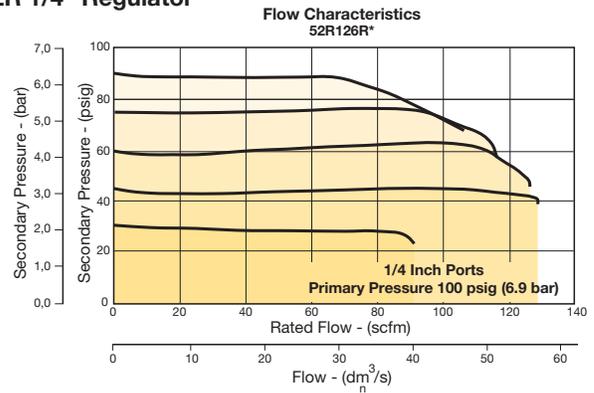


Inches (mm)

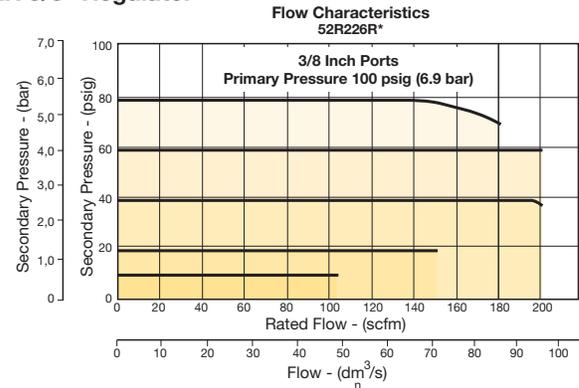
Air Preparation Products Regulator Products

Flow Charts

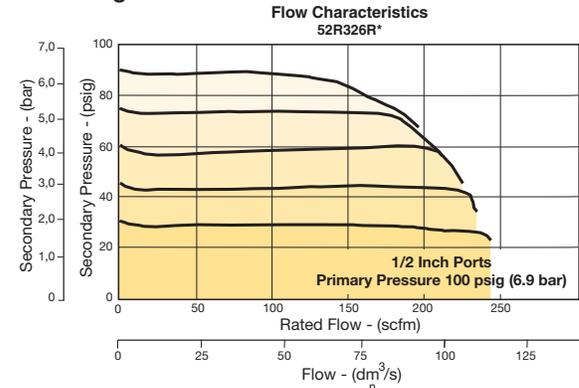
52R 1/4" Regulator



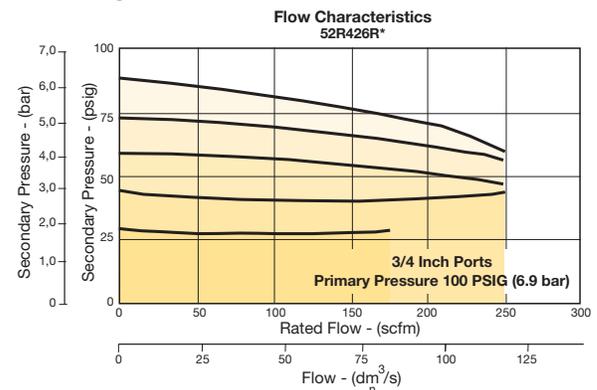
52R 3/8" Regulator



52R 1/2" Regulator



52R 3/4" Regulator



General

Dial

Pilot

Proportional

Precision

Water

K

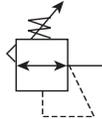
Regulator Products



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

53R Regulators – Relieving

- Balanced poppet design
- Non-rising, pressure-adjusting dial
- High-relief flow (3/16" relief orifice)
- Two 1/4" gauge ports
- Constant bleed, piston operated
- 3/4", 1", 1-1/4" ports (NPT, BSPP)



Port size	Description	Part number
3/4"	Standard pressure 5 to 160 psig (0.34 to 11 bar)	53R426RA
3/4"	Low pressure 2 to 40 psig (0.14 to 3 bar)	53R425RA
1"	Standard pressure 5 to 160 psig (0.34 to 11 bar)	53R526RA
1"	Low pressure 2 to 40 psig (0.14 to 3 bar)	53R525RA
1-1/4"	Standard pressure 5 to 160 psig (0.34 to 11 bar)	53R626RA
1-1/4"	Low pressure 2 to 40 psig (0.14 to 3 bar)	53R625RA

Operating information

Adjusting pressure range:	2 to 40 psig (0 to 2.8 bar) 5 to 160 psig (0 to 11.0 bar)
Bleed Rate:	0.05 scfm (0.02 dm ³ /s, ANR)
Operating temperature (max):	32°F to 150°F (0°C to 65.6°C)
Supply pressure (max):	300 psig (20.7)
Flow capacity [†] :	3/4" 400 scfm (188.8 dm ³ /s, ANR) 1" 650 scfm (306.8 dm ³ /s, ANR) 1-1/4" 700 scfm (330.4 dm ³ /s, ANR)
Gauge ports:	Two ports 1/4" (can be used as additional high flow 1/4 inch outlet ports)
Weight:	2.3 lb (1.04 kg)
[†] scfm = Inlet pressure 100 psig (6.9 bar) inlet. Secondary pressure 80 psig (5.5 bar).	

Ordering information:

53R	4	26	R	A	Blank
Port Size	Springs	Engineering Level	Relief	Thread Type	
3/4 inch 4	2 to 40 psig 25	A Current	R Relieving	Blank NPT	
1 inch 5	5 to 160 psig 26			1 BSPP	
1-1/4 inch 6					

Most popular.



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

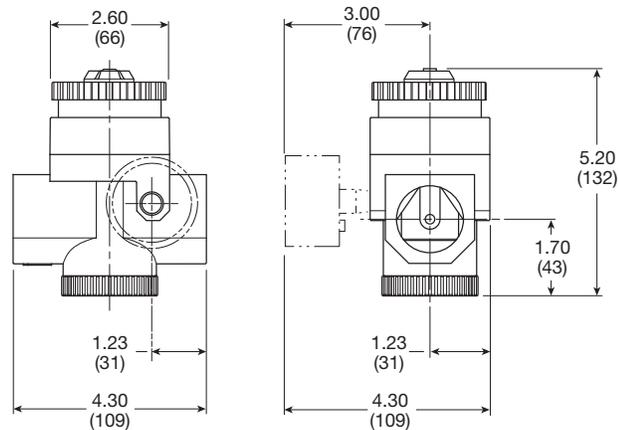
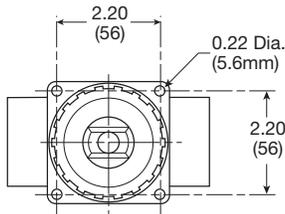
Semi-Precision Regulators

Material Specifications

Body	Zinc
Bonnet	Zinc / brass
Piston	Acetal
Seals	Nitrile
Springs	Steel
Valve assembly	Brass / nitrile / acetal

Repair and Service Kits

Adjustment dial knob	RRP-16-024
O-ring, repair kit	GRP-95-261
Piston, bottom and o-ring seal	RRP-95-192
Pistons and bonnet repair kit	RRP-95-766
Spring, regulation, Belleville washer – 2 to 40 psig range	RRP-95-906
Spring, regulation, Belleville washer – 5 to 160 psig range	RRP-95-905
Tamper resistant kit	RRP-95-585
Valve, main with o-ring seal	RRP-95-152
Valve, pilot with o-ring and valve spring	RRP-96-935

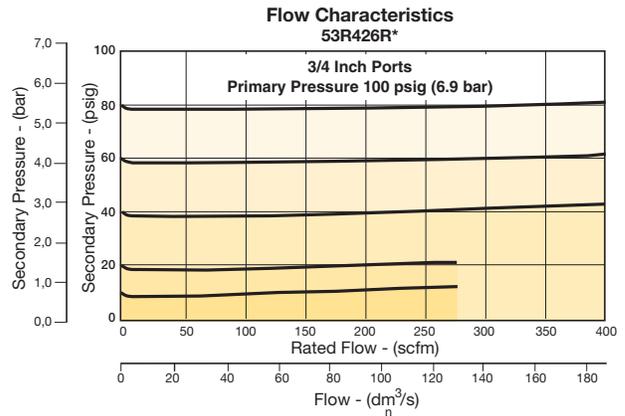


Inches (mm)

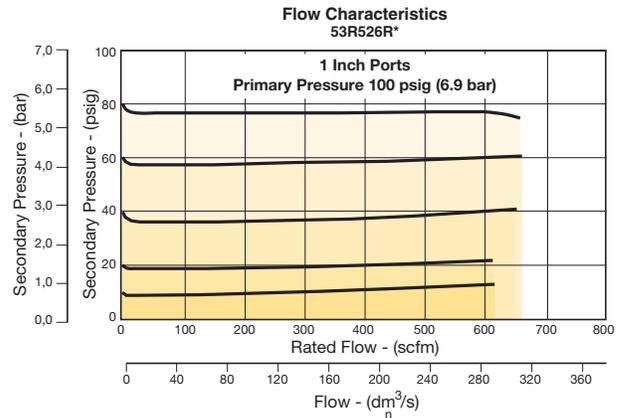
Air Preparation Products Regulator Products

Flow Charts

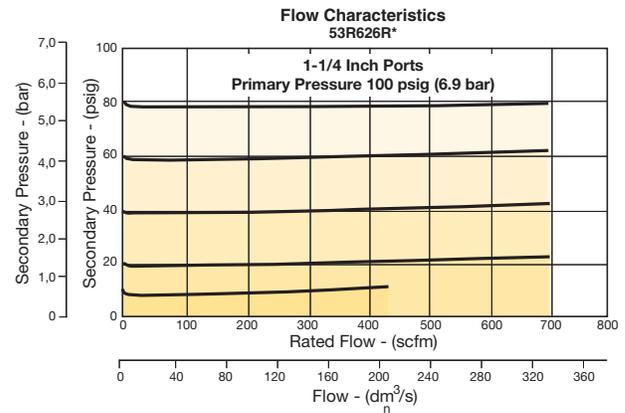
53R 3/4" Regulator



53R 1" Regulator



53R 31-14" Regulator



⚠ WARNING

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

General

Dial

Pilot

Proportional

Precision

Water

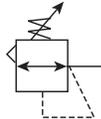
K

Regulator
Products



54R Regulators – Relieving

- Balanced poppet design
- Non-rising, pressure-adjusting dial
- High-relief flow (3/16" relief orifice)
- Two 1/4" gauge ports
- Constant bleed, piston operated
- 1-1/2", 2" ports (NPT, BSPP)



Port size	Description	Part number
1-1/2"	Standard pressure 5 to 160 psig (0.34 to 11 bar)	54R726RA
1-1/2"	Low pressure 2 to 40 psig (0.14 to 3 bar)	54R725RA
2"	Standard pressure 5 to 160 psig (0.34 to 11 bar)	54R826RA
2"	Low pressure 2 to 40 psig (0.14 to 3 bar)	54R825RA

Operating information

Adjusting pressure range:	2 to 40 psig (0 to 2.8 bar) 5 to 160 psig (0 to 11.0 bar)
Bleed Rate:	0.05 scfm (0.02 dm ³ /s, ANR)
Operating temperature (max):	32°F to 150°F (0°C to 65.6°C)
Supply pressure (max):	300 psig (20.7)
Flow capacity [†] :	1-1/2" 1,600 scfm (755 dm ³ /s, ANR) 2" 1,600 scfm (755 dm ³ /s, ANR)
Gauge ports:	Two ports 1/4" (can be used as additional high flow 1/4 inch outlet ports)
Weight:	9 lb (4.1 kg)
[†] scfm = Inlet pressure 100 psig (6.9 bar) inlet. Secondary pressure 80 psig (5.5 bar).	

Ordering information:

54R	7	26	R	A	Blank
Port Size	7				Thread Type
1-1/2 inch	7				Blank NPT
2 inch	8				1 BSPP
		26			
		Springs		Engineering Level	
		2 to 40 psig	25	A	Current
		5 to 160 psig	26		
				Relief	
			R	Relieving	

Most popular.



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

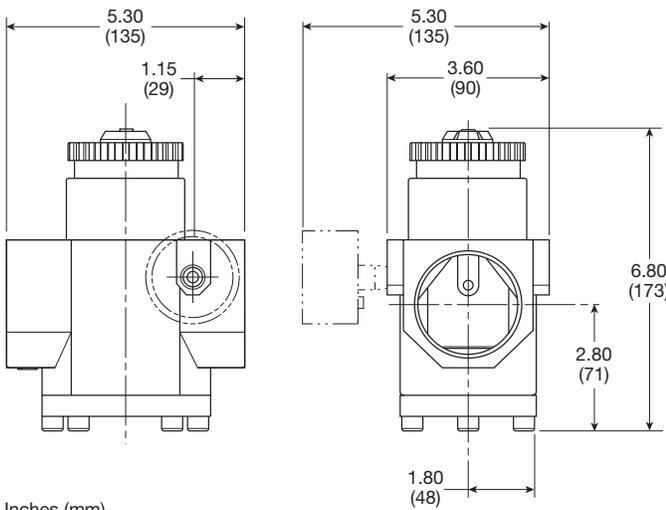
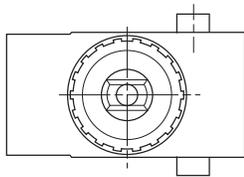
Semi-Precision Regulators

Material Specifications

Body	Zinc
Bonnet	Zinc / brass
Piston	Zinc
Seals	Nitrile
Springs	Steel
Valve assembly	Brass / nitrile / acetal

Repair and Service Kits

Adjustment dial knob	RRP-16-024
O-ring, repair kit	GRP-95-262
Piston, bottom and o-ring seal	RRP-95-192
Pistons and bonnet repair kit	RRP-95-766
Spring, regulation, Belleville washer – 2 to 40 psig range	RRP-95-906
Spring, regulation, Belleville washer – 5 to 160 psig range	RRP-95-905
Spring, main valve	RRP-95-024
Tamper resistant kit	RRP-95-585
Valve, main with o-ring seal	RRP-95-153
Valve, pilot with o-ring and valve spring	RRP-96-935

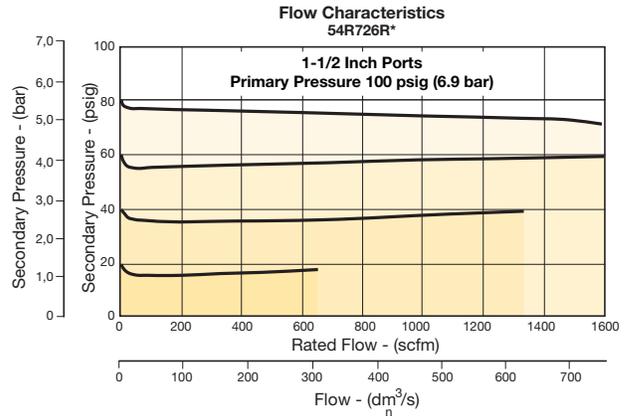


Inches (mm)

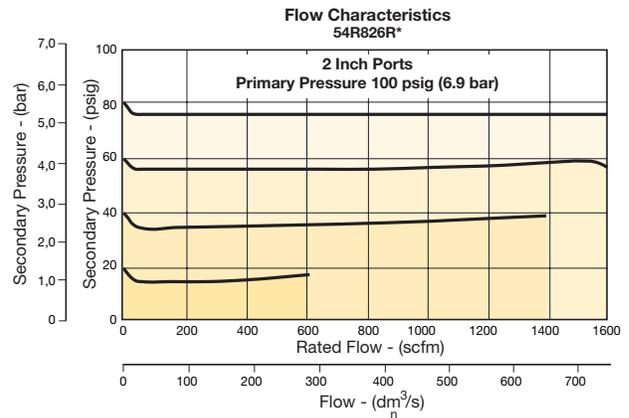
Air Preparation Products Regulator Products

Flow Charts

54R 1-1/2" Regulator



54R 2" Regulator



⚠ WARNING

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

General

Dial

Pilot

Proportional

Precision

Water

K

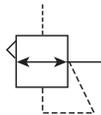
Regulator Products



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

11R Pilot Controlled Regulator – Compact

- Balanced poppet provides quick response and accurate pressure regulation
- Pilot controlled regulators can be mounted “out of reach” with pilot regulator installed in a convenient location
- Solid control piston for extended life
- Two full flow 1/4" gauge ports can be used as additional outlets
- Pilot port 1/4 Inch
- 1/4", 3/8", 1/2" ports (NPT, BSPP)



Port size	Description	Part number
1/4"	Without gauge	11R115PC
1/4"	With 160 psi gauge	11R121PC
3/8"	Without gauge	11R215PC
3/8"	With 160 psi gauge	11R221PC
1/2"	Without gauge	11R315PC
1/2"	With 160 psi gauge	11R321PC

NOTE: 2.0 Dia. (51 mm) hole required for panel mounting.

Operating information

Supply pressure (max):	0 to 250 psig (0 to 17.2 bar)	
Operating temperature:	32°F to 175°F (0°C to 80°C)	
Flow capacity [†] :		
High flow	1/4"	85 scfm (40 dm ³ /s, ANR)
	3/8"	95 scfm (44.8 dm ³ /s, ANR)
	1/2"	95 scfm (44.8 dm ³ /s, ANR)
Gauge ports (2):	1/4 inch (can be used as additional full flow 1/4 inch outlet ports)	
Weight:	1.3 lb (0.53 kg)	

[†] scfm = Standard cubic feet per minute at 100 psig inlet, 90 psig no flow secondary setting and 10 psig pressure drop.

Ordering information:

11R

Port Threads	
1/4 inch	1
3/8 inch	2
1/2 inch	3

2

Relief / Gauge Options	
Without gauge	
Non-relieving piston	14
Relieving piston	15
With gauge *	
Non-relieving piston	19
Relieving piston	21

* Includes 2" dial face gauge 0 to 300 psig.

15

P

Adjustment	
P	Pilot operated

C

Engineering Level	
C	Current

Port Type

	NPT	BSPP
Blank		
1		

Most popular.



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

K50

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

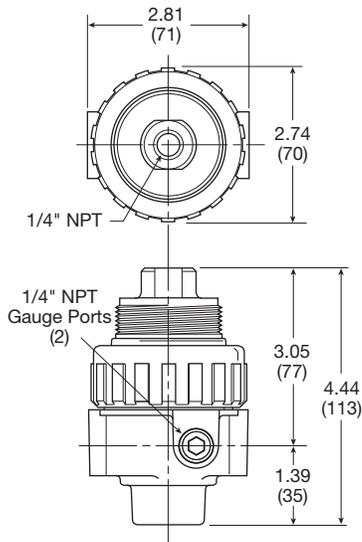
Compact Pilot Controlled Regulators

Material Specifications

Body & pilot cap	Zinc
Piston, valve poppet, & collar	Plastic
Seals	Nitrile
Springs	Steel

Repair and Service Kits

Seat Insert kit	PS713P
2" dial face 60 psig (0 to 4.1 bar), gauge	K4520N14060
2" dial face 160 psig (0 to 11.0 bar), gauge	K4520N14160
2" dial face 300 psig (0 to 20.7 bar), gauge	K4520N14300
1-3/4" digital round face 160 psig (0 to 11.0 bar), gauge	K4517N14160D
Mounting bracket kit (includes panel mount nut)	PS707P
Panel mount nut, plastic	P04082
Panel mount nut, metal	P04079B
Pilot conversion kit – relieving	PS745P
Non-Relieving	PS747P
Relieving	PS749P

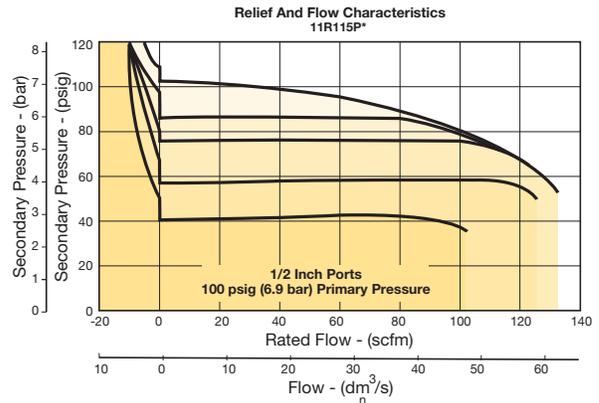


Inches (mm)

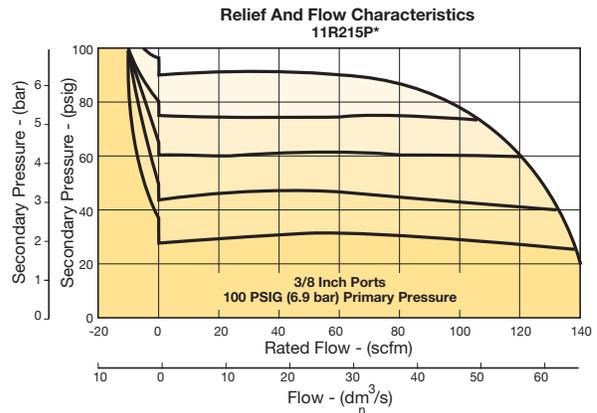
Air Preparation Products Regulator Products

Flow Charts

1/2" Regulator



3/8" Regulator

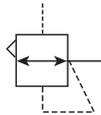


WARNING

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

12R Pilot Controlled Regulator – Standard

- Balanced poppet provides quick response and accurate pressure regulation
- Pilot controlled regulators can be mounted “out of reach” with pilot regulator installed in a convenient location
- Solid control piston for extended life
- Two full flow 1/4" gauge ports can be used as additional outlets
- Pilot port 1/4 Inch
- 1/2", 3/4" ports (NPT, BSPP, BSPT)



Port size	Description	Part number
1/2"	Without gauge	12R315PB
1/2"	With 160 psi gauge	12R321PB
3/4"	Without gauge	12R415PB
3/4"	With 160 psi gauge	12R421PB

NOTE: 2.0 Dia. (51 mm) hole required for panel mounting.

Operating information

Supply pressure (max):	0 to 250 psig (0 to 17.2 bar)	
Operating temperature:	32°F to 175°F (0°C to 80°C)	
Flow capacity [†] :		
High flow	1/2"	140 scfm (66 dm ³ /s, ANR)
	3/4"	140 scfm (66 dm ³ /s, ANR)
Gauge ports (2):	1/4 inch (can be used as additional full flow 1/4 inch outlet ports)	
Weight:	2.0 lb (0.91 kg)	

[†] scfm = Standard cubic feet per minute at 100 psig inlet, 90 psig no flow secondary setting and 10 psig pressure drop.

Ordering information:

12R

Port Threads	
1/2 inch	3
3/4 inch	4

3

Relief / Gauge Options	
Without gauge	
Non-relieving piston	14
Relieving piston	15
With gauge *	
Non-relieving piston	19
Relieving piston	21

* Includes 2" dial face gauge 0 to 300 psig.

15

P

Adjustment	
P	Pilot operated

B

Engineering Level	
B	Current

Port Type

Blank	NPT
1	BSPP
2	BSPT

General

Dial

Pilot

Proportional

Precision

Water

K

Regulator Products

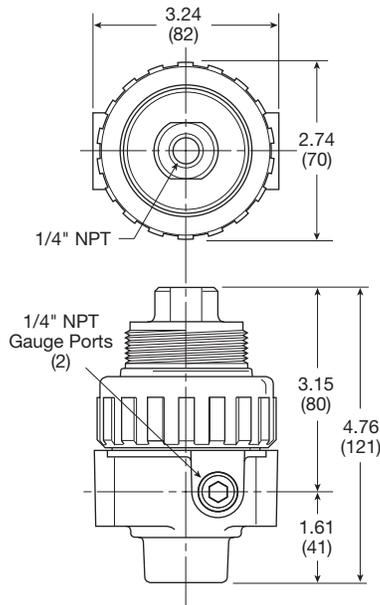
Standard Pilot Controlled Regulators

Material Specifications

Body & pilot cap	Zinc
Piston, valve poppet, & collar	Plastic
Seals	Nitrile
Springs	Steel

Repair and Service Kits

Seat insert kit	PS813P
2" dial face 60 psig (0 to 4.1 bar)	K4520N14060
2" dial face 160 psig (0 to 11.0 bar)	K4520N14160
2" dial face 300 psig (0 to 20.7 bar)	K4520N14300
1-3/4" digital round face 160 psig (0 to 11.0 bar)	K4517N14160D
Mounting bracket kit (includes panel mount nut)	PS807P
Panel mount nut, plastic	P04082
Panel mount nut, metal	P04079B
Pilot conversion kit – relieving	PS745P
Non-relieving	PS847P
Relieving	PS849P

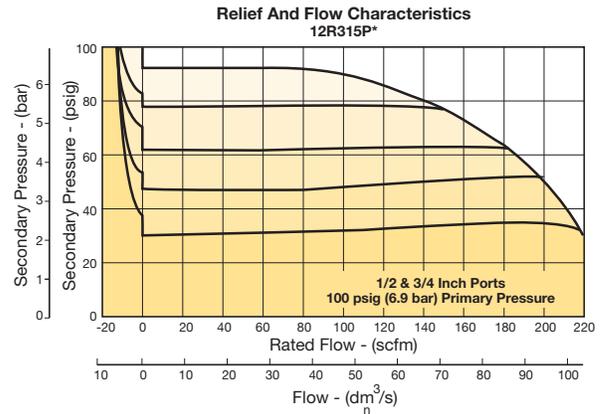


Inches (mm)

Air Preparation Products Regulator Products

Flow Charts

1/2 and 3/4" Regulator



⚠ WARNING

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

General

Dial

Pilot

Proportional

Precision

Water

K

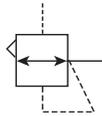
Regulator
Products



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

P3NR Pilot Controlled Regulator - Hi-Flow

- Port blocks (PB) available to provide 1-1/2" port extension to 1" ported bodies
- Self relieving feature plus balanced poppet provides quick response and accurate pressure regulation
- Solid control piston for extended life
- 3/4", 1" 1-1/2" ports (NPT, BSPP)



Port size	Description	Part number
3/4"	Without gauge	P3NRA96BPP
1"	Without gauge	P3NRA98BPP
1-1/2" #	Without gauge	P3NRA9PBPP

1" port body with 1-1/2" port block.

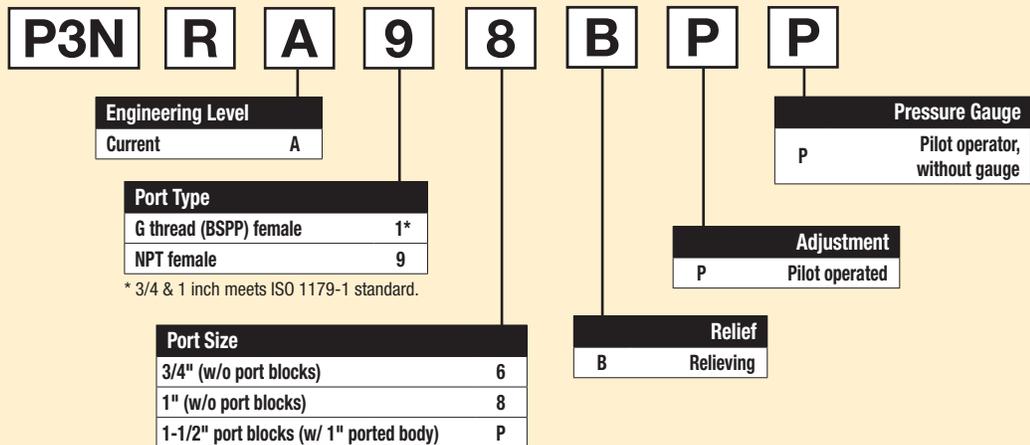
Operating information

Supply pressure (max):	250 psig (17.2 bar)
Operating temperature:	32°F to 175°F (0°C to 80°C)
Flow capacity†:	
High flow	
3/4"	300 scfm (141.6 dm³/s, ANR)
1"	300 scfm (141.6 dm³/s, ANR)
1-1/2"	350 scfm (165.2 dm³/s, ANR)
Gauge ports (2):	1/4 inch
Weight:	
3/4", 1"	3.3 lb (1.5 kg)
1-1/2" #	4.4 lb (2.0 kg)

† scfm = Standard cubic feet per minute at 100 psig inlet, 90 psig no flow secondary setting and 10 psig pressure drop.

1" port body with 1-1/2" port block

Ordering information:



Note: BSPP ported units supplied using NPT ported bodies and BSPP port block kits.

Most popular.



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

K54

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

Hi-Flow Pilot Controlled Regulators

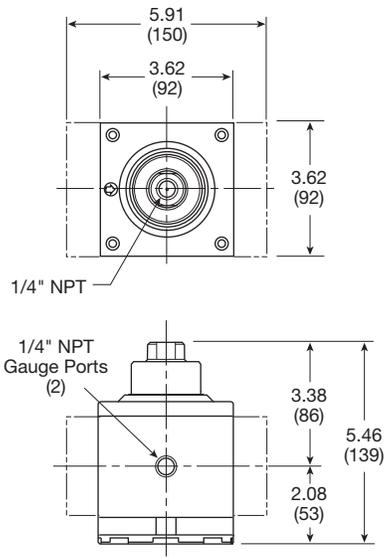
Material Specifications

Adjusting stem	Steel
Body	Aluminum
Bonnet	Aluminum
Piston	Plastic
Poppet assembly	Brass
Seals	Nitrile
Springs – poppet	Steel

Repair and Service Kits

2" dial face 60 psig (0 to 4.1 bar), gauge	K4520N14060
2" dial face 160 psig (0 to 11.0 bar), gauge	K4520N14160
2" dial face 300 psig (0 to 20.7 bar), gauge	K4520N14300
1-3/4" digital round face 160 psig (0 to 11.0 bar), gauge	K4517N14160D
Mounting bracket kit*	P3NKA00MW
Relieving	P3NKA00PD

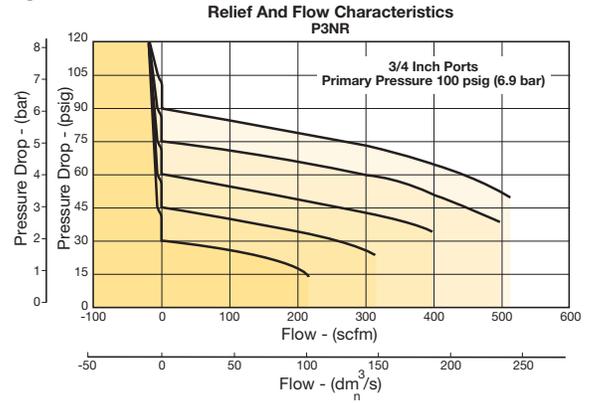
* If 1-1/2 BSPP E02 fittings are required, use P3NKA00BMW.



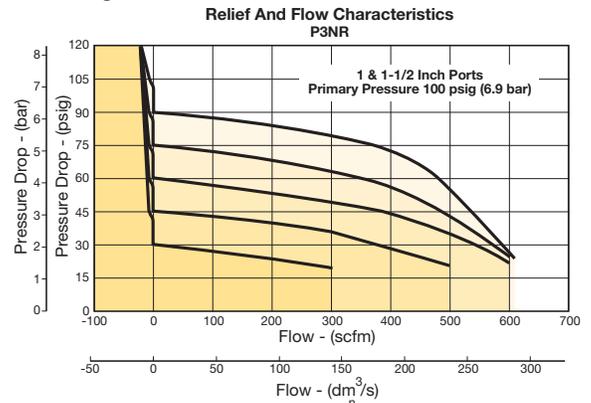
Air Preparation Products Regulator Products

Flow Charts

3/4" Regulator



1" & 1-1/2" Regulator



⚠ WARNING

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

General

Dial

Pilot

Proportional

Precision

Water

K

Regulator
Products



R119 – Pilot Operated Regulators

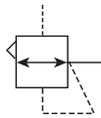
- Adapted for control by a remote or distant small pilot regulator. Ideal for maximum capacity requirements in applications where units are not readily accessible
- High flow performance featuring rugged design for the most demanding applications
- Ideal for those installations calling for constant pressure with wide variation in flow
- Diaphragm operated design with balanced poppet and constant bleed pilot for quick and accurate regulation.
- Secondary aspiration plus balanced poppet provides quick response and accurate pressure regulation
- Reverse flow available
- 1/4", 3/8", 1/2" ports (NPT, BSPP)



Operating information

Supply pressure (max):	300 psig (0 to 20.7 bar)	
Air consumption:	Constant bleed from air pilot chamber: approx. 0.17 scfm (10 scfh)	
Operating temperature:	40°F to 125°F (4.4°C to 52°C)	
Pilot pressure:	1/4", 3/8" thread - 1/8" 1/2" thread - 1/4"	
Reduced pressure range:	Adjustable to within 5 to 7 psig (0.34 to 0.48 bar) of supply pressure	
Flow capacity†:		
High flow	1/4"	100 scfm (47.2 dm³/s, ANR)
	3/8"	110 scfm (51.9 dm³/s, ANR)
	1/2"	150 scfm (70.8 dm³/s, ANR)
Gauge ports (2):	1/4 inch	
Weight:	1/4"	1.6 lb (0.73 kg)
	3/8"	1.6 lb (0.73 kg)
	1/2"	2.6 lb (1.18 kg)

† scfm = Standard cubic feet per minute at 100 psig inlet, 75 psig no flow secondary setting and 20 psig pressure drop.



Port size	Description (0-125 psig reduced pressure)	Part number
1/4"	Without gauge, relieving, NPT	R119-02J/M2
3/8"	Without gauge, relieving, NPT	R119-03J/M2
1/2"	Without gauge, relieving, NPT	R119-04J/M2

Ordering information:

R119 - 02 J /M2

Port Threads	-			Engineering Level	/M2
NPT	-			/M2	Current
BSPP	G				
Port Size					
1/4 inch	02				
3/8 inch	03				
1/2 inch	04				
Reduced Pressure Range					
Air pilot operated	J				
Options					
Blank	None				
K	Non-relieving				
X64*	Fluorocarbon o-rings and diaphragm				
X71	Non-bleed (for use with electronic controllers)				
X7	Brass bottom plug				

* Brass bottom plug standard with X64 option.

 Most popular.



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

Material Specifications

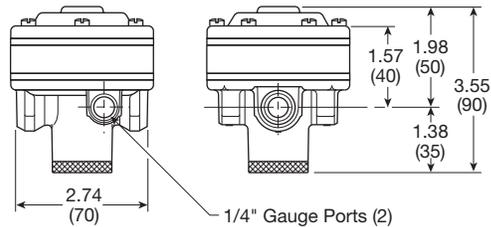
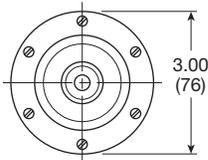
Body, ring, top plate	Zinc
Bottom plug	Nylon
Innervalve	Brass
Seals	Buna N

Repair and Service Kits

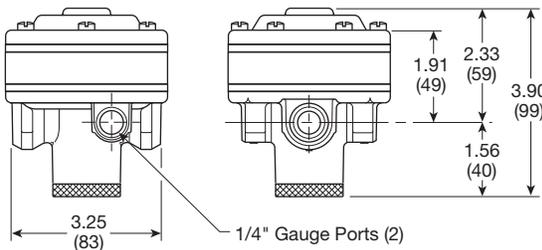
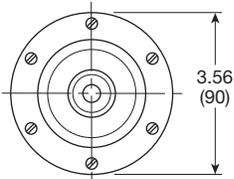
2" dial face 60 psig (0 to 4.1 bar), gauge	K4520N14060
2" dial face 160 psig (0 to 11.0 bar), gauge	K4520N14160
2" dial face 300 psig (0 to 20.7 bar), gauge	K4520N14300
1-3/4" digital round face 160 psig (0 to 11.0 bar), gauge	K4517N14160D
Non-relieving diaphragm, valve assembly (1/2")	RK118X20A
Non-relieving diaphragm, valve assembly (1/4", 3/8")	RK118X20Y
Relieving diaphragm, valve assembly (1/2")	RK119X20A
Relieving diaphragm, valve assembly (1/4", 3/8")	RK119X20Y

For fluorocarbon repair kits, add X64 to kit number suffix.
 For non-bleed pilot repair kits, add X71 to kit number suffix.

R119-02J, R119-03J



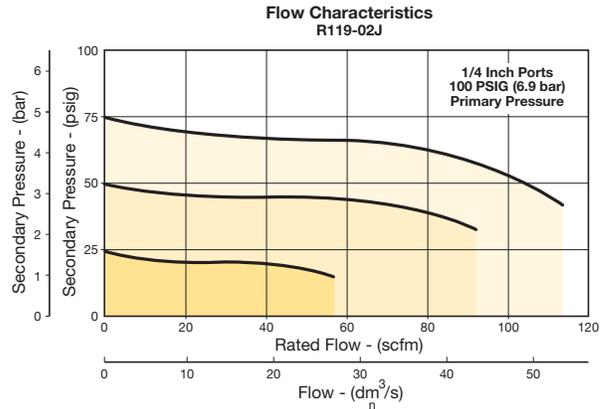
R119-04J



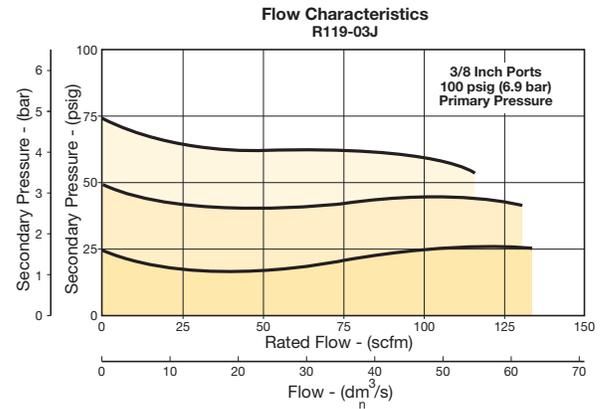
Inches (mm)

Flow Charts

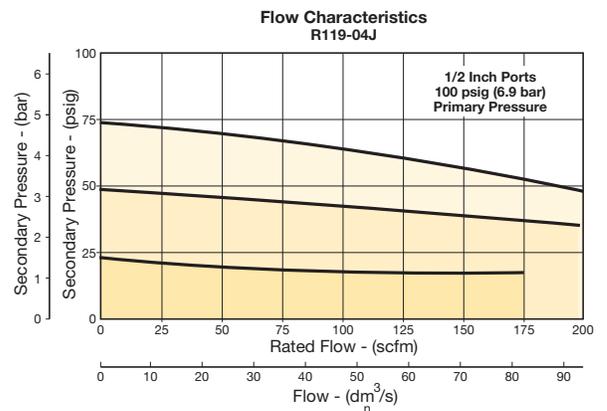
1/4" Regulator



3/8" Regulator



1/2" Regulator



⚠ WARNING

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

General
Dial
Pilot
Proportional
Precision
Water
K
Regulator Products



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

R119 Pilot Operated Regulators - Hi-Flow

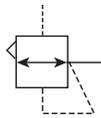
- Adapted for control by a remote or distant small pilot regulator. Ideal for maximum capacity requirements in applications where units are not readily accessible
- High flow performance featuring rugged design for the most demanding applications
- Ideal for those installations calling for constant pressure with wide variation in flow
- Diaphragm operated design with balanced poppet and constant bleed pilot for quick and accurate regulation
- Secondary aspiration plus balanced poppet provides quick response and accurate pressure regulation
- Reverse flow version available
- 3/4", 1", 1-1/2" ports (NPT, BSPP)



Operating information

Supply pressure (max):	300 psig (0 to 20.7 bar)	
Air consumption:	Constant bleed from air pilot chamber: approx. 0.17 scfm (10 scfh)	
Operating temperature:	40°F to 125°F (4.4°C to 52°C)	
Reduced pressure range:	Adjustable to within 5 to 7 psig (0.34 to 0.48 bar) of supply pressure	
Flow capacity†:		
High flow	3/4"	300 scfm (141.6 dm³/s, ANR)
	1"	300 scfm (141.6 dm³/s, ANR)
	1-1/2"	500 scfm (236 dm³/s, ANR)
Gauge ports (2):	1/4 inch	
Weight:	3/4"	5.2 lb (2.36 kg)
	1"	5.2 lb (2.36 kg)
	1-1/2"	5.6 lb (2.54 kg)

† scfm = Standard cubic feet per minute at 100 psig inlet, 75 psig no flow secondary setting and 20 psig pressure drop.



Port size	Description (0-125 psig reduced pressure)	Part number
3/4"	Without gauge, relieving, NPT	R119-06J/M2
1"	Without gauge, relieving, NPT	R119-08J/M2
1-1/2"	Without gauge, relieving, NPT	R119-12J/M2

Ordering information:

R119 - 06 J [] /M2

Port Threads		Engineering Level
NPT	-	/M2
BSPP	G	Current

Port Size		Options
3/4 inch	06	Blank
1 inch	08	K
1-1/2 inch	12	X64*
		X71
		X80

Reduced Pressure Range	
Air pilot operated	J

* Brass bottom plug standard with X64 option.

Most popular.



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

Hi-Flow Regulators

Material Specifications

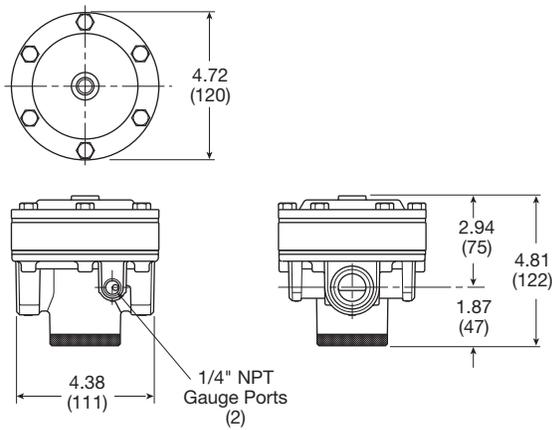
Body, ring, top plate	Zinc
Bottom plug, innervalve	Brass
Seals	Buna N

Repair and Service Kits

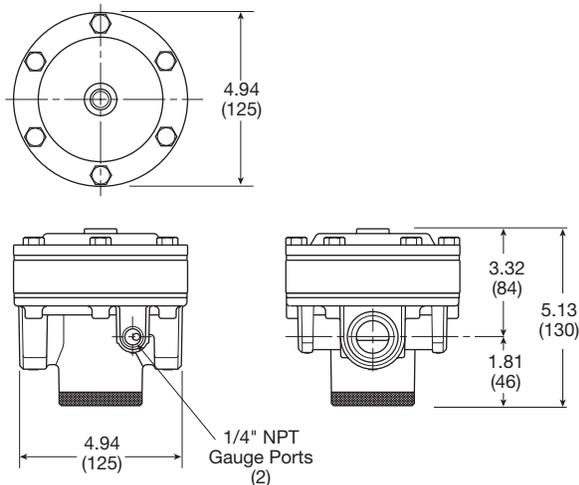
2" dial face 60 psig (0 to 4.1 bar), gauge	K4520N14060
2" dial face 160 psig (0 to 11.0 bar), gauge	K4520N14160
2" dial face 300 psig (0 to 20.7 bar), gauge	K4520N14300
1-3/4" digital round face 160 psig (0 to 11.0 bar), gauge	K4517N14160D
Non-relieving diaphragm, valve assembly (3/4", 1")	RK118X20B
Non-relieving diaphragm, valve assembly (1-1/4", 1-1/2")	RK118X20D
Relieving diaphragm, valve assembly (3/4", 1")	RK119X20B
Relieving diaphragm, valve assembly (1-1/4", 1-1/2")	RK119X20D

For Fluorocarbon Repair Kits, add X64 to Kit Number suffix.

R119-06J, R119-08J



R119-12J

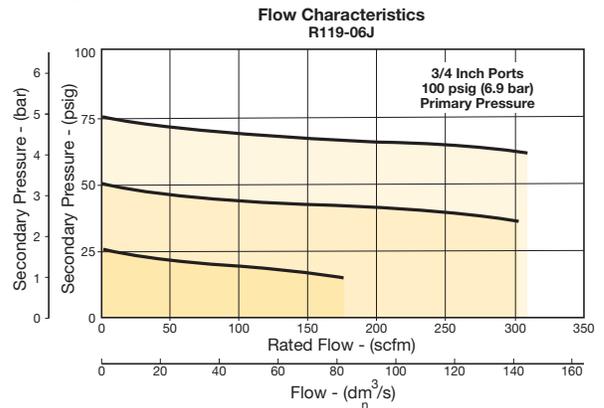


Inches (mm)

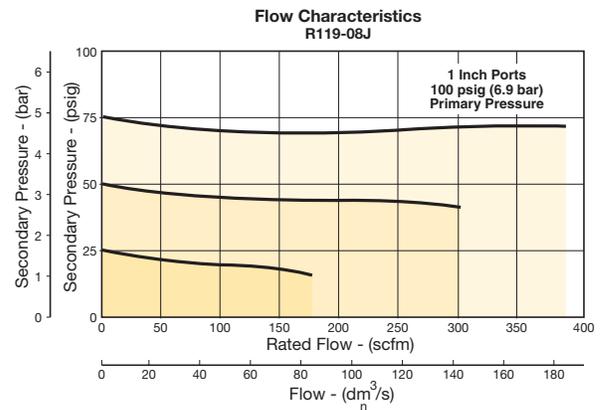
Air Preparation Products Regulator Products

Flow Charts

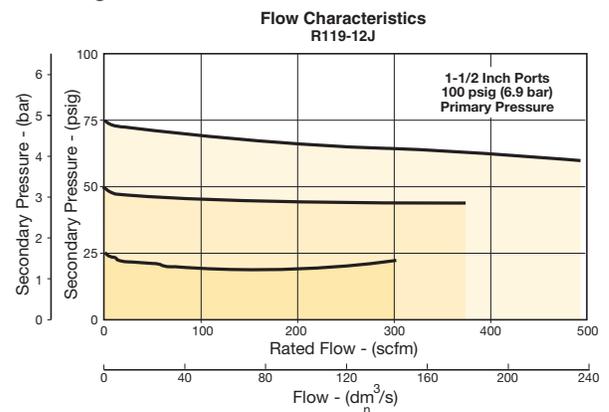
3/4" Regulator



1" Regulator



1-1/2" Regulator



⚠ WARNING

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

General

Dial

Pilot

Proportional

Precision

Water

K

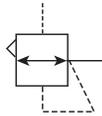
Regulator
Products



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

R119 Pilot Operated Regulators - Hi-Flow

- Adapted for control by a remote or distant small pilot regulator. Ideal for maximum capacity requirements in applications where units are not readily accessible
- High flow performance featuring rugged design for the most demanding applications
- Ideal for those installations calling for constant pressure with wide variation in flow
- Piston operated design with balanced poppet and dual constant bleed for quick and accurate regulation
- 2", 2-1/2" ports (NPT, BSPP)



Port size	Description (0-125 psig reduced pressure)	Part number
2"	Without gauge, relieving, NPT	R119-16J
2-1/2"	Without gauge, relieving, NPT	R119-20J

Operating information

Supply pressure (max):	300 psig (0 to 20.7 bar)	
Air consumption:	Air pilot chamber: approx. 0.17 scfm (10 scfh)	
Constant bleed from:	Reduced pressure: approx. 0.17 scfm (10 scfh)	
Operating temperature:	40°F to 120°F (4.4°C to 48.9°C)	
Reduced pressure range:	Adjustable to within 5 to 7 psig (0.34 to 0.48 bar) of supply pressure	
Flow capacity†:		
High flow	2"	1800 scfm (850 dm³/s, ANR)
	2-1/2"	1800 scfm (850 dm³/s, ANR)
Gauge ports (2):		
Can be used for full flow	1/4 inch	
High pressure outlet for pilot	1/4 inch	
Weight:	15 lb (6.8 kg)	

† scfm = Standard cubic feet per minute at 100 psig inlet, 75 psig no flow secondary setting and 20 psig pressure drop.

Ordering information:

R119 - 16 J

Port Threads	Reduced Pressure Range
NPT -	J Air pilot operated
BSPP G	

Port Size	
2 inch	16
2-1/2 inch	20

NOTE: Non-relieving not available.

Most popular.



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

K60

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

Hi-Flow Regulators

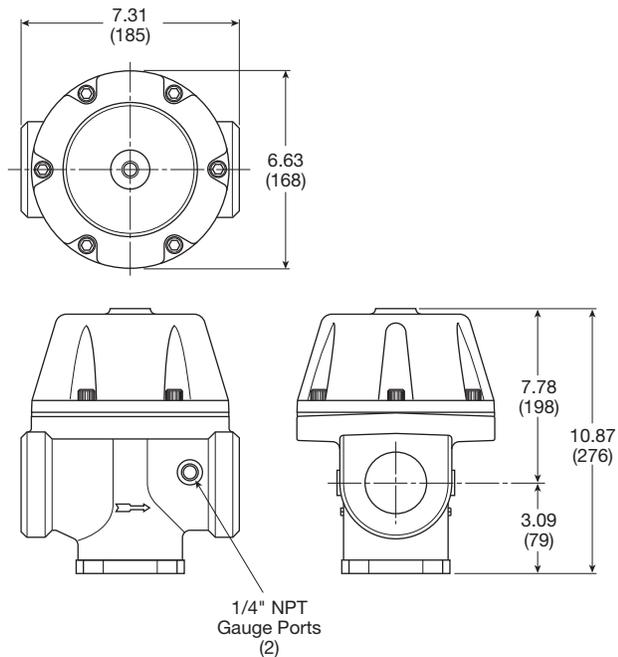
Material Specifications

Body, piston	Aluminum
Seals	Buna N
Innervalve stainless	Brass &

Repair and Service Kits

2" dial face 60 psig (0 to 4.1 bar), gauge	K4520N14060
2" dial face 160 psig (0 to 11.0 bar), gauge	K4520N14160
2" dial face 300 psig (0 to 20.7 bar), gauge	K4520N14300
1-3/4" digital round face	
160 psig (0 to 11.0 bar), gauge	K4517N14160D
Piston type regulation (2", 2-1/2")	RK119G

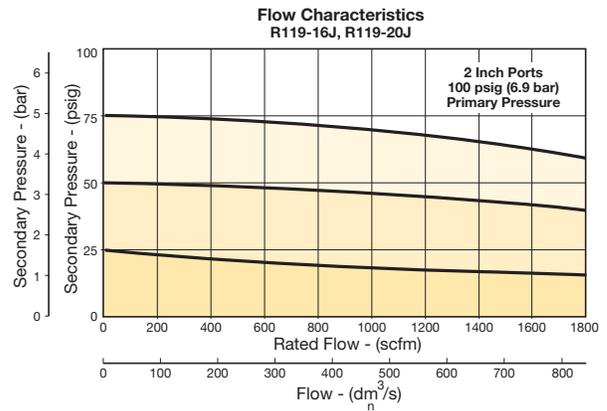
R119-16J, R119-20J



Inches (mm)

Air Preparation Products Regulator Products

Flow Charts



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



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

K61

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

General

Dial

Pilot

Proportional

Precision

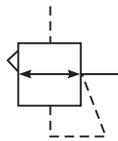
Water

K

Regulator Products

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



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" 550 scfm (259.6 dm³/s, ANR) 1" 550 scfm (259.6 dm³/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.	

Port size	Description	Part number
3/4"	Pilot operated regulator	P3YRA96BPPN
1"	Pilot operated regulator	P3YRA98BPPN

Ordering information

P3YRA 9 6 BPPN

Basic series	Thread type*	Port size
Pilot Operated Regulator P3YRA	BSPP 1	3/4 6
	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

K62

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

K
Regulator Products

General

Dial

Pilot

Proportional

Precision

Water

Pilot Operated Regulators

Material specifications

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

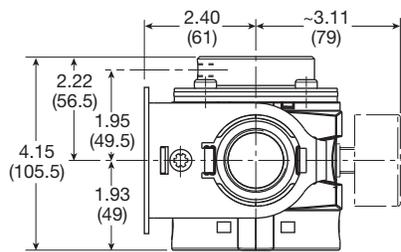
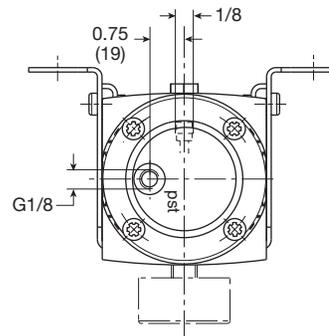
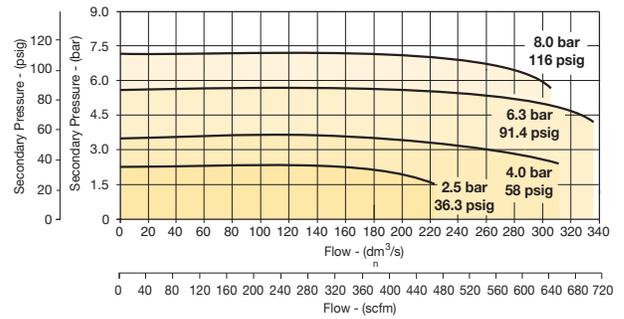
WARNING

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

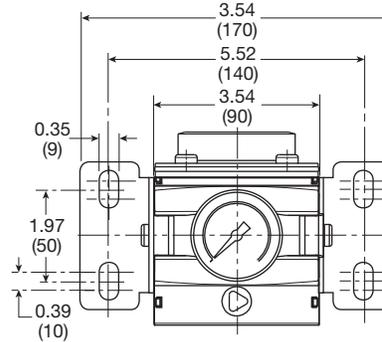
Air Preparation Products Regulator Products

Flow characteristics

3/4" and 1" Pilot Regulator



Inches (mm)



General

Dial

Pilot

Proportional

Precision

Water

K

Regulator Products

P31P & P32P Proportional Regulators

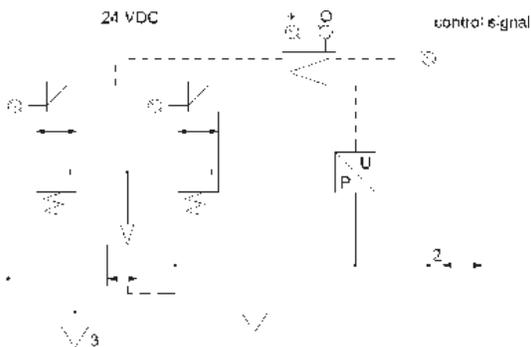
- Very fast response times
- Accurate output pressure
- Parameter settings
- Selectable I/O parameters
- Quick, full flow exhaust
- LED display indicates output pressure
- No air consumption in steady state
- Multiple mounting options
- Protection to IP65



**P31P Series
Bottom exhaust**



**P32P Series
Bottom exhaust**



Port size	Description	Part number
1/4"	145 psig (0-10 bar), NC 0-10V	P31PA92AD2VD1
1/2"	145 psig (0-10 bar), NC 0-10V	P32PA92AD2VD1

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

Body size	Thread type	Power supply	Control signal	Input connector
Global modular mini (1/4") P31PA	BSPP 1	2 24 volts	V 0-10V [†]	1 M12 (4-pin)
Global modular compact (1/2") P32PA	BSPT 2		‡ Factory setting is 0-10 V control signal. 4-20 mA control signal available via parameter 4 on keypad.	
	NPT 9			
Port size	Version	Pressure range	Output signal	
Global modular mini (1/4") 2	Bottom ported exhaust (NC) A	Z 0 - 29 psig (0 - 2 bar)	D Digital, PNP	
Global modular compact (1/2") 4	Bottom ported forced exhaust (NO) [†] E	D 0 - 145 psig (0 - 10 bar)	P PNP or 0-10V	
			N NPN or 0-10V	
			M 4-20mA fixed	

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

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

Proportional Regulators

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 Ri = 1 kOhm
Outside the signal band this connection is 0V.

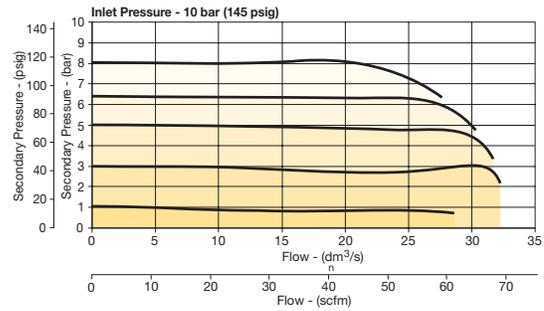
Connections

(In case of output signal (Option D)
Central M12 connector 4-pole
The electrical connections are as follows:

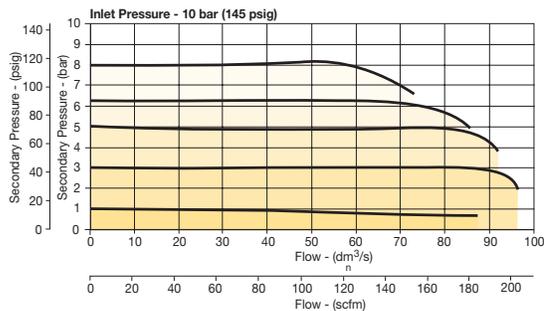
Pin No.	Function	Color
1	24 V Supply	Brown
2	0 to 10 V Control Signal Ri = 100k Ω	White
	4 to 20mA Control Signal Ri = 500 Ω	
3	0 V (GND) Supply & Set Point Ground	Blue
4	24 V Alarm Output Signal	Black

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 61000-6-2:2001
- EN 61000-6-3:2001
- 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

General

Dial

Pilot

Proportional

Precision

Water

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Regulator Products

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:

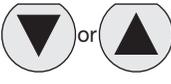
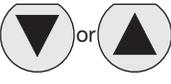
When keys DOWN and UP are pressed during startup, (connecting to the 24V power supply) manual mode is activated. This means that the user is able to in/decrease the output pressure of the regulator, by pressing the UP or DOWN key. During this action the display will blink, indicating that the manual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

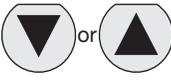
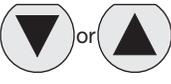
Parameter Number 0 – Reset Back to Factory Settings

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 Milliamps

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



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

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

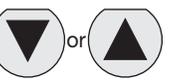
Output Signal option “N” = Digital NPN or Analog 1-10V

- 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.

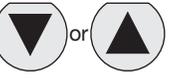
Adjust Span Analog Output Signal

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



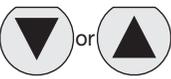
For inventory, lead time, and kit lookup, visit www.pdnplu.com

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Regulator Products

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					
Until Display Reads			 Flashing Decimal	 Flashing Decimal	 Flashing	
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					
Until Display Reads			 Flashing Decimal	 Flashing Decimal	 Flashing	
Description	Accesses changeable parameters.	Accesses parameter no. 14.	Displays current parameter value. 1 = psig 0 = bar 2 = MPa	Edits parameter.	Accepts and saves new parameter setting.	Sequences to next parameter.

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Preset Minimum Pressure

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

Parameter Number 18 – Set Minimum Preset Pressure

Step	1	2	3	4	5	
Press 	 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: <u>2 bar unit:</u> x 2 mbar x % P19 <u>10 bar unit:</u> x 10 mbar x % P19	Edits parameter.	Accepts and saves new parameter setting.	Sequences to next parameter.

Set Pressure Correction

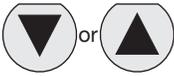
Pressure correction allows the user to set a Maximum pressure as a percentage of secondary pressure F.S.

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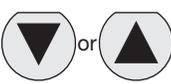
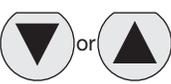
For inventory, lead time, and kit lookup, visit www.pdnplu.com

General

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					
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.

Pilot

Dial

Precision

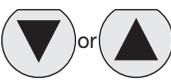
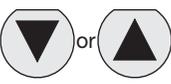
Proportional

Water

**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					
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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K70

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

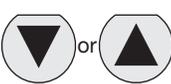
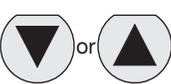
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Regulator Products

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)

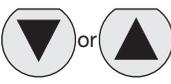
Step	1	2	3	4	5	
Press 	 3-6 seconds					
Until Display Reads			 Flashing Decimal	 Flashing Decimal (value between 4 and 40)	 Flashing	
Description	Accesses changeable parameters.	Accesses parameter no. 13.	Displays current parameter value. Incremental value is x 10 mbar	Edits parameter.	Accepts and saves 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					
Until Display Reads			 Flashing Decimal	 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					
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



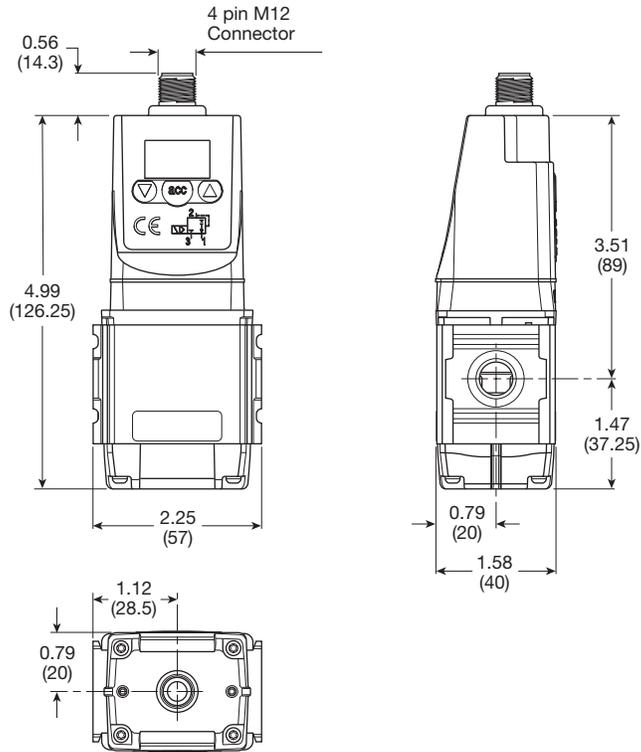
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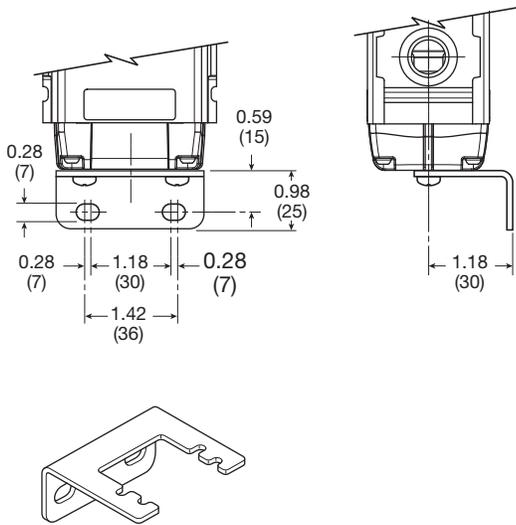
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Precision
Water
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P31P

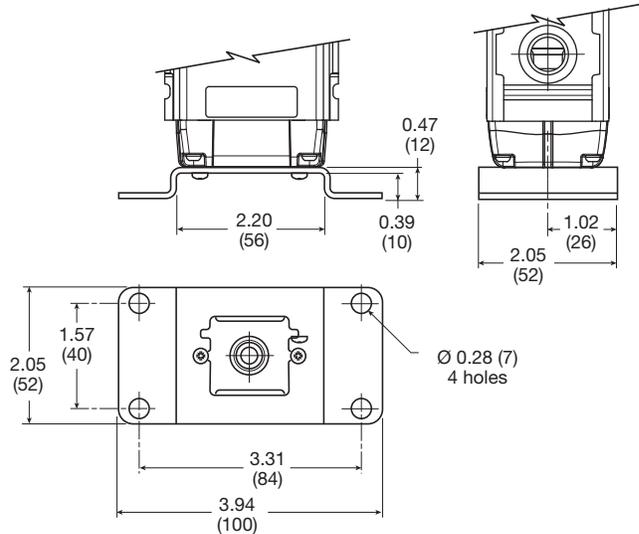
Dimensions inches (mm)



**L-Bracket
P3HKA00ML**



**Foot Bracket
P3HKA00MC**



Cables

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

Most popular.



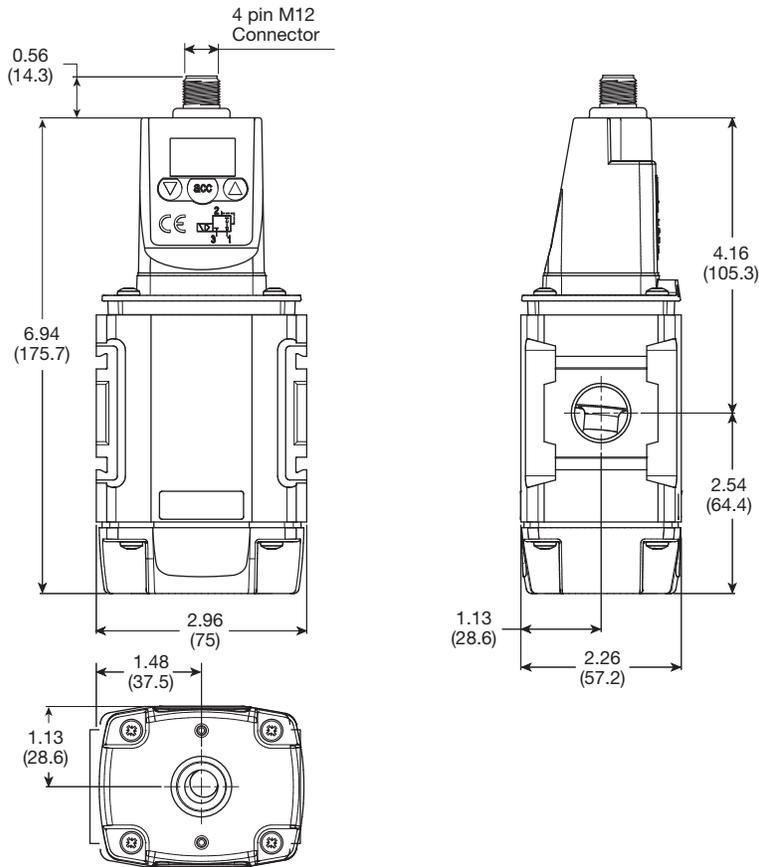
For inventory, lead times, and kit lookup, visit www.pdnplu.com

Proportional Regulators

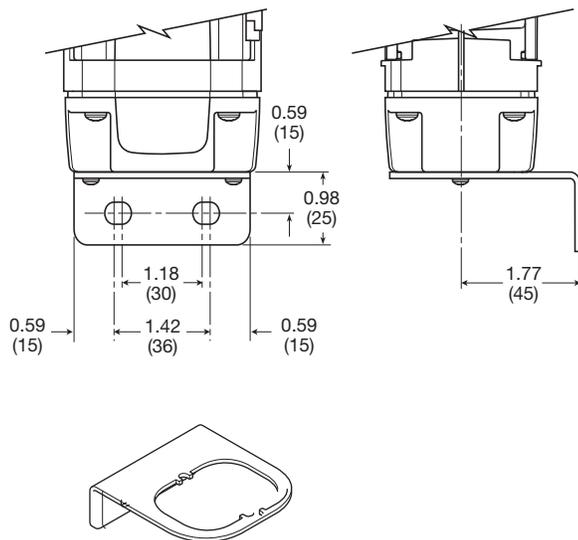
**Air Preparation Products
Regulator Products**

P32P

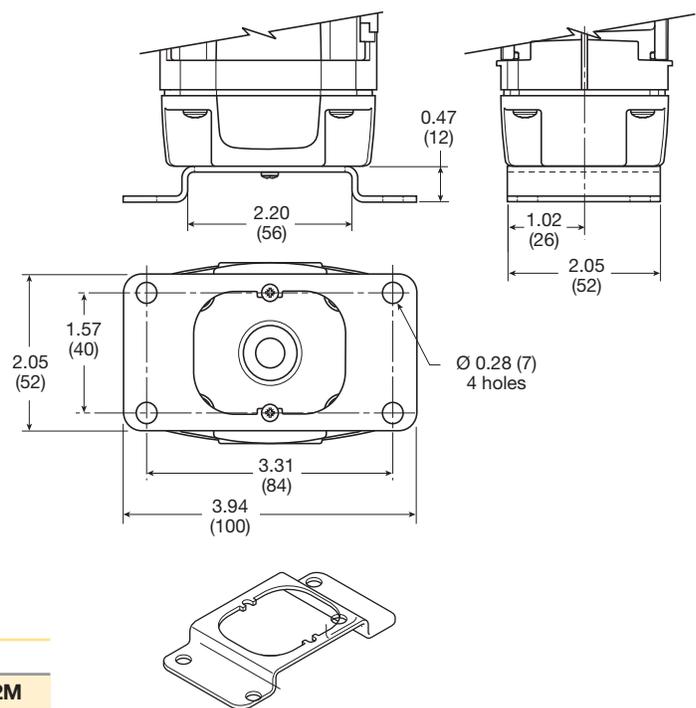
Dimensions inches (mm)



**L-Bracket
P3KKA00ML**



**Foot Bracket
P3KKA00MC**



Cables

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

Most popular.



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General

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Regulator
Products

PAR™-15 Programmable Air Regulating Valve

General

PAR™-15 is a unique 3-Way, programmable, air regulating valve that functions as a precise, high-flow, multi-purpose regulator.

Dial

Signals from a computer, programmable controllers or from simple electrical switches, fed to the valve's four solenoids, control the division of a single inlet pressure into any one of fifteen equally spaced output pressures.

The valve's response is instant and repeatable, reducing the need for expensive feedback controls.

Pilot

It goes far beyond the capabilities of conventional controls by providing a limitless range of application possibilities including cylinder pressure/stroke control, clamping, retracting, approach, flow, and impact.

PAR™-15 eliminates shock absorbers, increases tool life, saves air, and reduces workpiece damage.

Proportional

- Full flow capacity for direct air device operation.
- Quick, full flow exhaust.
- Instantly repeatable response.
- Air saving design, close crossover, non-constant bleed.
- Wide range of discrete output pressures.
- Normally closed or normally open operators.
- Compatible with computers and programmable controllers with digital solid state relay outputs.
- Meets NEMA 4 standard (6-Pin option only).

Precision

Life Expectancy

Normal multi-million cycle life expectancy of these valves is based on the use of properly filtered air at room temperature.

Water



No Enclosure



NEMA 4 Enclosure – 6-Pin Connector

Operating information

Pressure range:	
Inlet (max)	150 psig (1035 kPa)
Output (min)	6 psig (41 kPa)
Temperature range (ambient)†:	32°F to 140°F (0°C to 60°C)
Voltage range:	+10% to -10% of rating
Flow capacity:	
Inlet to outlet	275 scfm (129.8 dm³/s, ANR)
Outlet to exhaust	225 scfm (106.2 dm³/s, ANR)
Output response:	20 milliseconds
Weight:	
Without enclosure	6.3 lb (2.9 kg)
With 6-pin & cord	8.0 lb (3.6 kg)

⚠ † Caution: If it is possible that the ambient temperature may fall below freezing, the media must be moisture free to prevent internal damage or unpredictable behavior.

Solenoid Operated – Normally Closed – Internal Pilot*

Port Size			Solenoid Operated – Normally Closed – Internal Pilot*		
Body	Pilot	Voltage/Cycle	No Enclosure	NEMA 4 Enclosure - 6-Pin Connector	
				Quadrant 2 †	Quadrant 4 †
1/2"	1/8"	24V/60Hz	W21540172B	W21542172B	W21544172B
1/2"	1/8"	12VDC	W21540175B	W21542175B	W21544175B
1/2"	1/8"	24VDC	W21540179B	W21542179B	W21544179B
1/2"	1/8"	110/120V / 50/60Hz	W21540183B	W21542183B	W21544183B

* Normally open and external pilot options also available.

† Theoretically Quadrant 1 is defined as the 6-Pin connector on the same face with the inlet port. Looking from the top down and rotating the enclosure clockwise 90° you get Quadrant 2 or 270° for Quadrant 4.

Material Specifications

Body, Bottom and Top Plates	Aluminum
Divider	Aluminum
Piston	Acetal
Poppet	Aluminum
Poppet guide	Aluminum
Poppet seal	Fluorocarbon
Seals	Nitrile
Spring	Stainless steel

☐ Most popular.

Lubrication

Although the valve does not require lubrication for a normal service life, use of SAE 10 mineral base oil is recommended to extend component life. This should be supplied using a 1/2 inch full flow lubricator located upstream of the valve inlet port.

CAUTION:
DO NOT USE SYNTHETIC, RECONSTITUTED, OR OILS WITH AN ALCOHOL CONTENT.

Wiring

Follow all national and local electrical codes.

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Regulator Products



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Ordering information:

W21

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Basic Series	
PAR™-15 Version 2.0	W21

Actuation	
Solenoid Operated	5

Port Size / Thread Type	
1/2" NPT	4

Voltage	
72	24V/60 Hz
75	12VDC
79	24VDC
83	120/110V 60/50 Hz

Solenoid Type / Pilot Source	
1	Normally Closed / Internal Pilot
3	Normally Closed / External Pilot
5	Normally Open / Internal Pilot
7	Normally Open / External Pilot

Engineering Level	
B	Current

Label / Temp Option	
Blank	Standard Temperatures

Enclosure / Connector Quadrant			
No enclosure	0	Nema 4 enclosure with 6-pin micro connector at quadrant 4, cord included	F
Metal enclosure with 7/8" conduit opening at quadrant 2	1	Nema 4 enclosure with 6-pin micro connector at quadrant 2, no cord	G
Nema 4 enclosure with 6-pin mini connector quadrant 2, cord included	2	Nema 4 enclosure with 6-pin micro connector at quadrant 4, no cord	H
Metal enclosure with 7/8" conduit opening at quadrant 4	3	Lighted enclosure with 6-pin micro connector at quadrant 2, cord included	K*
Nema 4 enclosure with 6-pin mini connector quadrant 4, cord included	4	Lighted enclosure with 6-pin micro connector at quadrant 2, no cord	L*
Nema 4 enclosure with 6-pin mini connector quadrant 2, no cord	5	Lighted enclosure with 6-pin mini connector at quadrant 4, cord included	M*
Nema 4 enclosure with 6-pin mini connector quadrant 4, no cord	6	Lighted enclosure with 6-pin mini connector at quadrant 4, no cord	N*
Lighted enclosure with 6-pin mini connector at quadrant 2, cord included	B*	Lighted enclosure with 6-pin micro connector at quadrant 4, cord included	P*
Lighted enclosure with 6-pin mini connector at quadrant 2, no cord	C*	Lighted enclosure with 6-pin micro connector at quadrant 4, no cord	Q*
Nema 4 enclosure with 6-pin micro connector at quadrant 2, cord included	E		

Theoretically, Quadrant 1 is defined as the 6-Pin Connector on the same face with the inlet port. Looking from the top down and rotating the enclosure clockwise 90° you get Quadrant 2 or 270° for Quadrant 4.

* Available in 24VDC and 120VAC Only. Not NEMA 4 rated.

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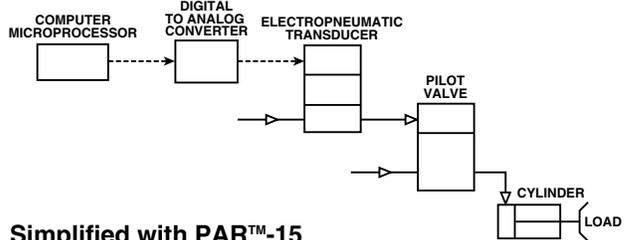


Electropneumatic System

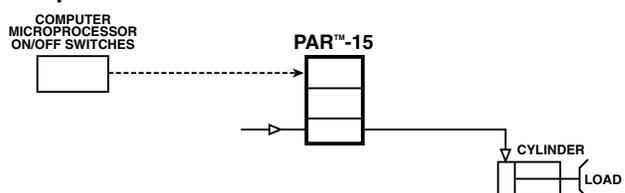
A conventional system is usually composed by several electronic and pneumatic components as shown on the schematic. The cylinder which is moving a load is operated with a pilot valve which receives the instructions from an electropneumatic transducer. The transducer converts electronic signals to pneumatic signals. These electronic signals are usually of an analog type, but controllers/computer microprocessors send digital signals as outputs, therefore, a digital to analog signal converter is required.

The simplified schematic with the PARTM-15 is reduced to fewer components since the PARTM-15 takes the place of the digital to analog converter, the electropneumatic transducer, and the pilot valve. The benefits being fewer components, and less maintenance and downtime.

Conventional

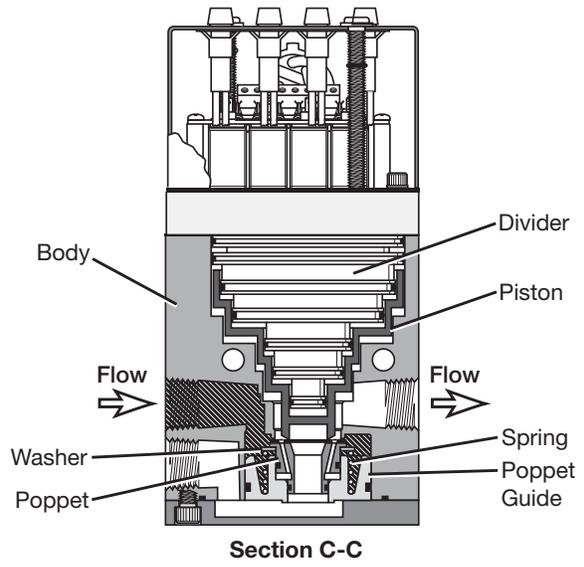
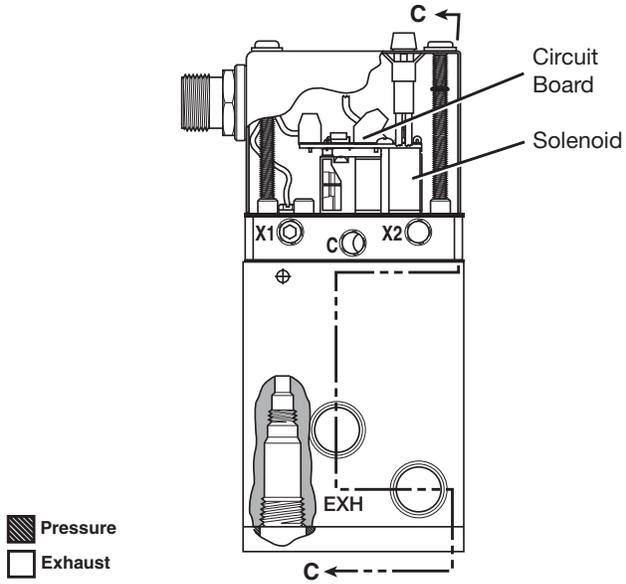


Simplified with PAR™-15



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

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Application

Pneumatic systems operating under multiple pressures, and requiring almost instantaneous pressure changes are good application cases for the PAR™-15. Usually the more pressures needed for a particular operation, the easier it is to justify the valve, since it will take the place of several pneumatic regulators and selector valves.

Among the most common applications are brakes and clutches, painting, printing feeds and tension, robotics, and spot welding.

Other Applications:

- Air Chucks
- Air Cylinder Control
- Air Winches
- Blow Molding Control
- Contact Force Control
- Conveyor Control
- Die Cushioning
- Dynamic Braking
- Fuel Control
- Hopper Control
- Robot Gripper Control
- Valve Positioning
- Variable Clamping
- Variable Pressure Processing
- Torque Control
- Wire Tensioning

Operation

Four solenoids are controlled by on/off signals that selectively divide any input pressure into any one of 15 equally spaced pressures plus zero. See the truth table.

Full flow exhaust permits instant reduction to any lower selected pressure or zero. High relief capacity quickly vents downstream overpressure. The output pressure will begin to change within 20 milliseconds after a change in the electrical input to one or more of the solenoids. However, the time which elapses until the output pressure reaches the new level will depend upon the volume of air, the size of the connection from the PAR™-15 valve and the magnitude of the pressure change.

A small regulator may be used to feed the external pilot port X1 on units with normally closed solenoid operators or X2 on units with normally open solenoid operators. The PAR™-15 valve will then divide this pressure independent of mainline supply pressure so long as the pilot regulator is set to a pressure below the mainline supply pressure. A regulated external supply will eliminate the effects of fluctuating mainline pressures. (NOTE: A regulator placed upstream of the inlet also eliminates the effects of fluctuating pressures).

The PAR™-15 is available with two types of output pressure regulation: increasing output and decreasing output. In the increasing output pressure regulation type, normally closed solenoid operators are used to divide the input pressure into 15 equal steps, ranging from 0 PSIG (all solenoid operators de-energized) to full line pressure (all solenoid operators energized). With the decreasing output pressure regulation type, normally open solenoid operators are used to divide the input pressure into 15 equal steps, but starting with full line pressure (all solenoid operators de-energized) and ending with 0 PSIG (all solenoid operators energized).

Truth Table

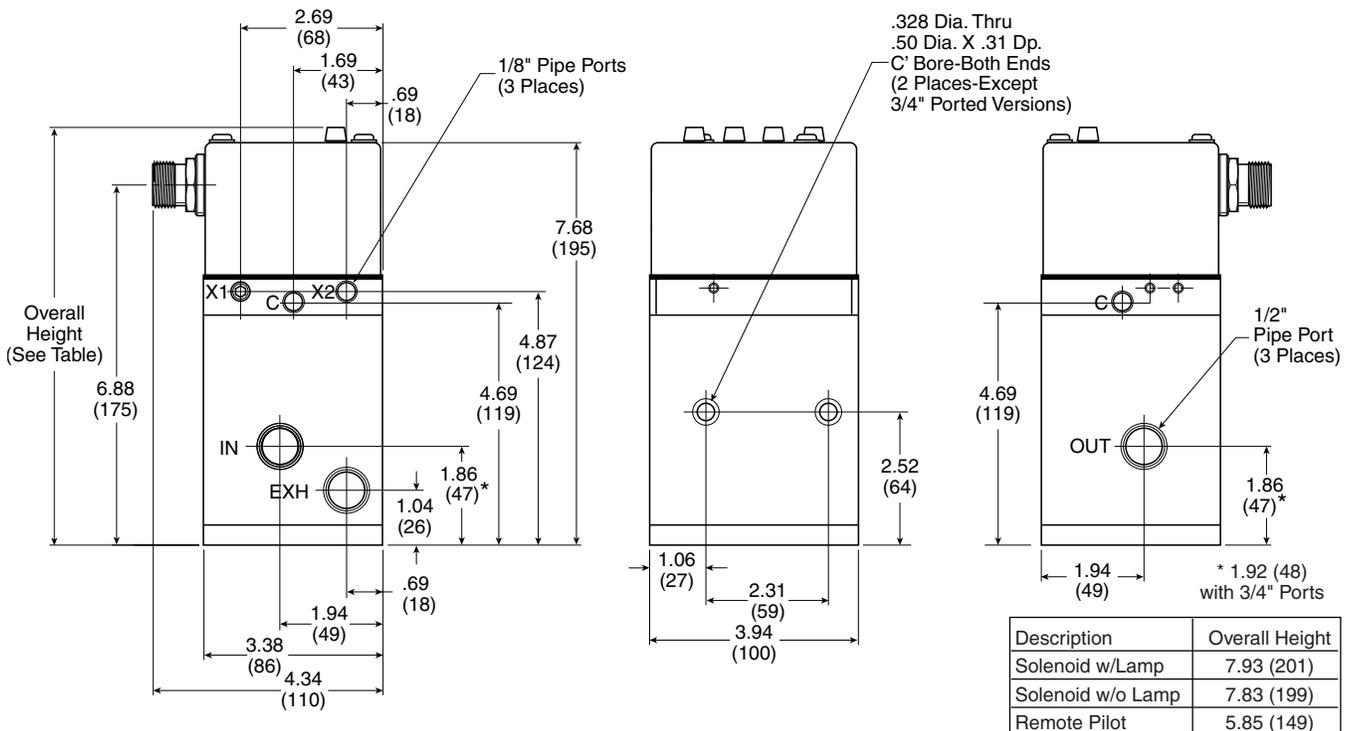
Normally Closed Valves / Solenoids	Normally Open Valves / Solenoids		PSIG Output@ 75 PSIG Inlet ^{††}	PSIG Output@ 90 PSIG Inlet
Binary Input * 8 4 2 1	Binary Input * 8 4 2 1			
Pin Number [†] 5 3 2 1	Pin Number [†] 5 3 2 1	Proportion of Inlet Pressure		
0 0 0 0	1 1 1 1	0	0	0
0 0 0 1	1 1 1 0	1/15	5	6
0 0 1 0	1 1 0 1	2/15	10	12
0 0 1 1	1 1 0 0	3/15	15	18
0 1 0 0	1 0 1 1	4/15	20	24
0 1 0 1	1 0 1 0	5/15	25	30
0 1 1 0	1 0 0 1	6/15	30	36
0 1 1 1	1 0 0 0	7/15	35	42
1 0 0 0	0 1 1 1	8/15	40	48
1 0 0 1	0 1 1 0	9/15	45	54
1 0 1 0	0 1 0 1	10/15	50	60
1 0 1 1	0 1 0 0	11/15	55	66
1 1 0 0	0 0 1 1	12/15	60	72
1 1 0 1	0 0 1 0	13/15	65	78
1 1 1 0	0 0 0 1	14/15	70	84
1 1 1 1	0 0 0 0	15/15	75	90

Table above illustrates available output pressures for inlet pressures of 75 PSIG and 90 PSIG. Inlet pressure may be any value between 15 and 150 PSIG. Output pressure increment will be 1/15 of inlet pressure.

* 0 = Voltage "OFF"
1 = Voltage "ON"

† Available only on units with 6-Pin connector.

†† Shaded output pressures shown are theoretical and are below the minimum operating range of the valve and should not be used. Please refer to the Engineering Specifications for minimum output.



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K77

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Regulator Products

Programmable Air Regulating Valve

Air Preparation Products Regulator Products

Narrow Band Control

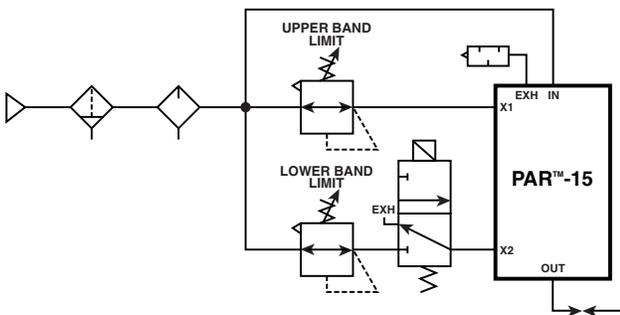
The PAR™-15 can also be used to provide a narrower band of output pressures with the lowest selected pressure greater than zero.

EXAMPLE:

Assume valve with normally closed solenoids. Customer desires to divide a range from 25 PSIG to 100 PSIG into 15 increments of 5 PSIG each. This is done by applying 100 PSIG to the external pilot supply port X1 and 25 PSIG to the pilot exhaust port X2.

Two 1/8 inch relieving regulators are required. The addition of one 3-Way normally closed solenoid operated valve allows the additional selection of 0 PSIG. These are connected as shown in the diagram. The relieving regulators set the upper and lower band limits. With a normally closed PAR™-15 valve, zero output pressure may be selected by simultaneously de-energizing the 3-Way valve and the PAR™-15 valve solenoids. With a normally open PAR™-15 valve, zero output pressure may be selected by simultaneously de-energizing the 3-Way valve and energizing the PAR™-15 valve solenoids.

Narrow Band Control Diagram



Note: For valves with normally open solenoids, reverse the X1 and X2 connections.

DO NOT PLUG THE 1/8" PORTS MARKED C AND X2 ON THE VALVE UPSTREAM AND X2 ON THE VALVE DOWNSTREAM.

Operation of the valves is the same as mentioned previously under the Operation section. See Cascading Truth Table for the proper input signal to each solenoid, and the resulting proportion of inlet pressure for an output pressure.

A formula can be used to calculate the output pressure of the valve downstream.

$$\text{OUTPUT PRESSURE (PSIG)} = \frac{\text{LINE PRESSURE (PSIG)}}{15} \times \left(\frac{\text{BINARY INPUT UPSTREAM VALVE}}{16} + \frac{\text{BINARY INPUT DOWNSTREAM VALVE}}{\text{VALVE}} \right)$$

Where:

LINE PRESSURE is the supply pressure to both valves and it must be equal.

BINARY INPUT UPSTREAM VALVE is the binary number, a number from 0 to 15 depending on which solenoids are energized (normally closed solenoids) or de-energized (normally open solenoids) on the valve upstream.

BINARY INPUT DOWNSTREAM VALVE is the binary number, a number from 0 to 15 depending on which solenoids are energized (normally closed solenoids) or de-energized (normally open solenoids) on the valve downstream.

EXAMPLE:

Assume the line pressure is 120 PSIG, the valve upstream has inputs 1 & 2 energized, and the valve downstream has inputs 1 & 8 energized. Also, assume normally closed solenoids. What is the output pressure of the valve downstream?

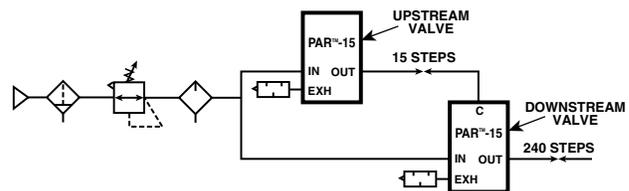
SOLUTION:

BINARY INPUT VALVE UPSTREAM = 1 + 2 = 3

BINARY INPUT VALVE DOWNSTREAM = 1 + 8 = 9

$$\text{OUTPUT PRESSURE} = \frac{120}{15} \times \left(\frac{3}{16} + 9 \right) = 8 \times 9.1875 = 73.5 \text{ PSIG}$$

Cascade Diagram



Cascading

Two PAR™-15's can also be used in conjunction to provide 240 steps (versus 15 steps from one valve), therefore more output pressures. See diagram.

Connect the outlet port marked OUT of the valve upstream to the 1/8" port marked C of the valve downstream. A port/pipe reducer(s) must be used to accomplish this task. If desired, a pressure gauge can be installed between these two points. A gauge isolator should be used to protect the gauge from pulsating pressures.

Connect the outlet port marked OUT of the valve downstream to the supply side of the system requiring multiple pressures. If desired, a pressure gauge can be installed downstream of the outlet port. A gauge isolator should be used to protect the gauge from pulsating pressures.

Truth Table

	Normally Closed Solenoids		Normally Open Solenoids					
	Down-Step Valve	Up-stream Valve	Down-stream Valve	Up-stream Valve	Down-stream Valve	Up-stream Valve		
	Binary Input*		Binary Input*		Proportion		PSIG Output @	PSIG Output @
	8 4 2 1	8 4 2 1	8 4 2 1	8 4 2 1	of Inlet Pressure	+ of Inlet Pressure	60 PSIG Inlet ††	120 PSIG Inlet ††
	Pin Number †		Pin Number †					
	5 3 2 1	5 3 2 1	5 3 2 1	5 3 2 1				
0	0000	0000	1111	1111	0	0	0.00	0.00
1	0000	0001	1111	1110	0	1/240	0.25	0.50
2	0000	0010	1111	1101	0	2/240	0.50	1.00
3	0000	0011	1111	1100	0	3/240	0.75	1.50
4	0000	0100	1111	1011	0	4/240	1.00	2.00
5	0000	0101	1111	1010	0	5/240	1.25	2.50
6	0000	0110	1111	1001	0	6/240	1.50	3.00
7	0000	0111	1111	1000	0	7/240	1.75	3.50
8	0000	1000	1111	0111	0	8/240	2.00	4.00
9	0000	1001	1111	0110	0	9/240	2.25	4.50
10	0000	1010	1111	0101	0	10/240	2.50	5.00
11	0000	1011	1111	0100	0	11/240	2.75	5.50
12	0000	1100	1111	0011	0	12/240	3.00	6.00
13	0000	1101	1111	0010	0	13/240	3.25	6.50
14	0000	1110	1111	0001	0	14/240	3.50	7.00
15	0000	1111	1111	0000	0	15/240	3.75	7.50
16	0001	0000	1110	1111	1/15	0	4.00	8.00
17	0001	0001	1110	1110	1/15	1/240	4.25	8.50
18	0001	0010	1110	1101	1/15	2/240	4.50	9.00
19	0001	0011	1110	1100	1/15	3/240	4.75	9.50
20	0001	0100	1110	1011	1/15	4/240	5.00	10.00
21	0001	0101	1110	1010	1/15	5/240	5.25	10.50
22	0001	0110	1110	1001	1/15	6/240	5.50	11.00
23	0001	0111	1110	1000	1/15	7/240	5.75	11.50
24	0001	1000	1110	0111	1/15	8/240	6.00	12.00
25	0001	1001	1110	0110	1/15	9/240	6.25	12.50
26	0001	1010	1110	0101	1/15	10/240	6.50	13.00
27	0001	1011	1110	0100	1/15	11/240	6.75	13.50
28	0001	1100	1110	0011	1/15	12/240	7.00	14.00
29	0001	1101	1110	0010	1/15	13/240	7.25	14.50
30	0001	1110	1110	0001	1/15	14/240	7.50	15.00
31	0001	1111	1110	0000	1/15	15/240	7.75	15.50
32	0010	0000	1101	1111	2/15	0	8.00	16.00
33	0010	0001	1101	1110	2/15	1/240	8.25	16.50
34	0010	0010	1101	1101	2/15	2/240	8.50	17.00
35	0010	0011	1101	1100	2/15	3/240	8.75	17.50
36	0010	0100	1101	1011	2/15	4/240	9.00	18.00
37	0010	0101	1101	1010	2/15	5/240	9.25	18.50
38	0010	0110	1101	1001	2/15	6/240	9.50	19.00
39	0010	0111	1101	1000	2/15	7/240	9.75	19.50
40	0010	1000	1101	0111	2/15	8/240	10.00	20.00
41	0010	1001	1101	0110	2/15	9/240	10.25	20.50
42	0010	1010	1101	0101	2/15	10/240	10.50	21.00
43	0010	1011	1101	0100	2/15	11/240	10.75	21.50
44	0010	1100	1101	0011	2/15	12/240	11.00	22.00
45	0010	1101	1101	0010	2/15	13/240	11.25	22.50
46	0010	1110	1101	0001	2/15	14/240	11.50	23.00
47	0010	1111	1101	0000	2/15	15/240	11.75	23.50
48	0011	0000	1100	1111	3/15	0	12.00	24.00
49	0011	0001	1100	1110	3/15	1/240	12.25	24.50
50	0011	0010	1100	1101	3/15	2/240	12.50	25.00
51	0011	0011	1100	1100	3/15	3/240	12.75	25.50
52	0011	0100	1100	1011	3/15	4/240	13.00	26.00
53	0011	0101	1100	1010	3/15	5/240	13.25	26.50
54	0011	0110	1100	1001	3/15	6/240	13.50	27.00
55	0011	0111	1100	1000	3/15	7/240	13.75	27.50
56	0011	1000	1100	0111	3/15	8/240	14.00	28.00
57	0011	1001	1100	0110	3/15	9/240	14.25	28.50
58	0011	1010	1100	0101	3/15	10/240	14.50	29.00
59	0011	1011	1100	0100	3/15	11/240	14.75	29.50
60	0011	1100	1100	0011	3/15	12/240	15.00	30.00
61	0011	1101	1100	0010	3/15	13/240	15.25	30.50
62	0011	1110	1100	0001	3/15	14/240	15.50	31.00
63	0011	1111	1100	0000	3/15	15/240	15.75	31.50
64	0011	1000	1100	1111	4/15	0	16.00	32.00
65	0011	1001	1100	1110	4/15	1/240	16.25	32.50
66	0011	1010	1100	1101	4/15	2/240	16.50	33.00
67	0011	1011	1100	1100	4/15	3/240	16.75	33.50
68	0011	1100	1100	1011	4/15	4/240	17.00	34.00
69	0011	1101	1100	1010	4/15	5/240	17.25	34.50
70	0011	1110	1100	1001	4/15	6/240	17.50	35.00
71	0011	1111	1100	1000	4/15	7/240	17.75	35.50
72	0011	1000	1100	0111	4/15	8/240	18.00	36.00
73	0011	1001	1100	0110	4/15	9/240	18.25	36.50
74	0011	1010	1100	0101	4/15	10/240	18.50	37.00
75	0011	1011	1100	0100	4/15	11/240	18.75	37.50
76	0011	1100	1100	0011	4/15	12/240	19.00	38.00
77	0011	1101	1100	0010	4/15	13/240	19.25	38.50
78	0011	1110	1100	0001	4/15	14/240	19.50	39.00
79	0011	1111	1100	0000	4/15	15/240	19.75	39.50
80	0011	1000	1100	1111	5/15	0	20.00	40.00
81	0011	1001	1100	1110	5/15	1/240	20.25	40.50
82	0011	1010	1100	1101	5/15	2/240	20.50	41.00
83	0011	1011	1100	1100	5/15	3/240	20.75	41.50
84	0011	1100	1100	1011	5/15	4/240	21.00	42.00
85	0011	1101	1100	1010	5/15	5/240	21.25	42.50
86	0011	1110	1100	1001	5/15	6/240	21.50	43.00
87	0011	1111	1100	1000	5/15	7/240	21.75	43.50
88	0011	1000	1100	0111	5/15	8/240	22.00	44.00
89	0011	1001	1100	0110	5/15	9/240	22.25	44.50
90	0011	1010	1100	0101	5/15	10/240	22.50	45.00
91	0011	1011	1100	0100	5/15	11/240	22.75	45.50
92	0011	1100	1100	0011	5/15	12/240	23.00	46.00
93	0011	1101	1100	0010	5/15	13/240	23.25	46.50
94	0011	1110	1100	0001	5/15	14/240	23.50	47.00
95	0011	1111	1100	0000	5/15	15/240	23.75	47.50
96	0011	1000	1100	1111	6/15	0	24.00	48.00
97	0011	1001	1100	1110	6/15	1/240	24.25	48.50
98	0011	1010	1100	1101	6/15	2/240	24.50	49.00
99	0011	1011	1100	1100	6/15	3/240	24.75	49.50
100	0011	1100	1100	1011	6/15	4/240	25.00	50.00
101	0011	1101	1100	1010	6/15	5/240	25.25	50.50
102	0011	1110	1100	1001	6/15	6/240	25.50	51.00
103	0011	1111	1100	1000	6/15	7/240	25.75	51.50
104	0011	1000	1100	0111	6/15	8/240	26.00	52.00
105	0011	1001	1100	0110	6/15	9/240	26.25	52.50
106	0011	1010	1100	0101	6/15	10/240	26.50	53.00
107	0011	1011	1100	0100	6/15	11/240	26.75	53.50
108	0011	1100	1100	0011	6/15	12/240	27.00	54.00
109	0011	1101	1100	0010	6/15	13/240	27.25	54.50
110	0011	1110	1100	0001	6/15	14/240	27.50	55.00
111	0011	1111	1100	0000	6/15	15/240	27.75	55.50
112	0011	1000	1100	1111	7/15	0	28.00	56.00
113	0011	1001	1100	1110	7/15	1/240	28.25	56.50
114	0011	1010	1100	1101	7/15	2/240	28.50	57.00
115	0011	1011	1100	1100	7/15	3/240	28.75	57.50
116	0011	1100	1100	1011	7/15	4/240	29.00	58.00
117	0011	1101	1100	1010	7/15	5/240	29.25	58.50
118	0011	1110	1100	1001	7/15	6/240	29.50	59.00
119	0011	1111	1100	1000	7/15	7/240	29.75	59.50
120	0011	1000	1100	0111	7/15	8/240	30.00	60.00
121	0011	1001	1100	0110	7/15	9/240	30.25	60.50
122	0011	1010	1100	0101	7/15	10/240	30.50	61.00
123	0011	1011	1100	0100	7/15	11/240	30.75	61.50
124	0011	1100	1100	0011	7/15	12/240	31.00	62.00
125	0011	1101	1100	0010	7/15	13/240	31.25	62.50
126	0011	1110	1100	0001	7/15	14/240	31.50	63.00
127	0011	1111	1100	0000	7/15	15/240	31.75	63.50
128	0011	1000	1100	1111	8/15	0	32.00	64.00
129	0011	1001	1100	1110	8/15	1/240	32.25	64.50
130	0011	1010	1100	1101	8/15	2/240	32.50	65.00
131	0011	1011	1100	1100	8/15	3/240	32.75	65.50
132	0011	1100	1100	1011	8/15	4/240	33.00	66.00
133	0011	1101	1100	1010	8/15	5/240	33.25	66.50
134	0011	1110	1100	1001	8/15	6/240	33.50	67.00
135	0011	1111	1100	1				

Programmable Air Regulating Valve

Air Preparation Products Regulator Products

General

Solenoid Kits & Electrical Data

Class F Solenoids

Voltage / cycles	Solenoid type*	Power consumption (watts)	Holding current (AMPS)	Part number
12VDC	NC	1.2W	0.1	PS2982B45P
24VDC	NC	1.2W	0.05	PS2982B49P
120V/60Hz	NC	1.6VA	0.013	PS2982B53P
24V/60Hz	NC	1.6VA	0.066	PS2982B42P
24V/60Hz	NO	2.4VA	0.1	PS3202B42P
12VDC	NO	1.8W	0.15	PS3202B45P
24VDC	NO	1.8W	0.075	PS3202B49P
120V/60Hz	NO	2.4VA	0.02	PS3202B53P

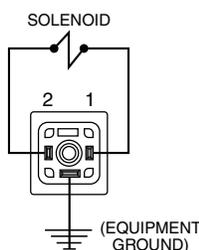
* NC = Normally Closed
NO = Normally Open

Dial

Pilot

Units with No Enclosure

Connect input and common signals to each one of the solenoids marked with the binary inputs 1, 2, 4 and 8, using the 3-Pin female connector kits shown in the catalog. Follow the installation instructions included with the 3-Pin female connector kits for the proper installation.



If you elect not to use the 3-Pin female connector kits, you may use three female spade connectors per solenoid and connect the wires as shown on the figure.

Proportional

Precision

Units with Enclosure and Without 6-Pin Receptacle

Connect input and common signals to the terminal block on the circuit board labelled TB1. Connect each solenoid input (1, 2, 4, & 8) to the respective label on the circuit board. Connect each common to the input labelled C on the circuit board.

Water

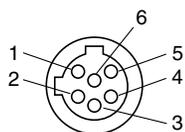
Units with Enclosure and 6-Pin Micro Receptacle

These units use the following brand names for 6-Pin micro connectors:

Brand name	Receptacle	Connector w/ 6 foot cord
Brad Harrison	7R6006A19A120	706000D02F060
Joy	5000127-41	5000127-2

Connection is made as shown in the chart below.

Pin	Wire color	Function
1	Red-White	Input 1
2	Red	Input 2
3	Green	Equipment Ground
4	Red-Yellow	Common
5	Red-Black	Input 8
6	Red-Blue	Input 4



Micro

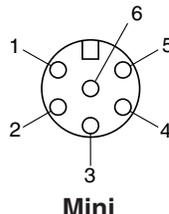
Units with Enclosure and 6-Pin Mini Connector

These units use either one of the following brand names for 6-Pin mini connectors:

Brand Name	Receptacle	Connector w/ 6 Foot Cord
Brad Harrison	42605	42602
Joy	X8987-2	X8987-4

Connection is made as shown in the chart below.

Pin	Wire color	Function
1	Orange	Input 1
2	Blue	Input 2
3	Black	Input 4
4	White	Common
5	Red	Input 8
6	Green	Equipment Ground



Units with Enclosure, 6-Pin Connector and Indicator Lamps

Each indicator lamp signals when the corresponding solenoid operator is actuated. Lamps that fail to light may need to be replaced or a check made to see if a connection has become loose.

Follow the service kit instructions included with the repair kits for proper installation of replacement lamps.

For units with DC solenoids and indicator lamps red wire is (+) positive white wire is (-) negative.

Caution: DC solenoids with indicator lamps are polarity sensitive. Observe polarities indicated above.

Available Lamps

Description	Part number
Lamp (120/60AC) with spring clip	K352428B
Lamp (24VDC) with spring clip	K352429B

15mm 3-Pin DIN 43650C

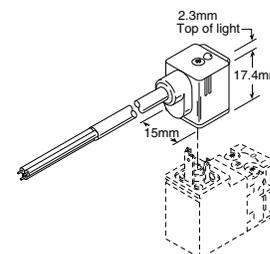
Description	Connector	Connector with 6' (2m) Cord
Unlighted	PS2932BP	PS2932JBP
Light - 12VAC or DC	PS294675BP	PS2946J75BP*
Light - 24VAC or DC	PS294679BP	PS2946J79BP*
Light - 110/120VAC	PS294683BP	PS2946J83BP*

* LED with surge suppression.

Note: Max ø6.5mm cable size required for connector w/o 6' (2m) cord.

Engineering Data:

Conductors: 2 Poles Plus Ground
Cable Range (Connector Only):
4 to 6mm (0.16 to 0.24 Inch)
Contact Spacing: 8mm



Service Kit

Piston, poppet assembly, all rubber seals and gaskets **K352413B**



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

K80

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

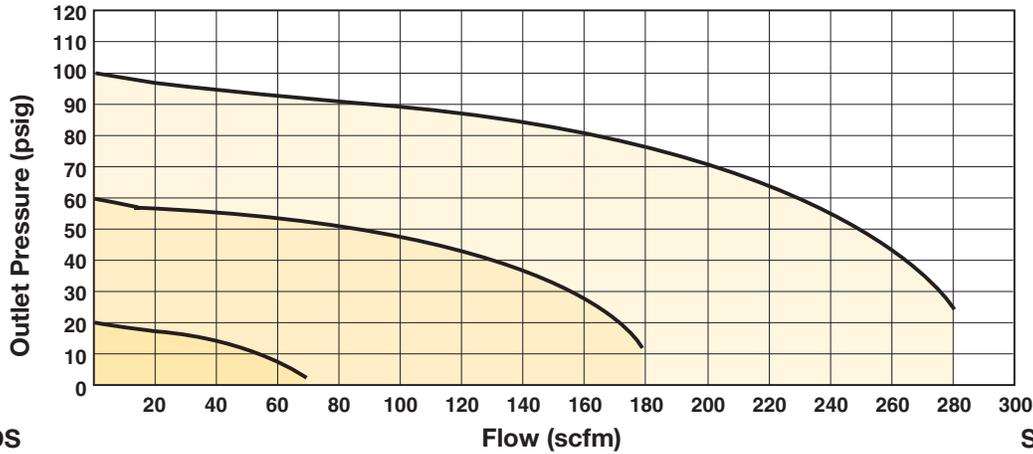
Flow Characteristics

INCREASING
OUTPUT
BINARY
INPUT

8	4	2	1
1	0	1	0
0	1	1	0
0	0	1	0

N.C.
SOLENOIDS

@ 150 PSIG INLET PRESSURE



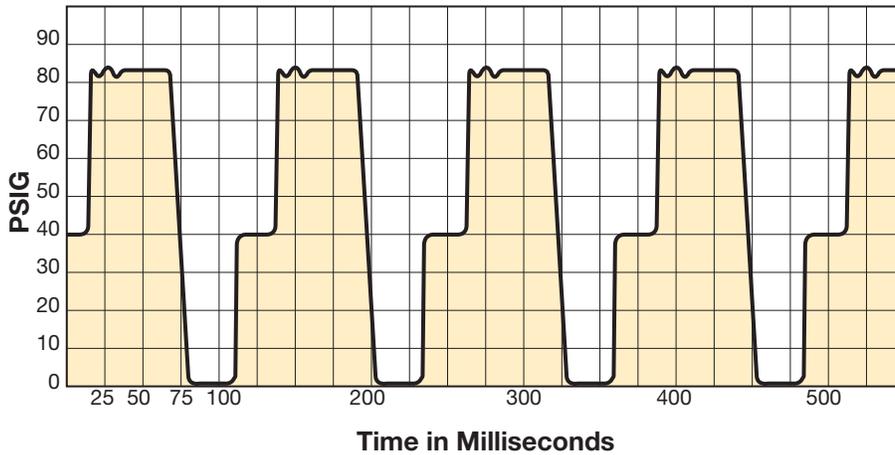
DECREASING
OUTPUT
BINARY
INPUT

8	4	2	1
0	1	0	1
1	0	0	1
1	1	0	1

N.O.
SOLENOIDS

Typical Time Response

PERFORMANCE CHARACTERISTICS



Actual test results show rapid response on a robot welding operation at a major U.S. automotive manufacturer.

NOTE: Although graph illustrates pressure dropping to 0 PSIG at the end of each cycle, the PAR™-15 valve can shift down to intermediate pressure steps, i.e. from 75 PSIG to 45 PSIG, without returning to 0 PSIG first.

General

Dial

Pilot

Proportional

Precision

Water

K

Regulator
Products

Lucifer® EPP4 1/4", 1/2" & 1/2" HP



Part number	Pipe	Max inlet pressure bar (PSIG)	Pressure range bar (PSIG)	Control signal
P4CN2001C001	1/4 NPT	1 to 12 (15 to 174)	0 to 10 (0 to 145)	0 to 10 V **
P4CN4001C001	1/2 NPT	1 to 12 (15 to 174)	0 to 10 (0 to 145)	0 to 10 V **
P4CG4201D003*†	1/2 BSPP	1 to 21 (15 to 305)	0 to 20 (0 to 290)	0 to 10 V **

Notes: For thread type NPT use **N**, for BSPP use **G**.

* HP (High Pressure).

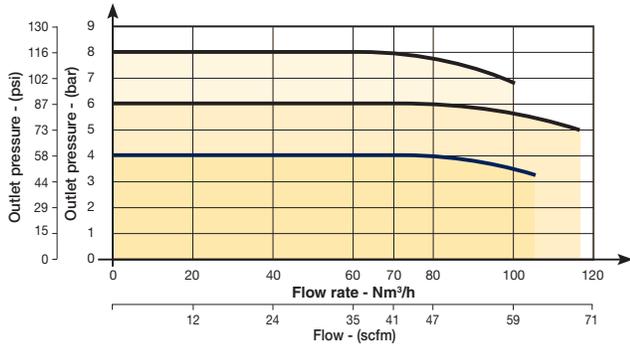
** 4-20mA available via Calys software.

† Only available in BSPP.

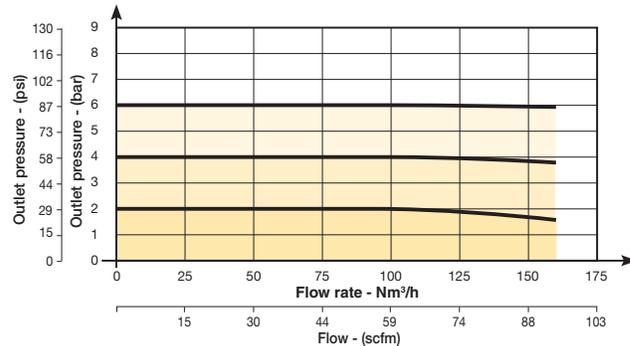
For other configurations not listed please consult factory. (Example: ATEX Series EX: II 3 D/G, O2 compatible, External Pilot, etc.)

Flow Curves

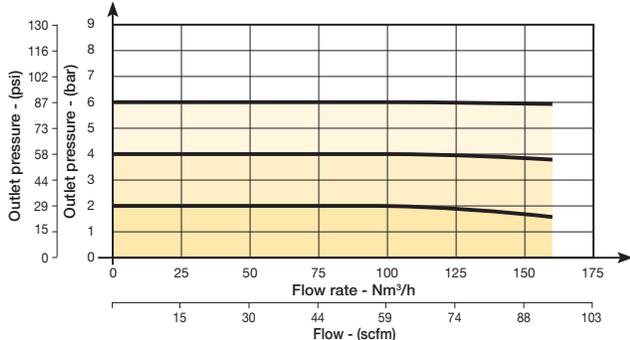
Flow Curve 1/4"



Flow Curve 1/2"



Flow Curve 1/2" HP



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

K82

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Pneumatic Division
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General
Dial
Pilot
Proportional
Precision
Water
K
Regulator Products

Lucifer® EPP4 1/4" & 1/2"

Technical Data

	EPP4 1/4"	EPP4 1/2"
Fluids:	Lubricated or non lubricated air and neutral gases - Recommended filtration: 40 µm or better	
Temperature range:	Ambient: 0°C to 50°C (32°F to 122°F) Fluid: 0°C to 50°C (32°F to 122°F)	
Inlet pressure range: The inlet pressure must always be at least 1 bar above the regulated pressure.	1 to 12 bar (14.5 to 174 PSIG)	1 to 12 bar (14.5 to 174 PSIG)
Outlet pressure range:	0.05 to 10 bar (.725 to 145 PSIG)	
Hysteresis:	± 50 mbar (.725 PSIG) (factory set up)	
Air consumption at constant control signal:	0	
Supply voltage:	24 V DC ± 15 % (Max. ripple 1 V)	
Power consumption:	Max. 2.8 W with 24 V DC and constant changes of the control signal < 1.5 W without change of control signal	
Control signal:	Analog 0 - 10 V Analog 4 - 20 mA field convertible	
Outlet sensor signal:	Analog 0 - 10 V Standard for 0 - 10 bar; Adjustable	Digital 0 - 24 V for alarm features: Adjustable pressure error (+/-) Adjustable delay ON Adjustable delay OFF Adjustable logic (+/-)
Max. flow:	70 m³/h (41 SCFM)	150 m³/h (88 SCFM)
Indicative response time:	With a volume of 330 cm³ (20.14 in³) at the outlet of the regulator	
Filling 2 to 4 bar (29 to 58 PSI):	50 msec	60 msec
Filling 2 to 8 bar (29 to 116 PSI):	100 msec	120 msec
Emptying 4 to 2 bar (29 to 116 PSI):	70 msec	90 msec
Emptying 8 to 2 bar (29 to 116 PSI):	130 msec	190 msec
Safety position:	In case of control signal failure or if it is less than 50 mV, the regulated pressure drops automatically to 0 bar (atmospheric pressure). In case of voltage supply failure, the regulated pressure will be kept constant.	
Electrical connection:	M12 - 8 pin; male connector power supply/control signal M12 - 5 pin; male connector communication	
Life expectancy:	> 50 million changes of control signal steps	
Mounting position:	Indifferent (recommended position: upright; electronic part on top)	
Resistance to vibrations:	30 g in all directions	
Degree of protection:	IP65	
Assembly:	Silicone free	
Electromagnetic compatibility: In accordance with:	EN 61000-6-1: 2001 EN 61000-6-2: 2001 EN 61000-6-3: 2001 + A11 2004 edition (01/07/07) EN 61000-6-4: 2001	
Installation and setting instructions:	See Bulletin 408128, 408134 and appendix supplied with the product.	

General

Dial

Pilot

Proportional

Precision

Water

K

Regulator Products

Note: Parker reserves the right to change specifications without notification.



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

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Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

Lucifer® EPP4 1/2" HP

Technical Data

EPP4 1/2" HP

General	Fluids:	Lubricated or non lubricated air and neutral gases - Recommended filtration: 50 µm
	Temperature range:	Ambient: 0°C to 50°C (32°F to 122°F) Fluid: 0°C to 50°C (32°F to 122°F)
Dial	Inlet pressure range: The inlet pressure must always be at least 1 bar above the regulated pressure.	1 to 21 bar (14.5 to 305 PSIG)
	Outlet pressure range:	0.05 to 20 bar (.73 to 290 PSIG)
Pilot	Hysteresis:	≤ 100 mbar (1.45 PSIG) if P inlet ≤ 10 bar (145 PSIG) ≤ 200 mbar (2.90 PSIG) if P inlet > 10 bar (145 PSIG)
	Air consumption at constant control signal:	0
Proportional	Supply voltage:	24V DC ± 15%
	Power consumption:	Max. 6 W with 24 V DC and constant changes of the control signal < 2 W without change of control signal
	Control signal:	Analog 0 - 10 V Analog 4 - 20 mA field convertible
Precision	Outlet sensor signal:	Analog 0 - 10 V Standard for 0 - 10 bar; Adjustable Analog 4 - 20 mA Standard for 0 - 10 bar; Adjustable
	Max. flow:	150 m³/h (88 SCFM)
Water	Indicative response time:	With a volume of 330 cm³ (20.14 in³) at the outlet of the regulator
	Filling 2 to 8 bar (29 to 116 PSI): Emptying 8 to 2 bar (116 to 29 PSI):	120 msec 190 msec
	Safety position:	In case of control signal failure or if it is less than 50 mV, the regulated pressure drops automatically to 0 bar atmospheric pressure (for pressure ranges from 0-10 bar, 100 mV for pressure range over 10 bar). In case of voltage supply failure, the regulated pressure will be kept constant.
K	Electrical connection:	M12 - 8 pin; male connector power supply/control signal M12 - 5 pin; male connector communication
	Life expectancy:	> 20 Million changes of control signal steps
Regulator Products	Mounting position:	Indifferent (recommended position: upright; electronic part on top)
	Resistance to vibrations:	30 g in all directions
	Degree of protection:	IP65
	Assembly:	Silicone free
	Electromagnetic compatibility: In accordance with:	EN 61000-6-1: 2001 EN 61000-6-2: 2001 EN 61000-6-3: 2001 + A11 2004 edition (01/07/07) EN 61000-6-4: 2001
Installation and setting instructions:	See Bulletin 408193 and appendix supplied with the product.	

Note: Parker reserves the right to change specifications without notification.



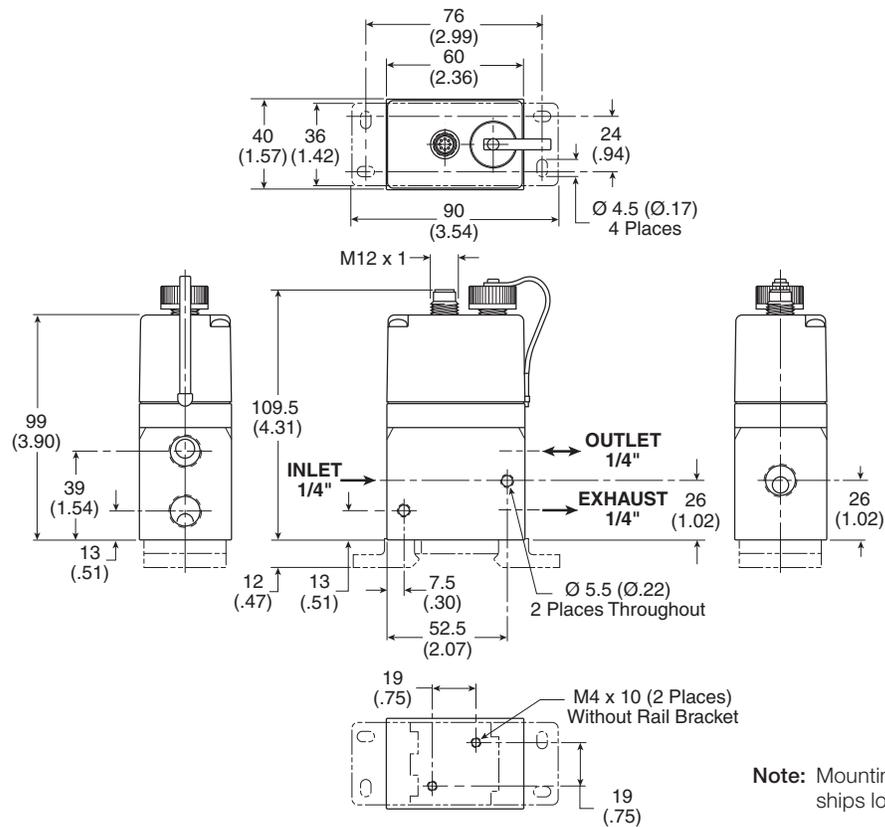
For inventory, lead times, and kit lookup, visit www.pdnplu.com

K84

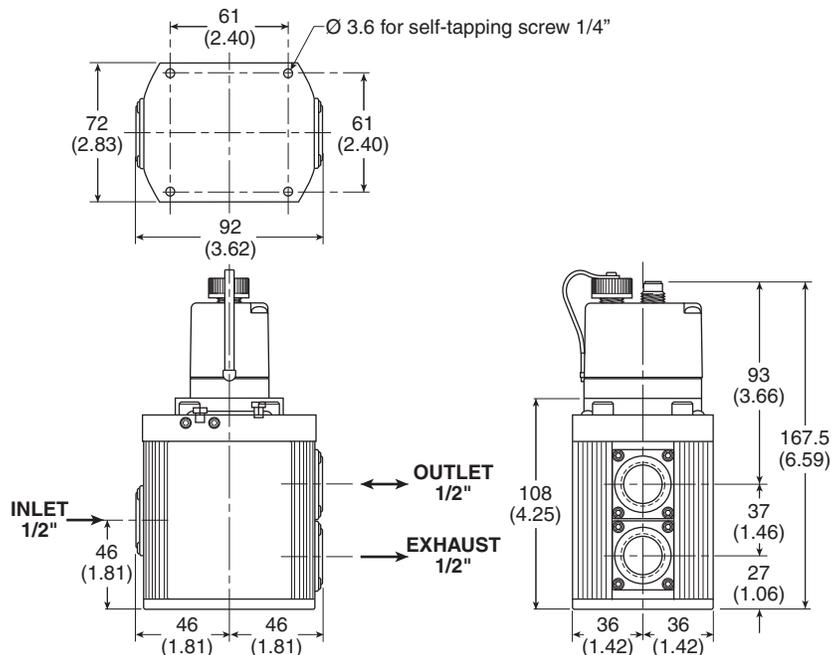
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Lucifer® EPP4 1/4" & 1/2"

Dimensions EPP4 1/4"



Dimensions EPP4 1/2"



General

Dial

Pilot

Proportional

Precision

Water

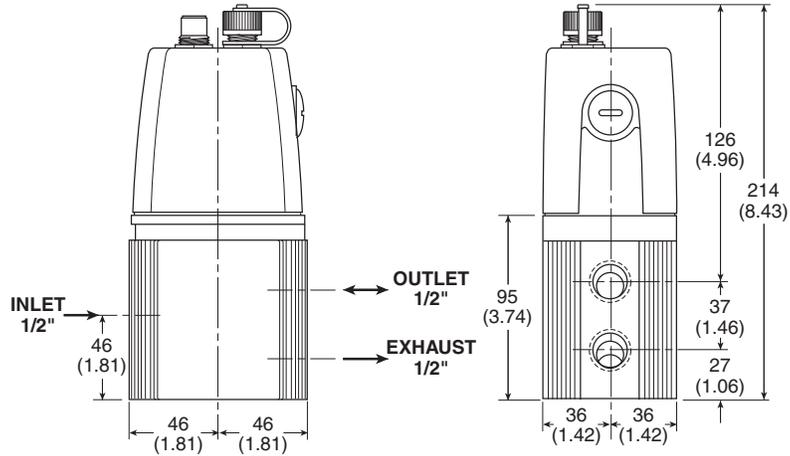
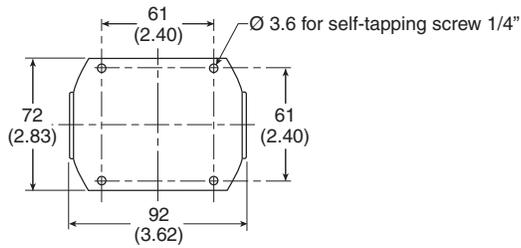
K

Regulator Products

Lucifer® EPP4 1/2" HP

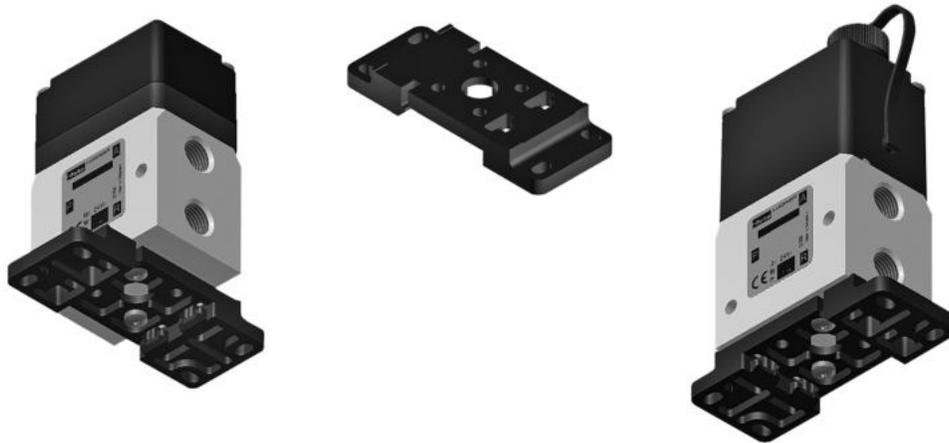
Dimensions EPP4 1/2" HP

General
Dial
Pilot
Proportional
Precision
Water
K
Regulator Products



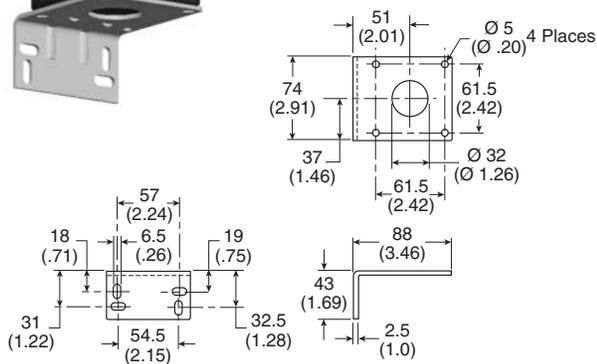
Lucifer® EPP4 Accessories

Mounting Brackets for EPP4 1/4"



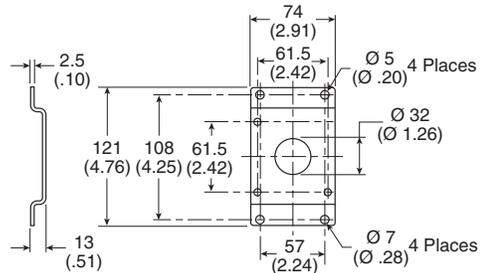
Note: Mounting bracket comes standard with all EPP4 1/4" units, and is shipped loose.

Mounting Brackets for EPP4 1/2"



L Bracket

Part Number 491367



Foot Bracket

Part Number 491366

General

Dial

Pilot

Proportional

Precision

Water

K

Regulator Products

Lucifer® EPP4 Accessories

Power Supply / Control Signal and Communication Cables

General

Dial

Pilot

Proportional

Precision

Water

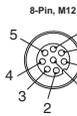
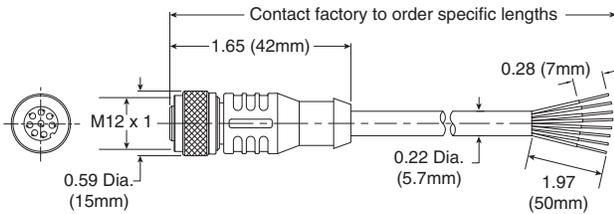
K

Regulator
Products

EPP4 Cable

- 2m cable with molded straight M12-8 pole to flying lead

Part Number RKC8T-2



Cable Pin	Color
1	White
2	Brown
3	Green
4	Yellow
5	Grey
6	Pink
7	Blue
8	Red



EPP4 Cable

- 2m cable with molded straight M12-5 pole to USB

Part Number 496449



First M12 / 8 pole connector:
power supply & control signal

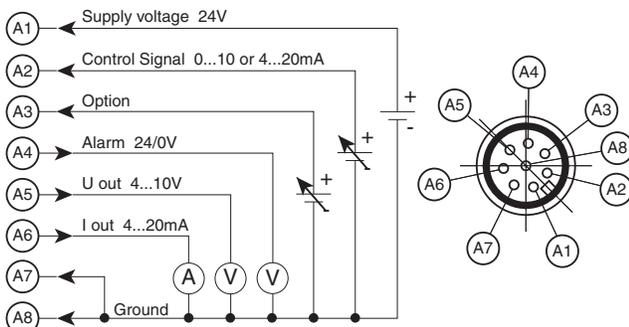
Electrical Connection (A)

Second M12 / 5 pole connector:
remote display or PC communication

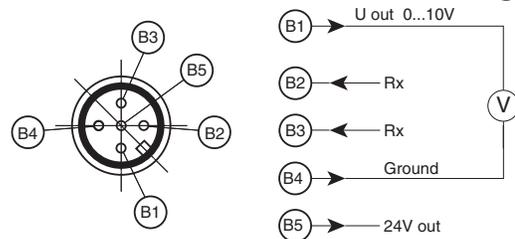
Electrical Connection (B)



Electrical Connection (A)



Electrical Connection (B)



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

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Lucifer® EPP4 Accessories

calys Software

Calys is developed to configure all the parameters of the EPP4. A specific cable is needed for the communication between the EPP4 and a PC.

To download free Calys software click on
www.parker.com/fcde/support

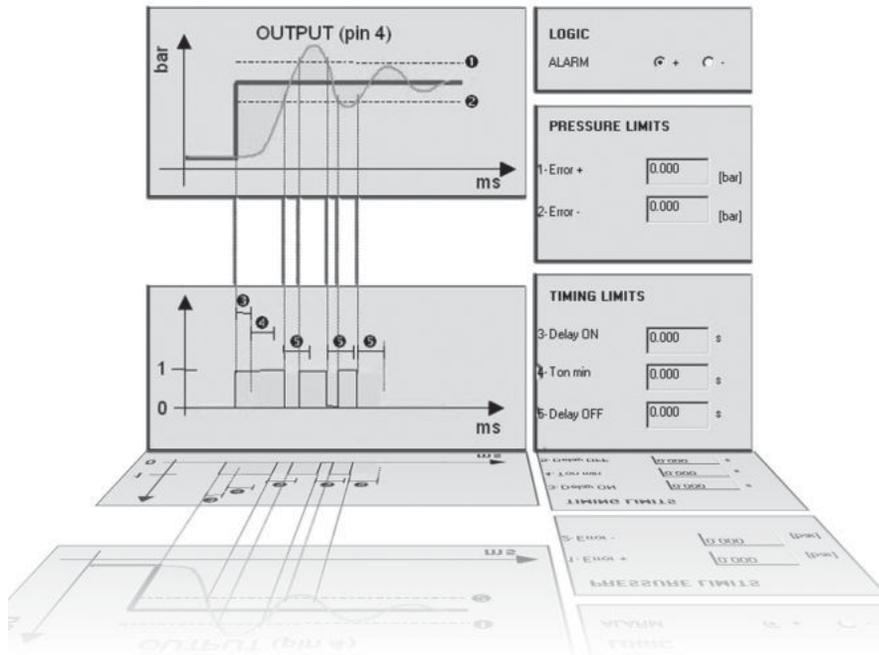
Calys offers many capabilities:

- Live monitoring (control signal, regulated pressure, supply voltage,...)
- Recording of the main parameters (control signal, regulated pressure, supply voltage,...) in an Excel file
- Free calibration for the inputs and outputs
- Adjustable alarm (positive-negative, pressure limits, delays)
- Configuration files are easy to duplicate
- Complete and interactive help file
- Data in 4 different pressure units
- Menus in 4 languages (English, German, French and Italian)



Specific communication cable with M12, 5-pole to USB connection

Part Number 496449



General
Dial
Pilot
Proportional
Precision
Water
K Regulator Products



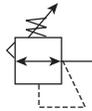
For inventory, lead time, and kit lookup, visit www.pdnplu.com

P3RA302 High Precision Regulators

The P3RA302 Regulator is designed for applications that require high capacity and accurate process control in a small package. A poppet valve which is balanced by utilizing a convoluted diaphragm, insures a constant output pressure even during wide supply pressure variations. Stability of regulated pressure is maintained under varying flow conditions through the use of an aspirator tube which adjusts the air supply in accordance with the flow velocity.



- Control sensitivity of .250" (.010 psig) (.64 cm) water column variation allows use in precision applications
- A compensating diaphragm lets the regulator remain unaffected by supply pressure changes
- An aspirator tube compensates downstream pressure droop under flow conditions
- A separate control chamber isolates the diaphragm from the main flow to eliminate hunting and buzzing
- Unit construction lets you service the regulator without removing it from the line
- 1/4" port (NPT)



Port size	Description	Part number
1/4"	0.5 to 30 psig	P3RA30232
1/4"	1 to 60 psig	P3RA30242
1/4"	2 to 100 psig	P3RA30252

Operating information

Supply pressure:	250 psig (17.2 bar), (1700 kPa) max
Ambient temperature:	-40°F to 200°F (-40°C to 93°C)
Sensitivity:	.250" (.010 psig) (.64 cm) water column
Flow capacity:	40 scfm (68 m ³ /HR) @ 100 psig (7.0 bar), (700 kPa) supply and 20 psig (1.5 bar), (150 kPa) setpoint
Exhaust capacity:	2.0 scfm (3.4 m ³ /HR) where downstream pressure is 5 psig (.35 bar), (35 kPa) above 20 psig (1.5 bar), (150 kPa) setpoint
Supply pressure effect:	Less than 0.2 psig, (.014 bar), (.14 kPa) for 100 psig, (7.0 bar), (700 kPa) change in supply pressure
Hazardous locations:	Acceptable for use in zones 1 and 2 for gas atmosphere: Groups IIA and IIB and zones 21 and 22 for dust atmospheres

Ordering information:

P3RA302 **4** **2** **□**

Springs	
0.5 to 30 psig	3
1 to 60 psig	4
2 to 100 psig	5

Pipe Size	
1/4 inch	2

Options	
Blank	No options
H	BSP
N	Non-relieving

Note: Other Spring Ranges, Port Sizes, and Options Available. Please Consult Factory

Most popular.



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

K90

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Compact High Precision Regulator

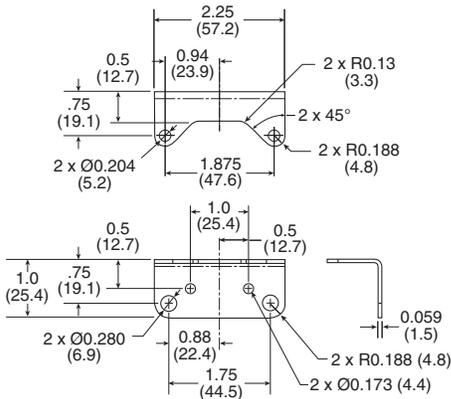
Material Specifications

Body and housing	Aluminum
Diaphragms	Nitrile on dacron
Trim	Brass

Repair and Service Kits

Nitrile, standard - 1/2 to 30, 1 to 60, & 2 to 100 psig	PS16116-13
Nitrile, non-relieving - 1/2 to 30, 1 to 60, & 2 to 100 psig	PS16116-14
Tamper Resistant Kit	PS12163
Mounting Bracket Kit	PS21667-1

Mounting bracket

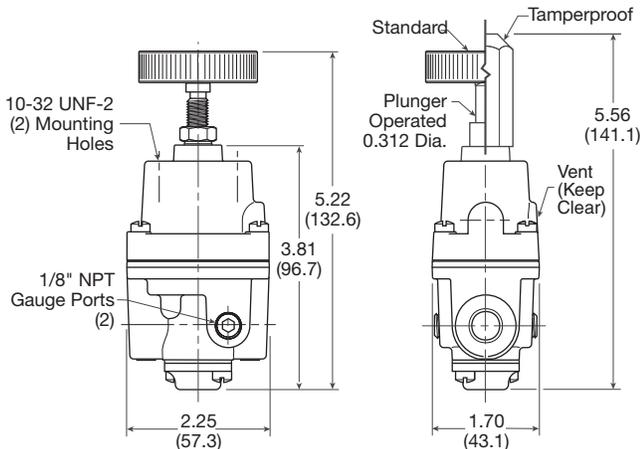


WARNING

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.

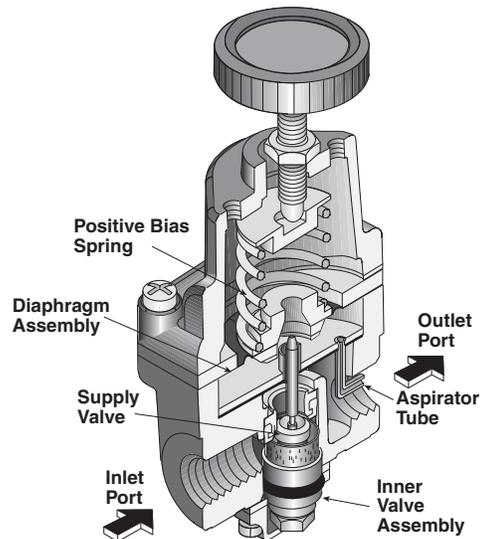
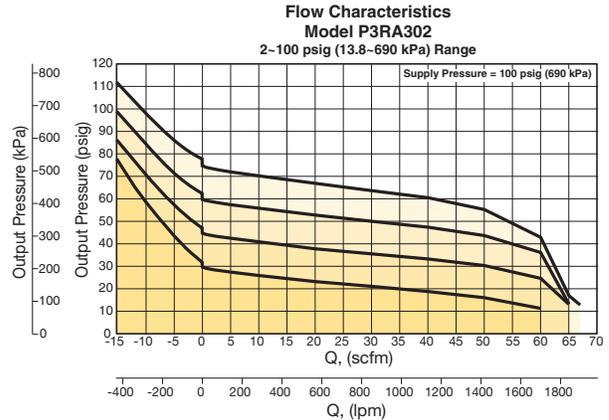


Inches (mm)

Air Preparation Products Regulator Products

Flow Charts

P3RA302 1/4" Regulator



Operating Principles

The P3RA302 Regulator uses the force balance principal to control the movement of the valve assembly which in turn controls the output pressure. When the regulator is adjusted for a specific set point, the downward force of the Positive Bias Spring causes the Diaphragm Assembly to move downward. The Supply Valve opens and allows air to pass to the Outlet Port. As the set point is reached, the downward force exerted by the Positive Bias spring is balanced by the upward force of the downstream pressure acting on the bottom of the Diaphragm Assembly. The resultant force moves the supply Valve upward to reduce the flow of air to the Outlet Port.

Outlet pressure is maintained as a result of balance between forces acting on the top and bottom of the Diaphragm Assembly.



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

K91

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General

Dial

Pilot

Proportional

Precision

Water

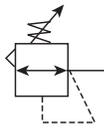
K

Regulator Products

P3RA102 High Precision Regulators

The P3RA102 Regulator is designed for applications that require high capacity and accurate process control. A poppet valve which is balanced by utilizing a rolling diaphragm, insures a constant output pressure even during wide supply pressure variations. Stability of regulated pressure is maintained under varying flow conditions through the use of an aspirator tube which adjusts the air supply in accordance with the flow velocity.

- Control sensitivity of .125" (.005 psig) (.32 cm) water column allows use in precision processes
- Pressure balanced supply valve prevents supply pressure changes from affecting the setpoint
- Optional check valve permits dumping of downstream pressure when supply is opened to atmosphere
- Separate control chamber isolates the diaphragm from the main flow to eliminate hunting and buzzing
- An aspirator tube compensates downstream pressure droop under flow conditions



Operating information

Supply pressure:	500 psig (35 bar), (3500 kPa) max
Ambient temperature:	-40°F to 200°F (-40°C to 93°C)
Sensitivity:	.125" (.005 psig) (.32 cm) water column
Flow capacity:	40 scfm (68 m ³ /HR) @ 100 psig (7.0 bar), (700 kPa) supply and 20 psig (1.5 bar), (150 kPa) setpoint
Exhaust capacity:	5.5 scfm (9.35 m ³ /HR) where downstream pressure is 5 psig, (.35 bar), (35 kPa) above 20 psig (1.5 bar), (150 kPa) setpoint
Supply pressure effect:	Less than 0.1 psig (.007 bar), (.7 kPa) for 100 psig, (7.0 bar), (700 kPa) change in supply pressure
Hazardous locations:	Acceptable for use in zones 1 and 2 for gas atmosphere: Groups IIA and IIB and zones 21 and 22 for dust atmospheres

Port size	Description	Part number
1/4"	0.5 to 30 psig	P3RA10232
1/4"	1 to 60 psig	P3RA10242
1/4"	2 to 100 psig	P3RA10262

Ordering information:

P3RA102 **6** **2** **□**

Springs	
0.5 to 30 psig	3
1 to 60 psig	4
2 to 150 psig	6

Pipe Size	
1/4 inch	2

Options	
Blank	No options
H	BSPP
N	Non-relieving

Note: Other spring ranges, port sizes, and options available. Please consult factory

Most popular.



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

K92

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Standard High Precision Regulator

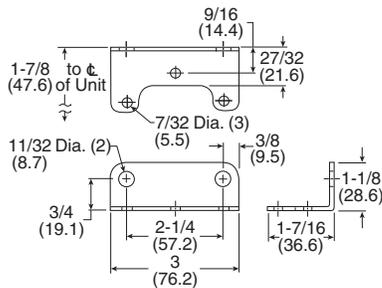
Material Specifications

Body and housing	Aluminum
Diaphragms	Buna N on dacron (standard unit only)
Trim	zinc plated steel, brass

Repair and Service Kits

0 to 200 psig, relieving	PS12125-1
0 to 200 psig, non-relieving	PS12125-4
Tamper resistant kit	PS12165
Mounting bracket kit, zinc plated steel	PS09921

Mounting bracket

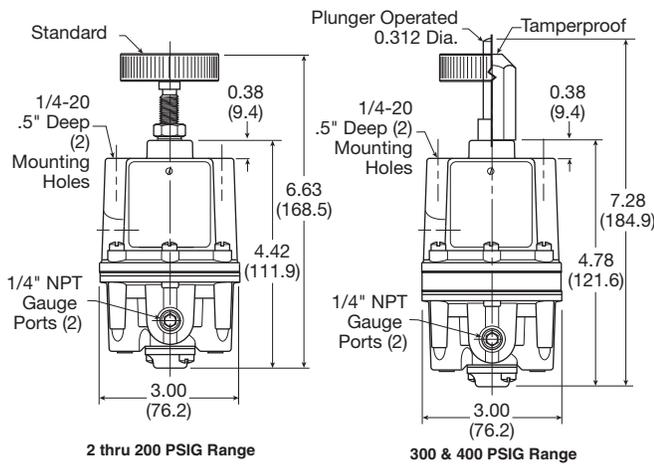


⚠ WARNING

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.

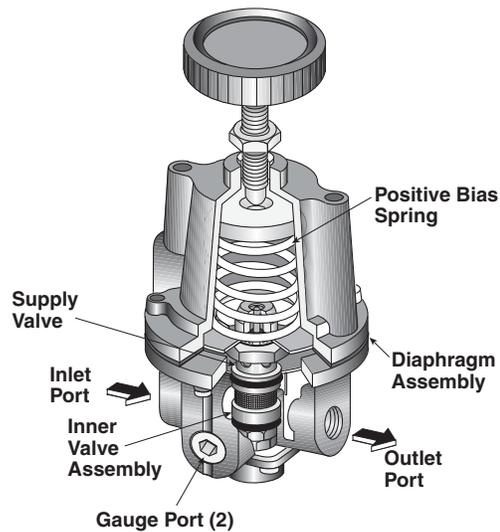
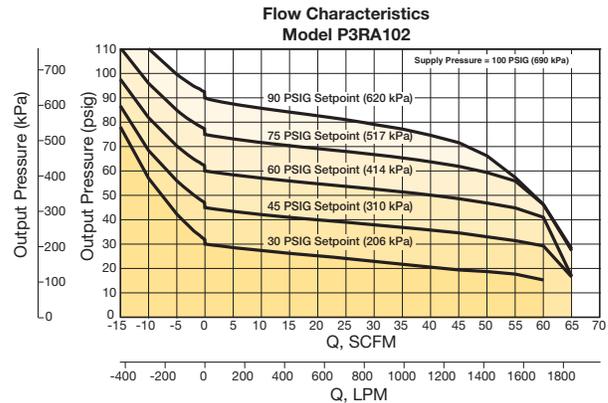


Inches (mm)

Air Preparation Products Regulator Products

Flow Charts

P3RA102 1/4" Regulator



Operating Principles

The P3RA102 Series regulator use the force balance principal to control the movement of the Valve Assembly that controls the output pressure. When the regulator is adjusted for a specific set point, the downward force of the Positive Bias Spring moves the Diaphragm Assembly downward. The Supply Valve opens and allows air to pass to the Outlet Port. As the set point is reached, the downward force exerted by the Positive Bias Spring is balanced by the force of the downstream pressure that acts on the Diaphragm Assembly. The resultant force moves the Supply Valve upward to reduce the flow of air to the Outlet Port.

Outlet pressure is maintained as a result of balance between forces acting on the top and bottom of the Diaphragm Assembly.



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

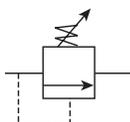
High Precision Relief Valve

P3RA102BP High Precision Relief Valves

The P3RA102BP is a high capacity relief valve that relieves excess pressure in a pneumatic system.

The P3RA102BP provides greater accuracy than standard relief valves over a narrow pressure range. The P3RA102BP is an excellent choice for a wide range of precision applications.

- Control sensitivity of .125" (.005 psig) (.32 cm) water column allows use in precision applications
- A separate control chamber and Aspirator Tube isolate the diaphragm from the main flow to eliminate hunting and buzzing
- Unit construction lets you service without removing it from the line
- Mounting bracket is available

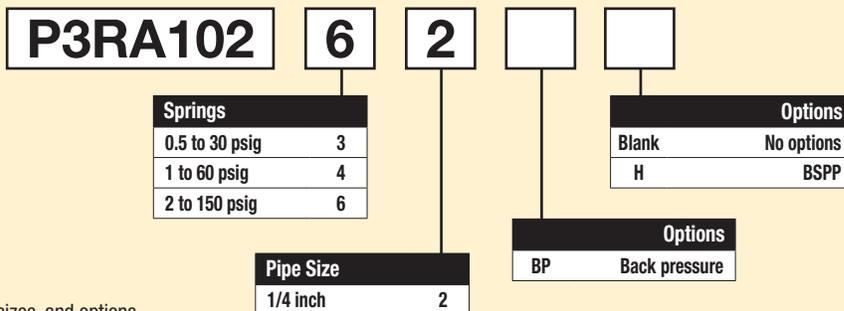


Operating information

Setpoint range	System pressure (maximum)
2 to 200 psig (0.15 to 14 bar) (15 to 1400 kPa)	300 psig (20.7 bar), (2100 kPa) max
300 to 400 psig (21 to 28 bar) (2100 to 2800 kPa)	500 psig (35 bar), (3500 kPa) max
Ambient temperature:	-40°F to 200°F (-40°C to 93°C)
Sensitivity:	.125" (.005 psig) (.32 cm) water column
Flow capacity:	40 scfm (68 m3/HR) @ 100 psig, (7.0 bar), (700 kPa) system pressure

Port size	Description	Part number
1/4"	0.5 to 30 psig	P3RA10232BP
1/4"	1 to 60 psig	P3RA10242BP
1/4"	2 to 100 psig	P3RA10262BP

Ordering information:



Note: Other spring ranges, port sizes, and options available. Please consult factory

Most popular.



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

High Precision Relief Valve

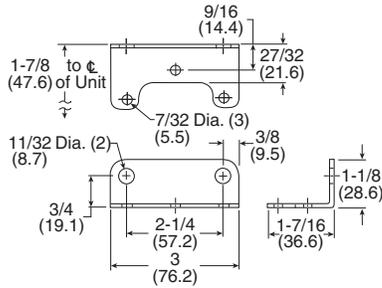
Material Specifications

Body and housing	Aluminum
Trim	Zinc plated steel, brass
Nozzle	Nitrile on dacron

Repair and Service Kits

0 to 200 psig, standard	PS12127-1
Tamper resistant kit	PS12165
Mounting bracket kit, zinc plated steel	PS09921

Mounting bracket

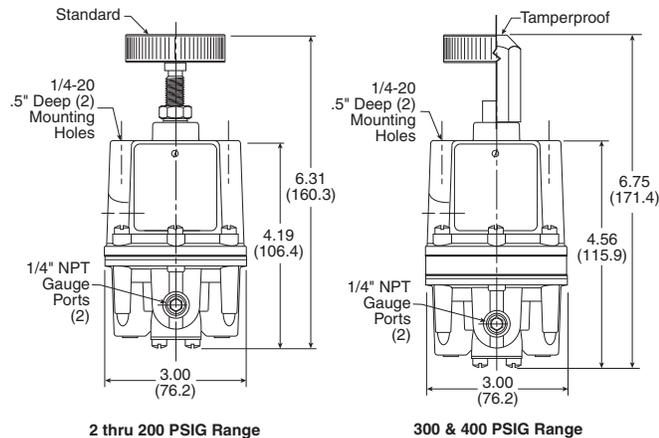


⚠ WARNING

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

CAUTION:

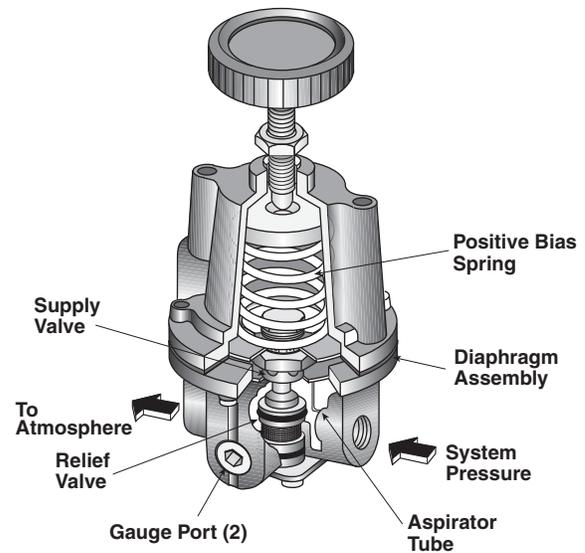
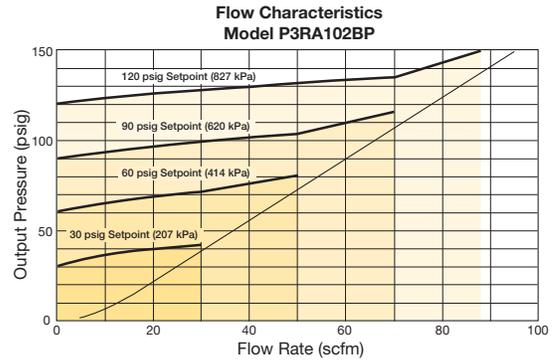
REGULATOR PRESSURE ADJUSTMENT – The working range of knob adjustment is designed to permit outlet pressures within their full range. Pressure adjustment beyond this range is also possible because the knob is not a limiting device. This is a common characteristic of most industrial regulators, and limiting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



Air Preparation Products Regulator Products

Flow Charts

P3RA102BP 1/4" Regulator



Operating Principles

The P3RA102BP Regulator uses the force balance principle to open the Relief Valve and vent system pressure when the set point is exceeded.

Downstream pressure is transmitted through the Aspirator Tube to the bottom of the Diaphragm Assembly. When you adjust the range screw for a specific set point, the Positive Bias Spring compresses and exerts a force on the top of the Diaphragm Assembly. As long as the pressure acting on the bottom of the Diaphragm Assembly produces a force less than the spring force acting on the top of the Diaphragm Assembly, the Relief Valve remains closed. When system pressure increases, the force on the bottom of the Diaphragm Assembly increases until it reaches the set point. When system pressure increases beyond the set point, the assembly moves upward, lifting the Relief Valve from its seat and vents the downstream air.

If downstream pressure decreases below the set point, the assembly moves downward closing the Relief Valve.



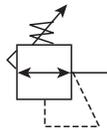
For inventory, lead time, and kit lookup, visit www.pdnplu.com

P3RA171 High Precision Vacuum Regulator

The P3RA171 is a high accuracy vacuum regulator that provides uniform vacuum regulation independent of vacuum supply changes and flow demand.

This unit has a diaphragm assembly with three springs to provide a more balanced loading of the diaphragm.

- Control sensitivity of .125" (.005 PSIG) (.32 cm) water column allows use in precision applications
- Balanced supply valve minimizes effects of vacuum variation
- Aspirator tube compensates for downstream pressure droop under flow conditions
- Separate control chamber isolates the diaphragm from the main flow to eliminate hunting and buzzing
- Construction allows servicing without removing from the line

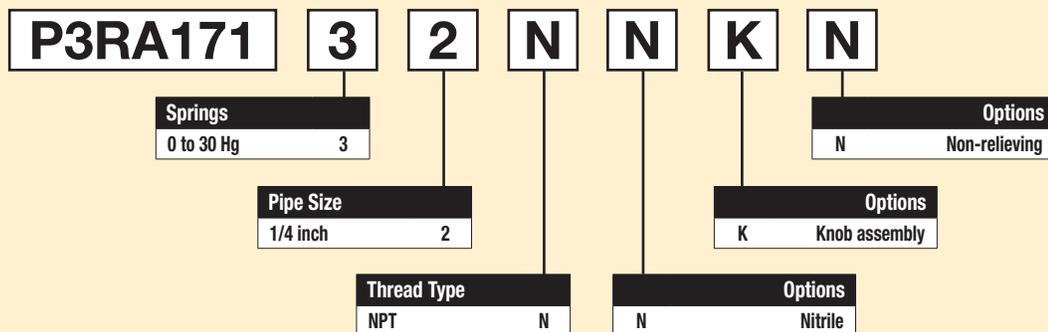


Operating information

Vacuum supply:	29.92 Hg (760 torr) max
Ambient temperature:	-40°F to 200°F (-40°C to 93°C)
Sensitivity:	.125" (.005 psig) (.32 cm) water column
Flow capacity:	3 scfm @ 650 torr supply, 250 torr setpoint
Vacuum supply effect:	Less than 1 torr for 100 torr (.04 Hg for 3.94 Hg) change in vacuum supply

Port size	Description	Part number
1/4"	0 to 30 Hg	P3RA17132NNKN

Ordering information:



Note: Other spring ranges, port sizes, and options available. Please consult factory

Most popular.



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

K96

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

High Precision Vacuum Regulator

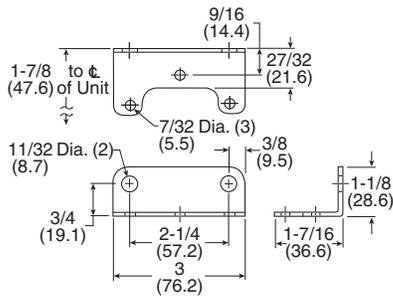
Material Specifications

Body and housing	Aluminum
Trim	Zinc plated steel, brass
Elastomers	Nitrile

Repair and Service Kits

Service kits – (includes diaphragm assy, valve assy, seat assy & gasket) 0-30" Hg, nitrile, non-relieving	PS20966-9
Tamper resistant kit	PS20967-1
Mounting bracket	PS09921

Mounting bracket

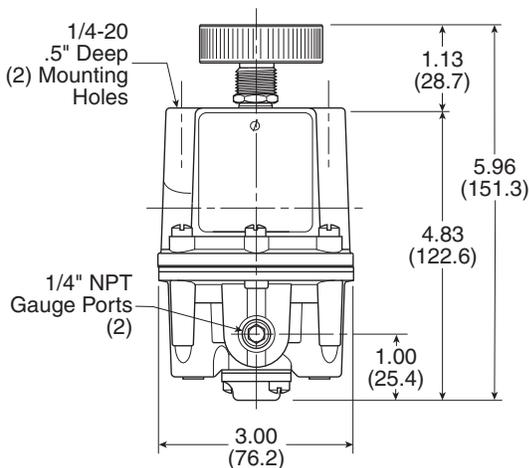


⚠ WARNING

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

CAUTION:

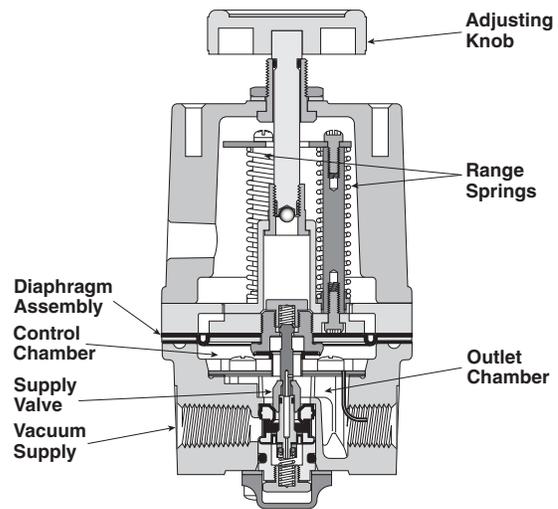
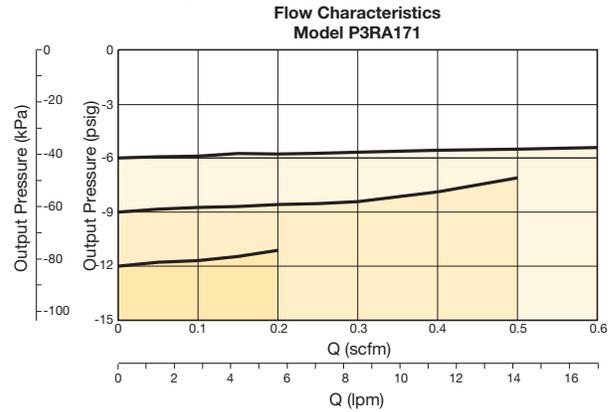
REGULATOR PRESSURE ADJUSTMENT – The working range of knob adjustment is designed to permit outlet pressures within their full range. Pressure adjustment beyond this range is also possible because the knob is not a limiting device. This is a common characteristic of most industrial regulators, and limiting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



Air Preparation Products Regulator Products

Flow Charts

P3RA171 1/4" Regulator



Operating Principles

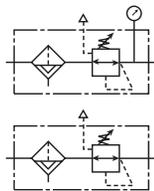
The Model P3RA171 Series vacuum regulator uses the force balance principle to control the movement of the Valve Assembly that controls output vacuum.

When the regulator is adjusted for a specific set point, the upward force of the Range Springs moves the Diaphragm Assembly upward. The Supply Valve opens and allows air to pass to the inlet port. As the set point is reached, the upward force exerted by the Range Springs is balanced by the force of the vacuum that pulls downward on the Diaphragm Assembly. The resultant force moves the Supply Valve downward to reduce the flow of air to the inlet port. Outlet vacuum is maintained as a result of balance between forces acting on the top and bottom of the Diaphragm Assembly.

High Precision Filter / Regulator

P3EA632 Precision Filter / Regulators

- The no-brass construction is well suited to harsh environments
- Internal and external epoxy finish for superior corrosion resistance
- Non-bleed design to reduce consumption
- Integral relief valve
- A gauge port provides convenient pressure gauge mounting
- The standard 5-micron filter minimizes internal contamination
- The filter dripwell contains a drain plug to easily drain trapped liquids
- Standard tapped exhaust
- Soft relief seat minimizes air loss



Operating information

Supply pressure:	250 psig (17.2 bar), (1700 kPa) max
Temperature range:	-40°F to 160°F (-40°C to 71°C)
Sensitivity:	1.0" (.036 psig) (2.54 cm) water column
Flow capacity:	25 scfm (42.5 m ³ /HR) @ 100 psig (7 bar), (700 kPa) supply and 20 psig (1.5 bar), (150 kPa) setpoint
Exhaust capacity:	0.8 scfm (1.36 m ³ /HR) where downstream pressure is 5 psig, (.35 bar) (35 kPa) above 20 psig (1.5 bar), (150 kPa) setpoint (0.8 SCFM for 120 # unit)
Consumption:	Undetectable
Supply pressure effect:	Less than 1.25 psig (.09 bar), (9 kPa) change for 100 psig (7.0 bar), (700 kPa) change in supply pressure (1.90 psig for 120 # unit)

Port size	Description	Part number
1/4"	1 to 60 psig	P3EA63242NS
1/4"	2 to 120 psig	P3EA63252NS

Ordering information:

P3EA632 **5** **2** **N** **S** **Blank**

Springs	
0 to 60 psig	4
2 to 120 psig	5

Pipe Size	
1/4 inch	2

Thread Type	
NPT	N
BSPP	U

Options	
Blank	None

Adjustment	
S	Screw (std)
K	Knob
T	Tamperproof

Note: Other spring ranges, port sizes, and options available. Please consult factory

Most popular.



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

K98

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

High Precision Filter / Regulator

Material Specifications

Body and housing	Epoxy coated Aluminum
Trim	Stainless steel, nickel plated steel
Elastomers	Nitrile

Repair and Service Kits

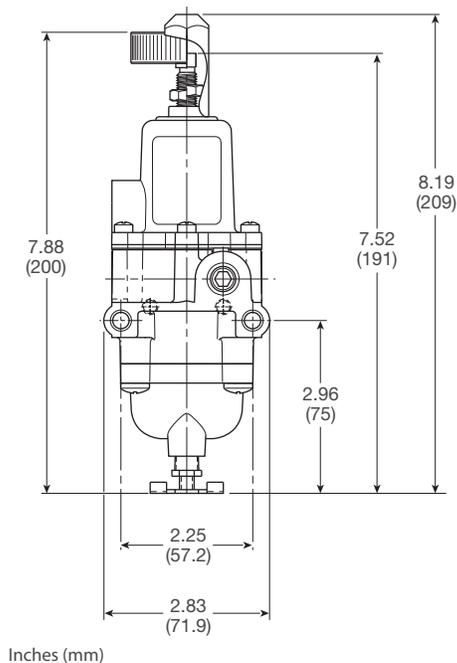
1 to 60, 2 to 120 psig	PS19968-NR
Tamper resistant kit	PS12165

WARNING

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

CAUTION:

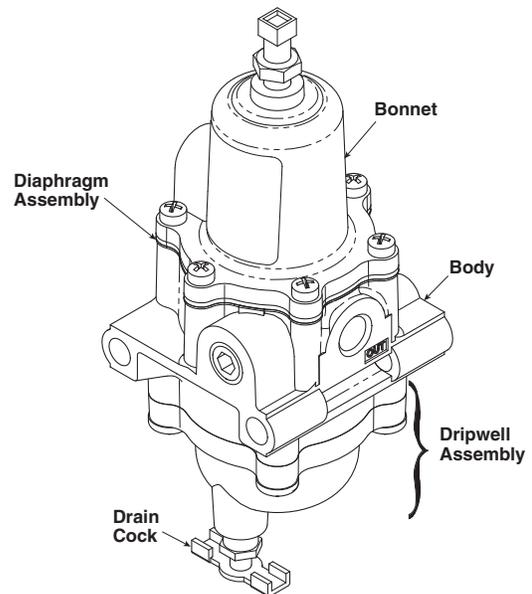
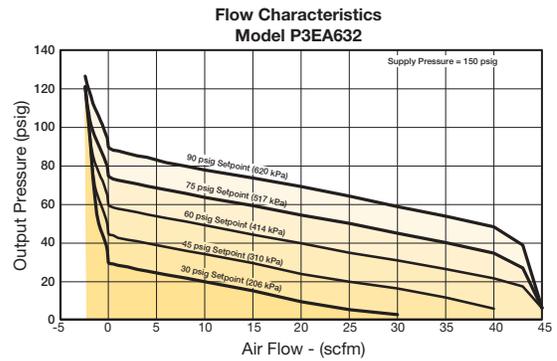
REGULATOR PRESSURE ADJUSTMENT – The working range of knob adjustment is designed to permit outlet pressures within their full range. Pressure adjustment beyond this range is also possible because the knob is not a limiting device. This is a common characteristic of most industrial regulators, and limiting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



Air Preparation Products Regulator Products

Flow Charts

P3EA632 1/4" Filter / Regulator



Operating Principles

When you turn the Adjustment Screw to a specific setpoint, the Spring exerts a downward force against the top of the Diaphragm Assembly. This downward force opens the Supply Valve. Output pressure flows through the Outlet Port and the passage to the Control Chamber where it creates an upward force on the bottom of the Diaphragm Assembly.

When the setpoint is reached, the force of the Spring that acts on the top of the Diaphragm Assembly balances with the force of output pressure that acts on the bottom of the Diaphragm Assembly and closes the Supply Valve.

When the output pressure increases above the setpoint, the Diaphragm Assembly moves upward to close the Supply Valve and open the Exhaust Valve. Output pressure flows through the Exhaust Valve and out of the Exhaust Vent on the side of the unit until it reaches the setpoint.

General

Dial

Pilot

Proportional

Precision

Water

K

Regulator Products

Precision Pneumatic Input Signal Amplifier

P3BA208 Precision Pneumatic Input Signal Amplifier

- The P3BA208 uses a pneumatic input signal to accurately control output pressure based on a predetermined ratio
- A balanced supply valve minimizes the effects of supply pressure variation
- An aspirator tube compensates downstream pressure droop under flowing conditions
- A separate control chamber isolates the diaphragm from the main flow to eliminate hunting and buzzing
- Unit construction allows servicing without removal
- Mounting bracket available

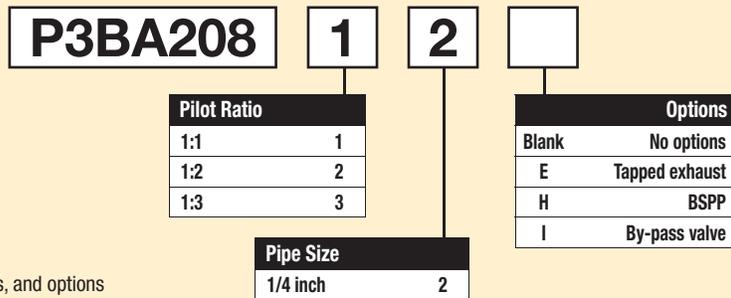


Port size	Description	Part number
1/4"	1:1 pilot ratio	P3BA20812
1/4"	1:2 pilot ratio	P3BA20822
1/4"	1:3 pilot ratio	P3BA20823

Operating information

	Signal : Output	1:1	1:2	1:3
Output pressure, maximum:		150 psig (10 bar)	150 psig (10 bar)	150 psig (10 bar)
Supply pressure, maximum:		250 psig (17 bar)	250 psig (17 bar)	250 psig (17 bar)
Flow capacity – 100 psig (7 bar), supply 20 psig, (1.5 bar) output		45 scfm (76.5 m ³ /HR)	45 scfm (76.5 m ³ /HR)	45 scfm (76.5 m ³ /HR)
Exhaust capacity – Downstream pressure 5 psig (0.35 bar) above 20 psig (1.5 bar) setpoint		11 scfm (18.7 m ³ /HR)	11 scfm (18.7 m ³ /HR)	11 scfm (18.7 m ³ /HR)
Sensitivity, water column:		0.250" (0.64 cm)	0.500" (1.27 cm)	0.750" (1.9 cm)
Ratio accuracy – % of 100 psig (7 bar) output span % of output span with 100 psig (7 bar) input span		1.0 —	1.0 —	1.0 —
Supply pressure effect – for change of 100 psig (7 bar)		0.10 psig (.007 bar)	0.20 psig (.014 bar)	0.30 psig (.021 bar)
Ambient temperature:		-40°F to 200°F (-40°C to 93°C)	-40°F to 200°F (-40°C to 93°C)	-40°F to 200°F (-40°C to 93°C)

Ordering information:



Note: Other spring ranges, port sizes, and options available. Please consult factory

Most popular.



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

K100

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

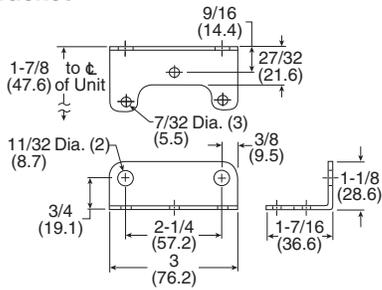
Material Specifications

Body and housing	Aluminum
Diaphragm	Nitrile on dacron fabric
Trim	Zinc plated steel, brass

Repair and Service Kits

Mounting bracket	PS09921
1:1 Ratio	PS19513-11
1:1 Ratio w/ by-pass valve	PS19513-11I
1:2 Ratio	PS19513-12
1:3 Ratio	PS19513-13

Mounting bracket



⚠ WARNING

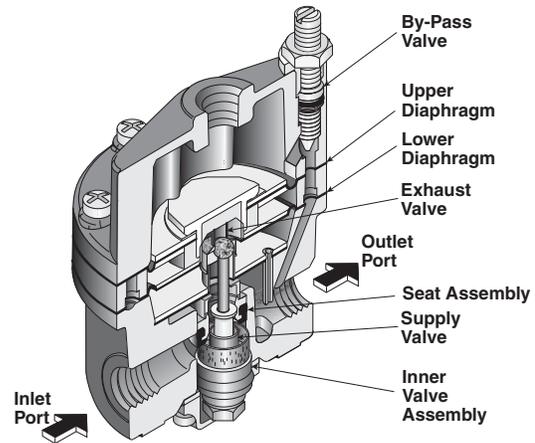
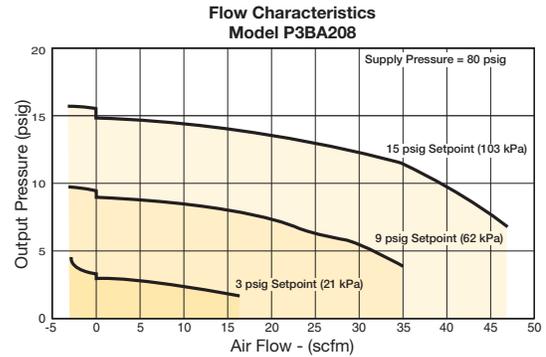
**Product rupture can cause serious injury.
Do not connect regulator to bottled gas.
Do not exceed Maximum primary pressure rating.**

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

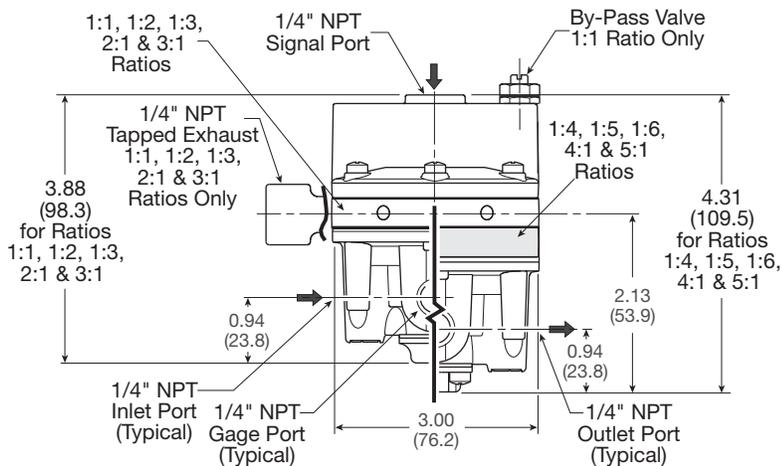
P3RA102BP 1/4" Input Signal Amplifier



Operating Principles

The P3BA208 Input Signal Amplifier is a pneumatic device capable of high flow and exhaust capacity. This device uses a force balance system to control the movement of the supply and exhaust valves.

At set point, the force due to signal pressure that acts on the top of the Upper Diaphragm balances with the force due to output pressure acting on the bottom of the Lower Diaphragm.



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

K101

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

General

Dial

Pilot

Proportional

Precision

Water

K

Regulator Products

P3BA45 Precision Pneumatic Input Signal Amplifier

- Five signal to output ratios meet most control element requirements.
- Control sensitivity of water column allows use in precision applications.
- Large Supply and Exhaust Valves provide high forward and exhaust flows.
- Soft Supply and Exhaust Valve seats minimize air consumption.
- A balanced Supply Valve minimizes the effect of supply pressure variation.
- An Aspirator Tube compensates downstream pressure droop under flow conditions.
- A separate Control Chamber isolates the diaphragm from the main flow to eliminate hunting and buzzing.
- Unit construction lets you service the P3BA45 without removing it from the line.

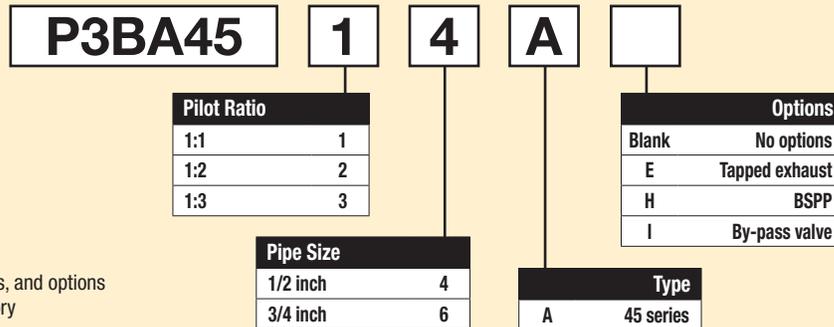


Port size	Description	Part number
1/2"	1:1 pilot ratio	P3BA4514A
3/4"	1:1 pilot ratio	P3BA4516A

Operating information

	Signal : Output	1:1	1:2	1:3
Output pressure, maximum:		150 psig (10 bar)	150 psig (10 bar)	150 psig (10 bar)
Supply pressure, maximum:		250 psig (17 bar)	250 psig (17 bar)	250 psig (17 bar)
Flow capacity – 100 psig (7 bar), supply 20 psig (1.5 bar) output		150 scfm (255 m ³ /HR)	150 scfm (255 m ³ /HR)	150 scfm (255 m ³ /HR)
Exhaust capacity – Downstream pressure 5 psig (.35 bar) above 20 psig (1.5 bar) setpoint		40 scfm (62.5 m ³ /HR)	40 scfm (62.5 m ³ /HR)	40 scfm (62.5 m ³ /HR)
Sensitivity, water column:		1.0" (2.54 cm)	2.0" (5.08 cm)	3.0" (7.62 cm)
Ratio Accuracy – % of 100 psig (7 bar) output span % of output span with 100 psig (7 bar) input span		3.0 —	3.0 —	3.0 —
Supply pressure effect – for change of 100 psig (7 bar)		0.10 psig (0.007 bar)	0.20 psig (0.014 bar)	0.30 psig (0.021 bar)
Ambient temperature:		-40°F to 200°F (-40°C to 93°C)	-40°F to 200°F (-40°C to 93°C)	-40°F to 200°F (-40°C to 93°C)
Hazardous locations:		Acceptable for use in zones 1 and 2 for gas atmospheres; Groups IIA and IIB and zones 21 and 22 for dust atmospheres.		

Ordering information:



Most popular.



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

Precision Pneumatic Input Signal Amplifier

Air Preparation Products Regulator Products

Material Specifications

Body and housing	Aluminum
Diaphragm	Nitrile on dacron fabric
Trim	Zinc plated steel, brass

Repair and Service Kits

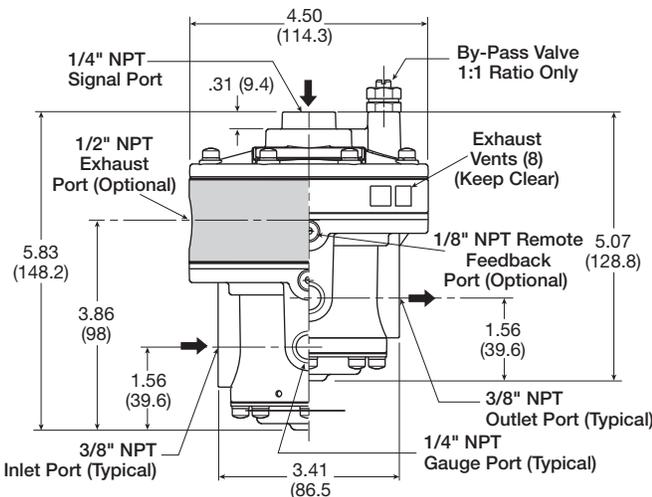
1:1 ratio	PS19549-1
1:1 ratio w/ tapped exhaust	PS19549-1E
1:3 ratio	PS19549-3
1:2 ratio	PS19549-2
1:1 w/ tapped exhaust, I option	PS19549-20E

⚠ WARNING

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

CAUTION:

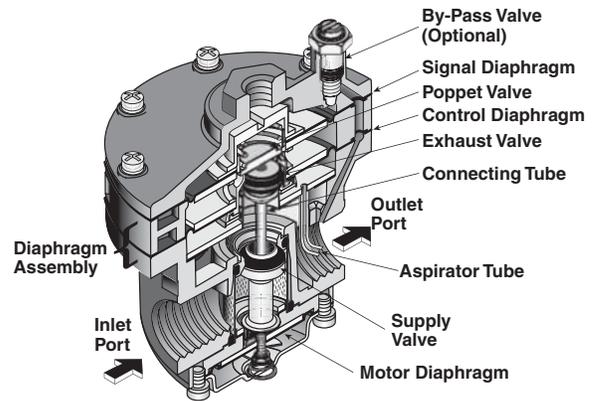
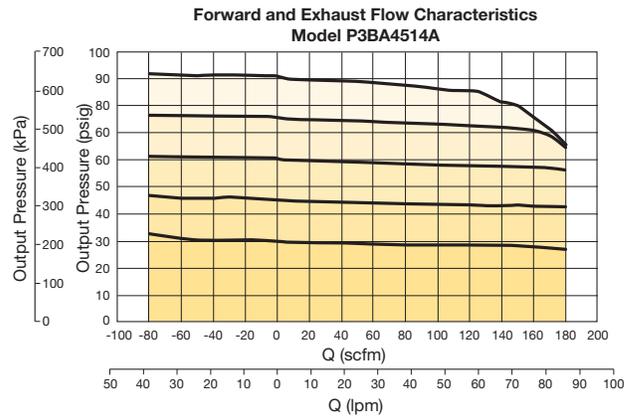
REGULATOR PRESSURE ADJUSTMENT – The working range of knob adjustment is designed to permit outlet pressures within their full range. Pressure adjustment beyond this range is also possible because the knob is not a limiting device. This is a common characteristic of most industrial regulators, and limiting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

Flow Charts

P3BA45 1/2" & 3/4" Input Signal Amplifier



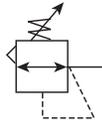
Operating Principles

When signal pressure on the top of the Signal Diaphragm creates a downward force on the Diaphragm Assembly, the Supply Valve opens. Output pressure flows through the Outlet Port and the Aspirator Tube to the Control Chamber to create an upward force on the bottom of the Control Diaphragm. When the setpoint is reached, the force of the signal pressure that acts on the top of the Signal Diaphragm balances with the force of the output pressure that acts on the bottom of the Control Diaphragm to close the Supply Valve.

When the output pressure increases above the signal pressure, the Diaphragm Assembly moves upward to close the Supply Valve and open the Exhaust Valve. Because the Poppet Valve is closed, pressure flows down the Connecting Tube to the bottom of the Motor Diaphragm. This pressure keeps the Supply Valve tightly closed while in the exhaust mode. The Poppet Valve opens and excess output pressure exhausts through the vent in the side of the unit until it reaches the setpoint.

20R Regulators – Miniature Water

- Rugged brass body for water service
- Unbalanced poppet standard
- Diaphragm operated for fast response
- Non-rising adjusting knob
- Compact, 3.06 inch (77.79mm) high by 1.56 inch (36.69mm) wide.
- High Flow: 1.25 GPM
- 1/8", 1/4" ports (NPT, BSPP)



Operating information

Supply pressure (max):	0 to 300 psig (0 to 20.7 bar)
Secondary pressure ranges	
Standard	2 to 125 psig (0 to 8.6 bar)
Medium	1 to 60 psig (0 to 4.1 bar)
Medium	1 to 25 psig (0 to 1.7 bar)
Operating temperature:	32°F to 125°F (0°C to 52°C)
High flow:	1.25 GPM
Gauge ports (2):	1/8 inch
Weight:	0.5 lb (0.23 kg)

Port size	Description	Part number
1/8"	Without gauge	20R013GC
1/4"	Without gauge	20R113GC

NOTE: 1.25 Dia. (31.8 mm) hole required for panel mounting.

Ordering information:

20R 1 13 G C

Port Size		Port Type
1/8 inch	0	Blank NPT
1/4 inch	1	1 BSPP

Pressure Range		Engineering Level
25 psig	11	C Current
125 psig	13	
60 psig	61	

Relief
F Relieving
G Non-relieving

Most popular.



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

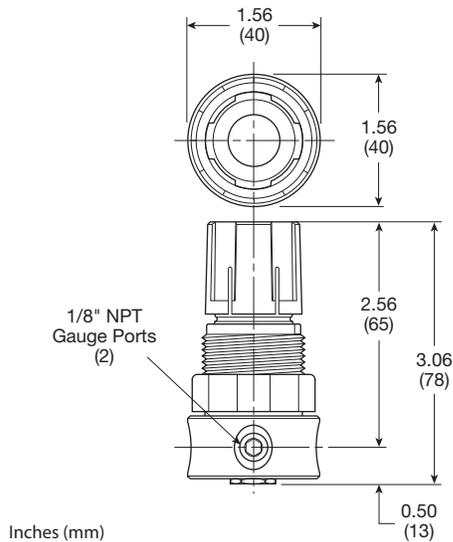
Miniature Water Regulators

Material Specifications

Adjusting nut & stem	Steel
Body, valve poppet, bottom plug, diaphragm button	Brass
Bonnet, knob	Plastic
Seals, diaphragm	Buna N
Springs	Steel

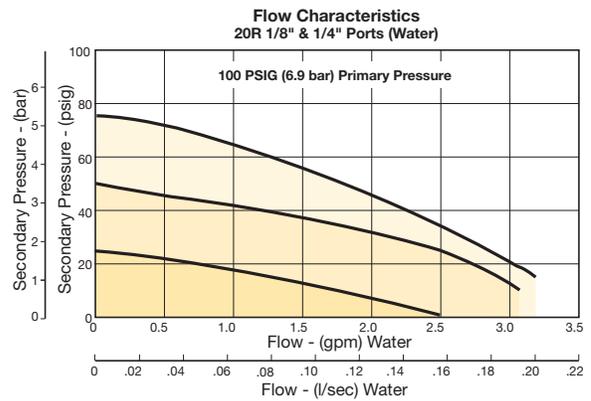
Repair and Service Kits

Bonnet kit	PCKR364Y
Bonnet tamperproof kit	PCKR364T
Panel mount nut, aluminum	R05X51-A
Panel mount nut, plastic	R05X51-P
Mounting bracket kit	SA161X57
Relieving	PRKR164Y
Non-Relieving	PRKR163Y



Air Preparation Products Regulator Products

Flow Charts



WARNING

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Do not connect regulator to bottled gas.
Do not exceed Maximum primary pressure rating.**

CAUTION:

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General

Dial

Pilot

Proportional

Precision

Water

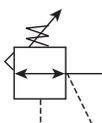
K

Regulator
Products

R24 Regulators – Miniature Water

Water service

- Constructed with a combination of N.S.F. and F.D.A. compliant materials
- Lightweight plastic body
- Unbalanced poppet standard
- Non-rising, push-to-lock adjusting knob
- Compact, 3.10 Inch (79mm) high by 1.60 Inch (41mm) wide
- Lightweight
- Diaphragm operated
- 1/8", 1/4" ports (NPT)



Port size	Description	Part number
1/8"	Non-relieving, 0-125 reduced pressure, without gauge	R24-01CK
1/4"	Non-relieving, 0-125 reduced pressure, without gauge	R24-02CK

NOTE: 1.250 Dia. (31.8 mm) hole required for panel mounting.

Operating information

Supply pressure (max):	Inlet 150 psig (10.0 bar)
Operating temperature:	40°F to 125°F (4°C to 52°C)
Gauge ports (2):	1/8 inch (can be used for full flow)
Weight:	0.25 lb (0.11 kg)

Ordering information:

R24 - 02 C K

Type EPDM Elastomers R25	Port Size 1/8 inch 01 1/4 inch 02	Pressure Range A 0 to 25 psig (0 to 2 bar) B 0 to 60 psig (0 to 4 bar) C 0 to 125 psig (0 to 8 bar)
		Relief K Non-relieving P Panel Mount Nut

Most popular.



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

K106

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

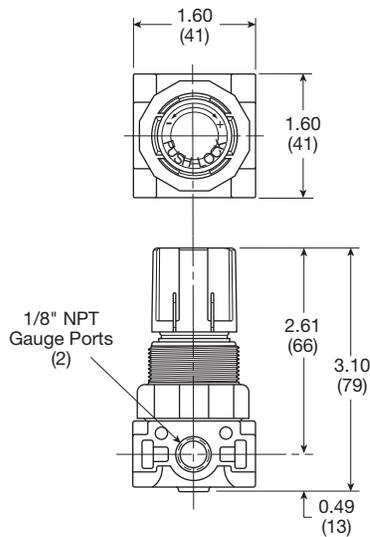
Miniature Water Regulators

Material Specifications

Adjusting screw	Steel
Body	Acetal
Bonnet and seat	Acetal
Diaphragm	EPDM
Seals	EPDM
Springs	Stainless steel
Valve poppet	EPDM

Repair and Service Kits

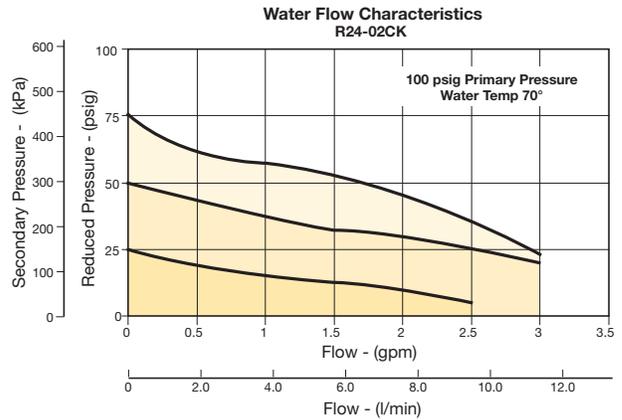
Panel mount nut, plastic	R05X51-P
Mounting bracket and nut	SA161X57
Relieving (EPDM)	RKR24Y
Non-Relieving (EPDM)	RKR24KY
0-25 psig spring	SPR-375-1
0-60 psig spring	SPR-376
0-125 psig spring	SPR-377
Tamperproof kit	CKR364T



Inches (mm)

Air Preparation Products Regulator Products

Flow Charts



⚠ WARNING

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

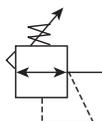
CAUTION:

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.

R46 Regulators – Miniature Water

Water service

- Constructed with a combination of N.S.F. and F.D.A. compliant materials
- Lightweight plastic body
- Unbalanced poppet standard
- Non-rising, push-to-lock adjusting knob
- Compact, 3.43 inch (87.1mm) high by 2.06 inch (52.3mm) wide
- Lightweight
- Diaphragm operated
- 1/4", 3/8" ports (NPT)



Operating information

Supply pressure (max):	Inlet 150 psig (10.0 bar)
Operating temperature:	40°F to 125°F (4°C to 52°C)
Gauge ports (2):	1/4 inch (can be used for full flow)
Weight:	0.38 lb (0.17 kg)

Port size	Description	Part number
1/4"	Non-relieving, 0-125 reduced pressure, without gauge	R46-02CK
3/8"	Non-relieving, 0-125 reduced pressure, without gauge	R46-03CK

NOTE: 1.250 Dia. (31.8 mm) hole required for panel mounting.

Ordering information:

R46 - 02 C

Type EPDM Elastomers R46	Port Size 1/4 inch 02 3/8 inch 03	Relief K Non-relieving P Panel Mount Nut
	Pressure Range A 0 to 25 psig (0 to 2 bar) B 0 to 60 psig (0 to 4 bar) C 0 to 125 psig (0 to 8 bar)	

Most popular.



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

K108

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

General
Dial
Pilot
Proportional
Precision
Water
K Regulator Products

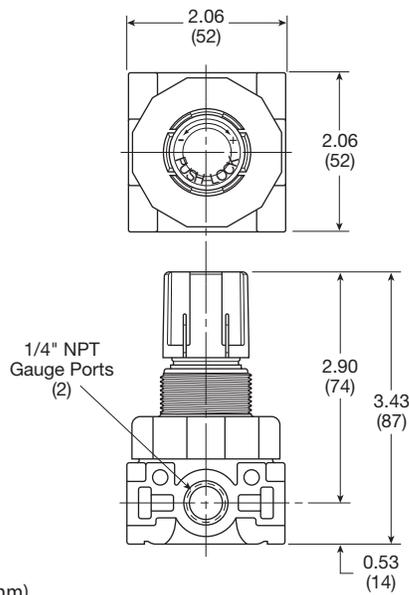
Miniature Water Regulators

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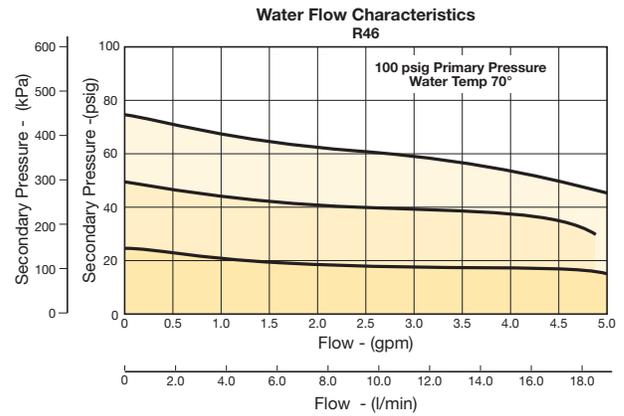
Panel mount nut, plastic	R05X51-P
Mounting bracket and nut	SA161X57
Relieving	RKR45Y
Non-Relieving	RKR45KY
0-25 psig spring	SPR-46
0-60 psig spring	SPR-47
0-125 psig spring	SPR-48



Inches (mm)

Air Preparation Products Regulator Products

Flow Charts



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.

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.



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.

Part Number
Index

Safety Guide

Offer of Sale

Part Number Index,
Safety Guide, Offer of Sale



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

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 from Seller.
Goods:	means any tangible part, system or component to be supplied by the Seller.
Products:	means the Goods, Services and/or Software as described in a Quote provided by the Seller.
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 supplied by the Seller.
Software:	means any software related to the Products, whether embedded or separately downloaded.
Terms:	means the terms and conditions of this Offer of Sale or any newer version of the same as published by Seller electronically at www.parker.com/saleterms .

2. **Terms.** All sales of Products by Seller are contingent upon, and will be governed by, these Terms and, these Terms are incorporated into any Quote provided by Seller to any 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 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 Seller's Quote are offered for sale at the prices indicated in Seller's Quote. Unless otherwise specifically stated in Seller's 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 2010). All sales are contingent upon credit approval and 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. 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 shipment carrier at Seller's facility. Unless otherwise agreed, Seller may exercise its judgment in choosing the carrier and means of delivery. No deferment of shipment at Buyer's request beyond the respective indicated shipping date will be made except on terms that will indemnify, defend and hold Seller harmless against all loss and additional expense. Buyer shall be responsible for any additional shipping charges incurred by Seller due to Buyer's acts or omissions.

5. **Warranty.** The warranty related to 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 completion of the Services by Seller; 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:

DISCLAIMER OF WARRANTY: THIS WARRANTY IS THE SOLE AND ENTIRE WARRANTY PERTAINING TO PRODUCTS. SELLER DISCLAIMS ALL OTHER WARRANTIES, EXPRESS AND IMPLIED, INCLUDING 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. BUYER AGREES AND ACKNOWLEDGES THAT 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 the 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 ARISING OUT OF, OR AS THE RESULT OF, THE SALE, DELIVERY, NON-DELIVERY, SERVICING, NON-COMPLETION OF SERVICES, USE, LOSS OF USE OF, OR INABILITY TO USE THE PRODUCTS OR ANY PART THEREOF, LOSS OF DATA, IDENTITY, PRIVACY, OR CONFIDENTIALITY, OR FOR ANY CHARGES OR EXPENSES OF ANY NATURE INCURRED WITHOUT SELLER'S WRITTEN CONSENT, 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. **Loss to Buyer's Property.** Any designs, tools, patterns, materials, drawings, confidential information or equipment furnished by Buyer or any other items which are or become 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 such property. Seller shall not be responsible for any loss or damage to such property while it is in Seller's possession or control.

9. **Special Tooling.** Special Tooling includes but is not limited to tooling, jigs, fixtures and associated manufacturing equipment acquired or necessary to manufacture Products. A tooling charge may be imposed 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 Special Tooling belonging to Seller that is utilized in the manufacture of the Products, even if such Special Tooling has been specially converted or adapted for such manufacture 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 in its sole discretion at any time.

10. **Security Interest.** To secure payment of all sums due, 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 its security interest.

11. **User Responsibility.** The 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. The Buyer must analyze all aspects of the application and follow applicable industry standards, specifications, and other technical information provided with the Product. If Seller provides Product options based upon data or specifications provided by the Buyer, the 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 the Buyer is not the end-user, Buyer will ensure such end-user complies with this paragraph.

12. **Use of Products; Indemnity by Buyer.** Buyer shall comply with all instructions, guides and specifications provided by Seller with the Products. **Unauthorized Uses.** If Buyer uses or resells the Products for any uses prohibited in 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. 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, brought by or incurred by Buyer, Buyer's employees, or any other person, arising out of: (a) improper selection, application, design, specification or other misuse of Products provided by Seller; (b) any act or omission, negligent or otherwise, of Buyer; (c) Seller's use of patterns, tooling, equipment, plans, drawings, designs or 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 or tampering with the Products for any reason; 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.

13. **Cancellations and Changes.** Buyer may not cancel or modify 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. Seller, at any time, may change Product features, specifications, designs and availability.

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

15. **Force Majeure.** Seller does not assume the risk and is not liable for delay or failure to perform any of Seller's obligations by reason of events or circumstances beyond its reasonable control ("Events of Force Majeure"). Events of Force Majeure shall include without limitation: accidents, strikes or labor disputes, acts of any government or government agency, acts of nature, delays or failures in delivery from carriers or suppliers, shortages of materials, or any other cause beyond Seller's reasonable control.

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

17. **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) appoints a trustee, receiver or custodian for all or any part of Buyer's property (c) files a petition for relief in bankruptcy on its own behalf, or one filed by a third party (d) makes an assignment for the benefit of creditors; or (e) dissolves its business or liquidates all or a majority of its assets.

18. **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.

19. **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 the Seller to the 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 such claims of infringement of Intellectual Property Rights.

20. **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.

21. **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. 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.

22. **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 Product from Seller in a manner or for a purpose that violates Export Laws or would cause Seller to be in violation of Export Laws.