⚠ CAUTION:

Polycarbonate bowls, being transparent and tough, are ideal for use with Filters and Lubricators. They are suitable for use in normal industrial environments, but should not be located in areas where they could be subjected to direct sunlight, an impact blow, nor temperatures outside of the rated range. As with most plastics, some chemicals can cause damage. Polycarbonate bowls should not be exposed to chlorinated hydro-carbons, ketones, esters and certain alcohols. They should not be used in air systems where compressors are lubricated with fire-resistant fluids such as phosphate ester and di-ester types.

Metal bowls are recommended where ambient and/or media conditions are not compatible with polycarbonate bowls. Metal bowls resist the action of most such solvents, but should not be used where strong acids or bases are present or in salt laden atmospheres. Consult the factory for specific recommendations where these conditions exist.

TO CLEAN POLYCARBONATE BOWLS USE MILD SOAP AND WATER ONLY! DO NOT use cleansing agents such as acetone, benzene, carbon tetrachloride, gasoline, toluene, etc., which are damaging to this plastic.

Metal bowl guards are recommended for all applications.

⚠ 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.

⚠ WARNING

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

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

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

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Table of Contents

Regulators

Regulation

An air regulator is a specialized control valve. It reduces upstream supply pressure level to a specified constant downstream pressure.

Pneumatic equipment that is operated at higher-than-recommended pressure wastes the energy to generate that pressure. It creates a potential safety hazard, and probably will wear out prematurely. Operating below specified pressure can cause the machine to fail to meet design performance specifications. Therefore, precise air pressure control is essential to efficient operation of air-powered equipment.

How to Select the Proper Regulator

While regulator bodies are generally constructed of die-cast metal, other external parts may be either metal or plastic. Remember that all-metal construction is best for tough applications, where abuse is likely to occur, but plastic construction is generally lower in cost. For normal industrial applications, either construction is suitable.

Inlet pressure rating and downstream controlled range, as well as flow capacity, must be determined before selecting a regulator. Port size should match piping size.

Required response time, relieving capability, and type of adjustment are other considerations. Highly sensitive, lightweight diaphragm sensors vs. the slower, but often more durable, piston sensors. Self-relieving vs. non-relieving regulators. T-Handles or knobs as the adjustment mechanism, or air pilot operated regulator which offer remote adjustment. Other choices to be made include gauge, panel mount and other special options.

Regulator Construction

Regulators are generally constructed using a die-cast metal body. Other external parts, such as the spring cage and bottom plug, may be either metal or plastic. All-metal construction offers more durability in tough applications where abuse is likely to occur, while the plastic construction offers lower cost. For normal industrial applications (temperature range of 40° to 120° F and supply pressure to 300 PSIG), either construction will serve well.

Lightweight diaphragm sensors offer quick response and high sensitivity to air pressure changes. Piston sensors are somewhat slower but may be more durable. Where downstream pressure requirements change rapidly enough to cause regular chatter, slower response may be an advantage.

If the self-relieving feature is not needed for an application, simpler non-relieving regulators are available.

For regulators with an adjustment spring, a -T-Handle or knob provides the external link to the spring on various models.

Pilot-operated regulators substitute air pressure in the chamber above the sensor to provide the reference force. Remote adjustment through a separate pilot regulator thus becomes possible, or the pilot signal can be fed back from a downstream location for precise control.
The balanced inner valve design exposes both sides of the inner valve to essentially the same pressure. This eliminates much of the effect that changes in inlet pressure might have on inner valve position and orifice opening.

Regulator Operation

In a typical regulator, an inner valve sets the size of an orifice which connects inlet port to outlet port. The sensing element, often a diaphragm or piston mechanically linked to the inner valve, reacts to downstream pressure and a reference force to position the inner valve. The reference force can be a spring, or an air pilot chamber.

The valve is normally open. High pressure air enters and flows through the orifice toward the outlet. Downstream pressure is connected through an aspirator tube to the bottom of the diaphragm. As downstream pressure increases, the diaphragm is forced upward, compressing the adjustment spring. When the diaphragm moves, the inner valve spring pushes the inner valve disc upward to throttle the orifice. If downstream pressure exhausts, the mechanical sequence reverses and the inner valve disc opens the orifice until the set pressure is reached again.

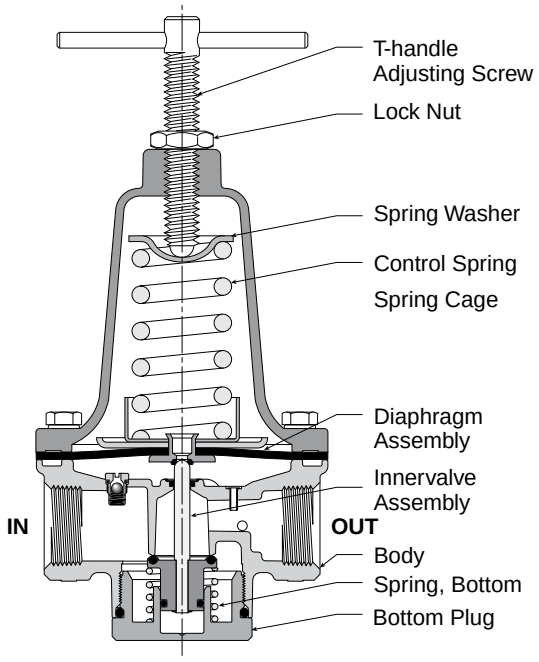
The arrangement of separate diaphragm chamber and aspirator tube accomplishes two purposes. First, the diaphragm is moved out of the potentially abrasive air stream. Second, and more important, if the downstream system calls for high flow, this flow generates a low pressure venturi effect at the end of the aspirator tube and into the diaphragm chamber. The diaphragm therefore reacts more quickly to open the orifice via the inner valve, thereby improving response time to high flow demands.

Some circuits may be subject to downstream-generated high pressure (from high temperatures or heavy vertical loads on cylinders, for example). This high pressure is reduced by a self-relieving feature built into the regulator. The inner valve stem normally blocks a relieving orifice in the center of the diaphragm. If excessive pressure lifts the diaphragm off the stem, air bleeds through the orifice and out the spring cage vent until the system returns to the set pressure.

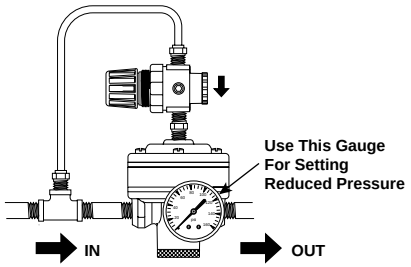
Regulators

Regulator Comparison Chart

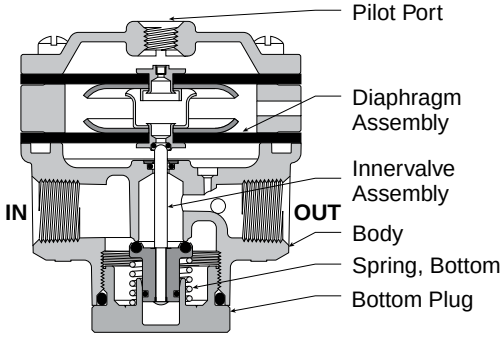
		High Precision Regulators			Precision Regulator	Standard Regulator
	Examples —>	**R210**	**R220**	**R230**	**R216**	**R10, R11, R119**
Repeatability / Sensitivity	Regulator's ability to return to a set pressure after inducing flow.	0.005 PSIG 1/8" Water Column	0.005 PSIG 1/8" Water Column	0.010 PSIG 1/4" Water Column	0.5 to 1.0 PSIG	2 to 4 PSIG
Reduced Pressure Variation	This refers to the regulator's ability to maintain a consistent output pressure when faced with variables such as time, cycling, temperature, supply pressure, flow, etc.	Best	Best	Better	Good	Average
Input Pressure	Unregulated air pressure going into the regulator	150 PSIG Max.	150 PSIG Max.	250 PSIG Max.	Varies	Varies
Effect of Supply Pressure Variation on Regulated Pressure	Reduced / set pressure variation when input pressure changes by 100 PSIG	0.020 PSIG	0.020 PSIG	0.100 PSIG	4 PSIG	Approx. 3 - 6 PSIG
Reduced Pressure Range	Reduced pressure ranges available	2-40 PSIG 2-120 PSIG	2-120 PSIG	0-2 PSIG 0-30 PSIG 0-60 PSIG 0-150 PSIG	Varies	Varies
Flow Capacity	Regulator's flow capacity	14 SCFM	14 SCFM	80 SCFM	Varies	Varies
Exhaust (Relief) Capacity	Regulator's exhaust/relief flow rating when backpressure is introduced from downstream	3 SCFM	11 SCFM	4 SCFM	Low	Low
Overpressure to Relieve ***Key in cylinder applications***	Regulator's sensitivity to relieve excess downstream pressure over the set pressure.	Best (0.005 PSIG)	Best (0.005 PSIG)	Better (0.010 PSIG)	Good (1 PSIG)	Average (5-10 PSIG)
Constant Bleed	Does the regulator constantly bleed air to the atmosphere to maintain accuracy?	Yes	Yes	Yes	Varies	No
Size Constraints	Overall size of regulator	4.5" H x 2.06" W	4.5" H x 2.06" W	5.5" H x 3" W	Varies	Varies
Mounting Constraints	Mounting options or Bracket	Panel, Pipe, or Bracket	Panel, Pipe, or Bracket	Panel, Pipe, Bracket, or Modular	Panel, Pipe,	Varies
Port Size	Inlet / Outlet port size	1/4"	1/4"	1/4" or 3/8"	Varies	Varies



Standard Regulator



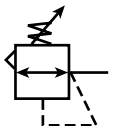
Pilot Regulator Application



Pilot Operated Regulator

Pneumatic Division
Richland, Michigan
www.wattsfluidair.com

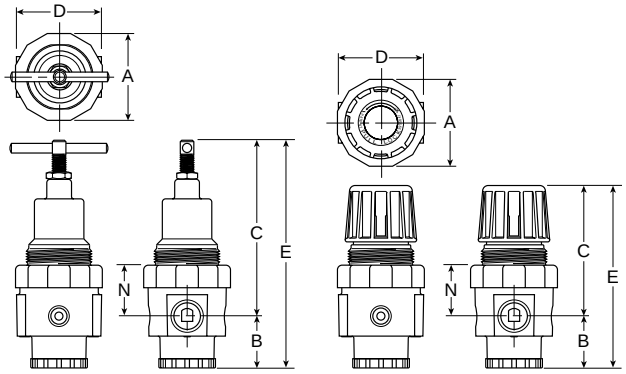
R10 / R11 General Purpose Regulators



Features

- High Flow Performance Featuring Rugged Design for the Most Demanding Applications
- Diaphragm Operated Design with Balanced Poppet Design for Quick and Accurate Regulation
- Accurate Pressure Regulation
- Panel Mountable
- High Flow: 1/4" - 80 SCFM
  3/8" - 80 SCFM
  1/2" - 100 SCFM§
- **R10:** Push-to-Lock, Pull-to-Adjust. Adjusting Lock is engaged when Knob is Removed Rendering Unit Tamper Resistant
- **R11:** Heavy Duty Tee Handle Adjustment

§ SCFM = Standard cubic feet per minute at 100 PSIG inlet, 75 PSIG no flow secondary setting, and 20 PSIG pressure drop.



Port Size	R10 NPT	R11 NPT
	Relieving	Relieving
Without Gauge 0-125 PSIG Reduced Pressure		
1/4"	**R10-02C**	**R11-02C**
3/8"	**R10-03C**	**R11-03C**
1/2"	**R10-04C**	**R11-04C**
With Gauge 0-125 PSIG Reduced Pressure		
1/4"	**R10-02CG**	**R11-02CG**
3/8"	**R10-03CG**	**R11-03CG**
1/2"	**R10-04CG**	**R11-04CG**

Standard part numbers shown bold.
For other models refer to ordering information below.

R10 Regulator Dimensions					
A	**B**	**C**	**D**	**E**	**N**
R10					
2.25 (57)	1.40 (36)	3.38 (86)	2.33 (59)	4.78 (121)	1.38 (35)
R11					
2.25 (57)	1.40 (36)	4.72 (120)	2.33 (59)	6.13 (156)	1.38 (35)

inches
(mm)

NOTE: 1.75 Dia. (44mm) hole required for panel mounting.

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

Ordering Information

R	10	—	02	C		/**

Series
- **10 Tamper Resistant, Snap Lock, Removable Knob**
- **11 "T" Handle Adjustment**

Port Threads
- **— NPT**
- G BSPP

Port Size
- **02 1/4 Inch**
- **03 3/8 Inch**
- **04 1/2 Inch**

Reduced Pressure Range
- A 0-25 PSIG
- B 0-60 PSIG
- **C 0-125 PSIG**
- D 0-250 PSIG

Options
- G Gauge
- K Non-Relieving
- P Panel Mount Nut
- X64 Fluorocarbon O-Rings and Diaphragm
- N Panel Mount Threads at Top of Bonnet (R11 Only)
- X81 Brass Body

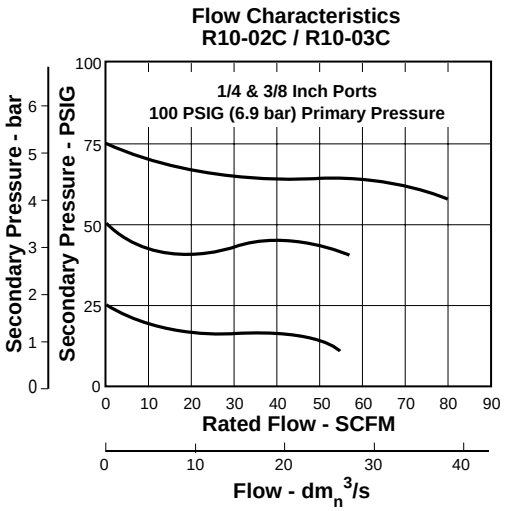
Engineering Change Designator
Will be entered at factory.

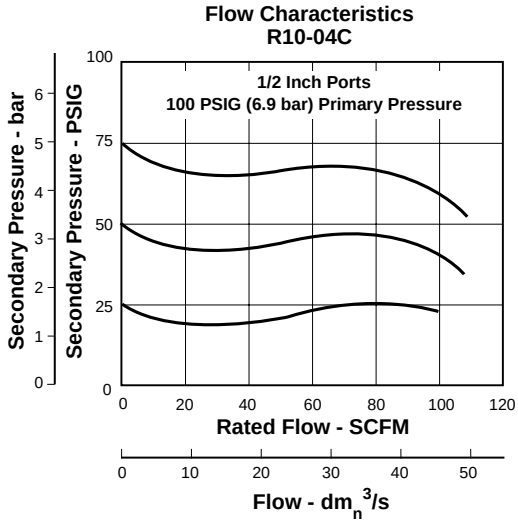
CAUTION:

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.

NOTE: BOLD OPTIONS ARE STANDARD.

Technical Information





R10 / R11 Regulator Kits & Accessories

Control Knob (R10) R10Y54

Tee Handle (R11) SA16Y53

Gauges –

2" Dial Size, 1/4" Back Connection
0 to 60 PSIG (0 to 400 kPa) K4520N14060

2" Dial Size, 1/4" Back Connection
0 to 160 PSIG (0 to 1100 kPa) K4520N14160

2" Dial Size, 1/4" Back Connection
0 to 300 PSIG (0 to 2068 kPa) K4520N14300

Mounting Bracket Kit SAR10Y57

Panel Mount Nut –

Plastic R10X51-P
Aluminum R10X51-A

Repair Kits –

Non-Relieving RKR10KY
Non-Relieving (Viton) RKR10KYX64
Relieving RKR10Y
Relieving (Viton) RKR10YX64

Cage Kit –

R10 ..... CKR10Y
R11 ..... CKR11Y

Specifications

Gauge Ports (2) ..... 1/4 Inch

Port Threads ..... 1/4, 3/8, 1/2 Inch

Supply Pressure ..... 300 PSIG Maximum (20.4 bar)

Temperature Rating ..... 40°F to 125°F (4.4°C to 52°C)

Weight ..... 1.3 lb. (0.59 kg) / Unit
32 lb. (14.51 kg) / 24-Unit Master Pack

Materials of Construction

Adjusting Knob –

R10 ..... Acetal
R11 (Tee Handle) ..... Steel

Body ..... Zinc

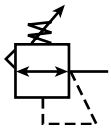
Bottom Plug ..... Brass

Elastomers ..... Buna N

Spring Case –

R10 ..... Acetal
R11 ..... Zinc

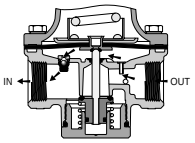
R119 Standard Regulators



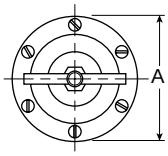
Features

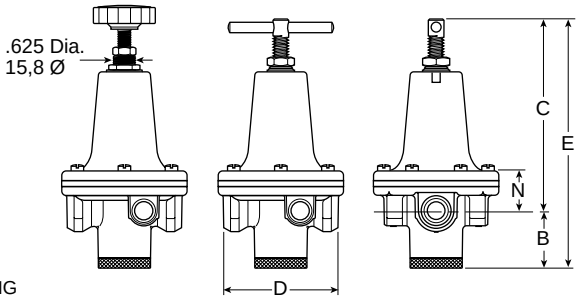
- High Flow Performance Featuring Rugged Design for the Most Demanding Applications
- Ideal for Those Installations Calling for Constant Pressure with Wide Variation in Flow
- Diaphragm Operated Design with Balanced Poppet Design for Quick and Accurate Regulation
- Secondary Aspiration Plus Balanced Poppet Provides Quick Response and Accurate Pressure Regulation
- Heavy Duty Tee Handle Adjustment
- Reverse Flow Version Available
- Panel Mount Version Available
- High Flow: 1/4" - 100 SCFM
  3/8" - 110 SCFM
  1/2" - 150 SCFM§

§ SCFM = Standard cubic feet per minute at 100 PSIG inlet, 75 PSIG no flow secondary setting, and 20 PSIG pressure drop.



X80 Reverse Flow Option





Panel Mount Version

Port Size	NPT	BSPP
	Relieving	Relieving
Without Gauge 0-125 PSIG Reduced Pressure		
1/4"	**R119-02C**	R119G02C
3/8"	**R119-03C**	R119G03C
1/2"	**R119-04C**	R119G04C
With Gauge 0-125 PSIG Reduced Pressure		
1/4"	**R119-02CG**	—
3/8"	**R119-03CG**	—
1/2"	**R119-04CG**	—

Standard part numbers shown bold.
For other models refer to ordering information below.

R119 Regulator Dimensions					
A	B	C	D	E	N
R119-02C, R119-03C					
3.00 (76)	1.38 (35)	4.60 (117)	2.74 (705)	5.98 (152)	0.96 (24)
R119-04C					
3.56 (90)	1.56 (40)	5.20 (132)	3.25 (83)	6.76 (172)	1.27 (32)

inches
(mm)

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

Ordering Information

R	119	—	02	C		/**

Port Threads
- **— NPT**
- G BSPP

Port Size
- **02 1/4 Inch**
- **03 3/8 Inch**
- **04 1/2 Inch**

Reduced Pressure Range
- A 0-25 PSIG
- B 0-60 PSIG
- **C 0-125 PSIG**
- D 0-250 PSIG

Options
- G Gauge
- K Non-Relieving
- P Panel Mount Version
- X64 Fluorocarbon O-Rings and Diaphragm
- X80 Reverse Flow*

* Reverse flow for use downstream of control valves.

Engineering Change Designator

Will be entered at factory.

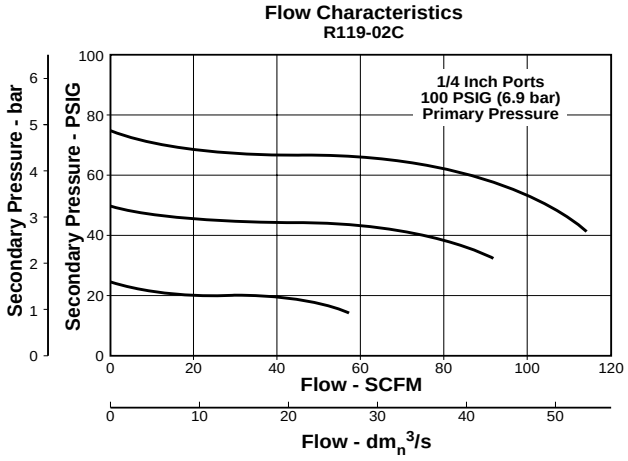
CAUTION:

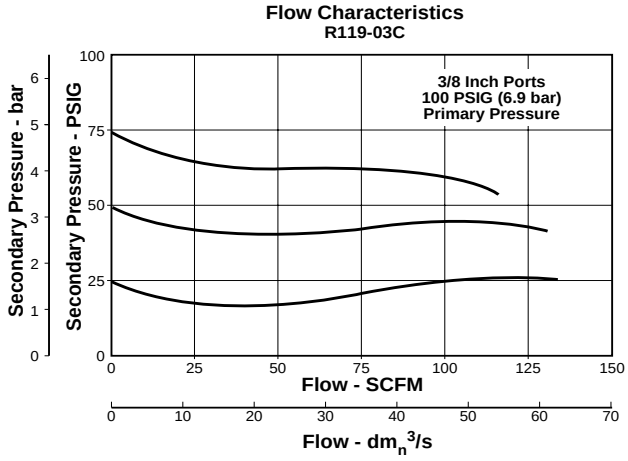
REGULATOR PRESSURE ADJUSTMENT – The working range of knob adjustment is designed to permit outlet pressures within their full range. Pressure adjustment beyond this range is also possible because the knob is not a limiting device. This is a common characteristic of most industrial regulators, and limiting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

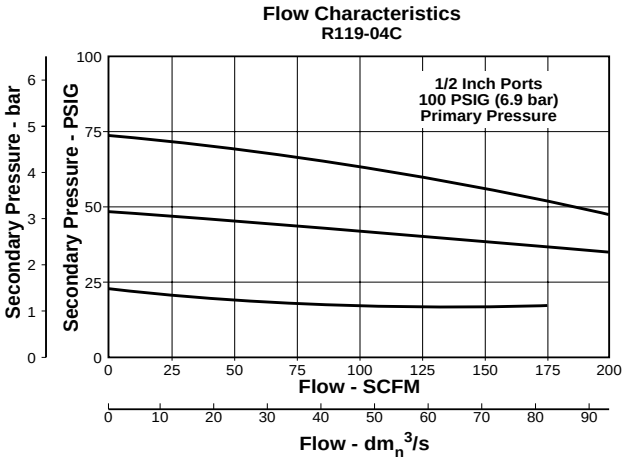
NOTE: BOLD OPTIONS ARE STANDARD.

Watts FluidAir
Pneumatic Division
Richland, Michigan
www.wattsfluidair.com

Technical Information







R119 Regulator Kits & Accessories

Gauges –

2" Dial Size, 1/4" Back Connection
0 to 60 PSIG (0 to 400 kPa) 275Y60S

2" Dial Size, 1/4" Back Connection
0 to 160 PSIG (0 to 1100 kPa) 275Y160S

2" Dial Size, 1/4" Back Connection
0 to 300 PSIG (0 to 2068 kPa) 275Y300S

Mounting Bracket Kit –

1/4", 3/8" SA15Y57
1/2" 18A57

Panel Mount Conversion Kit –

1/4", 3/8" 4202
1/2" 4204

Repair Kits –

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

Non-Relieving Diaphragm,
Valve Assembly (1/2"; 250 PSIG) RK118A250

Relieving Diaphragm,
Valve Assembly (1/2"; 25, 60, 125 PSIG) RK119A

Relieving Diaphragm,
Valve Assembly (1/2"; 250 PSIG) RK119A250

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

Specifications

Gauge Ports (2) ..... 1/4 Inch

Port Threads ..... 1/4, 3/8, 1/2 Inch

Reduced Pressure Range ..... 2 to 125 PSIG (0.15 to 8.5 bar)

Supply Pressure ..... 300 PSIG Maximum (20.4 bar)

Temperature Rating ..... 40°F to 125°F (4.4°C to 52°C)

Weight –

R119-02, R119-03 ..... 1.8 lb. (0.82 kg) / Unit
26 lb. (11.79 kg) / 12-Unit Master Pack

R119-04 ..... 3.2 lb. (1.45 kg) / Unit
27 lb. (12.25 kg) / 8-Unit Master Pack

Materials of Construction

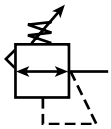
Adjusting Screw, Springs ..... Steel

Body, Spring Cage ..... Zinc

Bottom Plug, Innervalve ..... Brass

Seals ..... Buna N

R119 Standard Regulators



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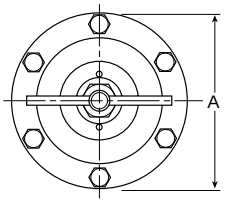
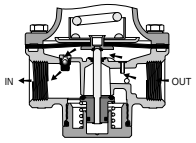
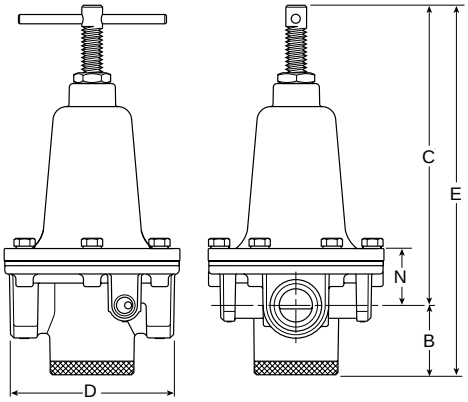
- Diaphragm Operated Design with Balanced Poppet Design for Quick and Accurate Regulation
- Secondary Aspiration Plus Balanced Poppet Provides Quick Response and Accurate Pressure Regulation
- Heavy Duty Tee Handle Adjustment
- Reverse Flow Version Available
- High Flow: 3/4" - 300 SCFM
  1" - 400 SCFM
  1-1/4" & 1-1/2" - 500 SCFM§

§ SCFM = Standard cubic feet per minute at 100 PSIG inlet, 75 PSIG no flow secondary setting, and 20 PSIG pressure drop.





X80 Reverse Flow Option



Port Size	NPT	BSPP
	Relieving	Relieving
Without Gauge 0-125 PSIG Reduced Pressure		
3/4"	**R119-06C**	R119G06C
1"	**R119-08C**	R119G08C
1-1/4"	**R119-10C**	R119G10C
1-1/2"	**R119-12C**	R119G12C
With Gauge 0-125 PSIG Reduced Pressure		
3/4"	**R119-06CG**	—
1"	**R119-08CG**	—
1-1/4"	**R119-10CG**	—
1-1/2"	**R119-12CG**	—

Standard part numbers shown bold.
For other models refer to ordering information below.

R119 Regulator Dimensions					
A	**B**	**C**	**D**	**E**	**N**
R119-06C, R119-08C					
4.69 (119)	1.87 (47)	8.15 (207)	4.38 (111)	10.02 (255)	1.61 (41)
R119-10C, R119-12C					
4.94 (125)	1.81 (46)	8.53 (217)	4.94 (125)	10.34 (263)	1.99 (50.6)

inches
(mm)

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

Ordering Information

R	119	—	06	C		/**

Port Threads
- **— NPT**
- G BSPP

Port Size
- **06 3/4 Inch**
- **08 1 Inch**
- **10 1-1/4 Inch**
- **12 1-1/2 Inch**

Reduced Pressure Range
- **C 0-125 PSIG**
- D 0-250 PSIG

Options
- G Gauge
- K Non-Relieving
- X64 Fluorocarbon O-Rings and Diaphragm
- X80 Reverse Flow*

* Reverse flow for use downstream of control valves.

Engineering Change Designator

Will be entered at factory.

CAUTION

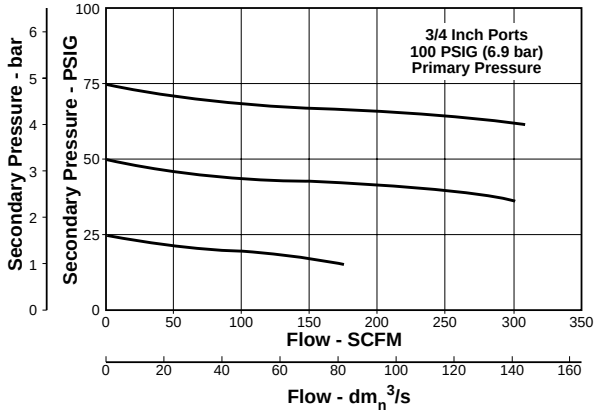
REGULATOR PRESSURE ADJUSTMENT – The working range of knob adjustment is designed to permit outlet pressures within their full range. Pressure adjustment beyond this range is also possible because the knob is not a limiting device. This is a common characteristic of most industrial regulators, and limiting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

NOTE: BOLD OPTIONS ARE STANDARD.

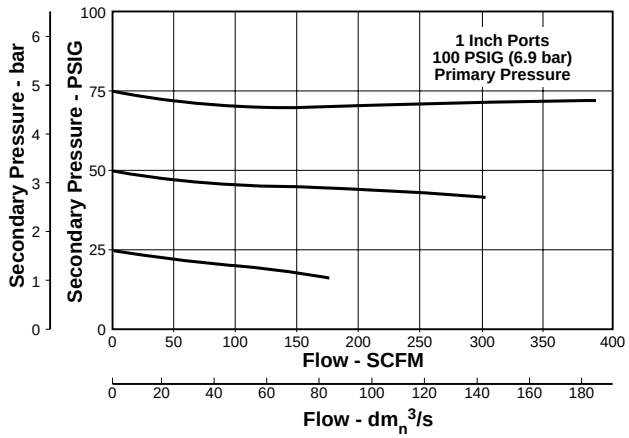
Watts FluidAir
Pneumatic Division
Richland, Michigan
www.wattsfluidair.com

Technical Information

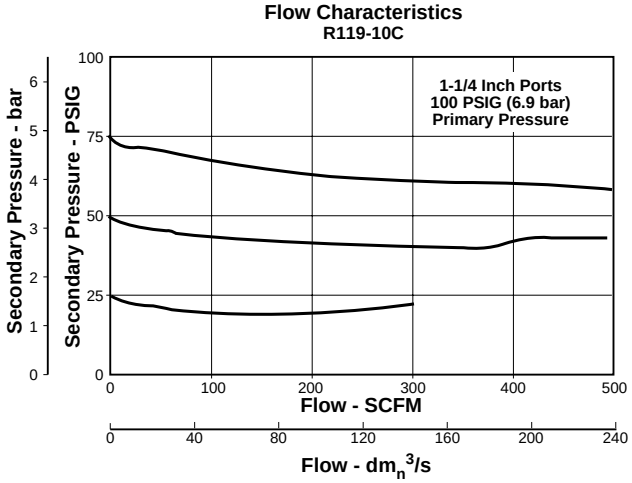
Flow Characteristics
R119-06C



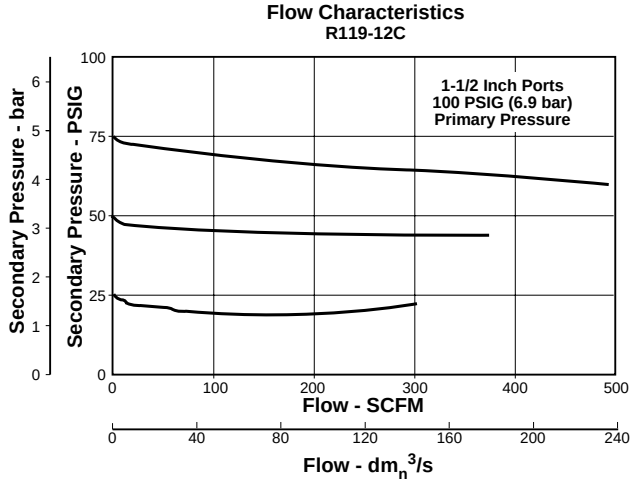
Flow Characteristics
R119-08C



Flow Characteristics
R119-10C



Flow Characteristics
R119-12C



R119 Regulator Kits & Accessories

Gauges –

2" Dial Size, 1/4" Back Connection
0 to 60 PSIG (0 to 400 kPa) 275Y60S

2" Dial Size, 1/4" Back Connection
0 to 160 PSIG (0 to 1100 kPa) 275Y160S

2" Dial Size, 1/4" Back Connection
0 to 300 PSIG (0 to 2068 kPa) 275Y300S

Mounting Bracket Kit 18B57

Repair Kits –

Non-Relieving Diaphragm,
Valve Assembly (3/4", 1") RK118B

Non-Relieving Diaphragm,
Valve Assembly (1-1/4", 1-1/2") RK118D

Relieving Diaphragm,
Valve Assembly (3/4", 1") RK119B

Relieving Diaphragm,
Valve Assembly (1-1/4", 1-1/2") RK119D

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

Specifications

Gauge Ports (2) ..... 1/4 Inch

Port Threads ..... 3/4, 1, 1-1/4, 1-1/2 Inch

Reduced Pressure Range ..... 2 to 125 PSIG (0.15 to 8.5 bar)

Supply Pressure ..... 300 PSIG Maximum (20.4 bar)

Temperature Rating ..... 40°F to 125°F (4.4°C to 52°C)

Weight –

R119-06, R119-08 ..... 6.2 lb. (2.81 kg) / Unit
25 lb. (11.34 kg) / 4-Unit Master Pack

R119-10, R119-12 ..... 7.2 lb. (3.27 kg) / Unit
29 lb. (13.15 kg) / 4-Unit Master Pack

Materials of Construction

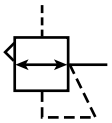
Adjusting Screw, Springs ..... Steel

Body, Spring Cage ..... Zinc

Bottom Plug, Innervalve ..... Brass

Seals ..... Buna N

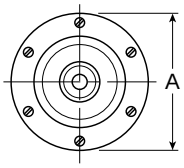
R119 Pilot Operated Regulators

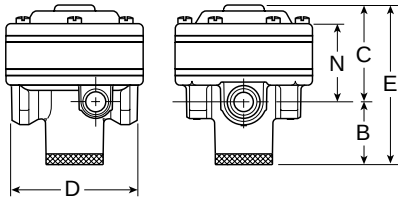


Features

- 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
- High Flow: 1/4" - 100 SCFM
  3/8" - 110 SCFM
  1/2" - 150 SCFM§

§ SCFM = Standard cubic feet per minute at 100 PSIG inlet, 75 PSIG no flow secondary setting, and 20 PSIG pressure drop.





Port Size	NPT	BSPP
	Relieving	Relieving
Without Gauge 0-125 PSIG Reduced Pressure		
1/4"	**R119-02J**	R119G02J
3/8"	**R119-03J**	R119G03J
1/2"	**R119-04J**	R119G04J

Standard part numbers shown bold.
For other models refer to ordering information below.

R119 Regulator Dimensions					
A	B	C	D	E	N
R119-02J, R119-03J					
3.00 (76)	1.38 (35)	2.10 (53)	2.74 (70)	3.48 (88)	1.69 (43)
R119-04J					
3.56 (90)	1.56 (40)	2.31 (59)	3.34 (85)	3.87 (98)	1.93 (49)

inches
(mm)

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

Ordering Information

R	119	—	02	J		/**

Port Threads
- **— NPT**
- G BSPP

Port Size
- **02 1/4 Inch**
- **03 3/8 Inch**
- **04 1/2 Inch**

Reduced Pressure Range
- **J Air Pilot Operated**

Options
- K Non-Relieving
- X64 Fluorocarbon O-Rings and Diaphragm
- X71 Non-Bleed Pilot (For use with Electronic Controllers)

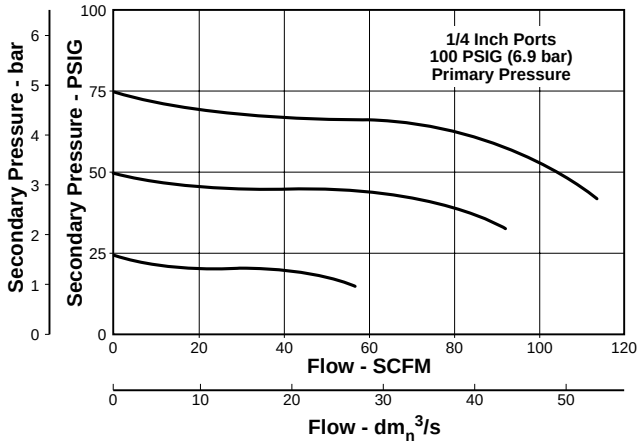
Engineering Change Designator
- Will be entered at factory.

NOTE: BOLD OPTIONS ARE STANDARD.

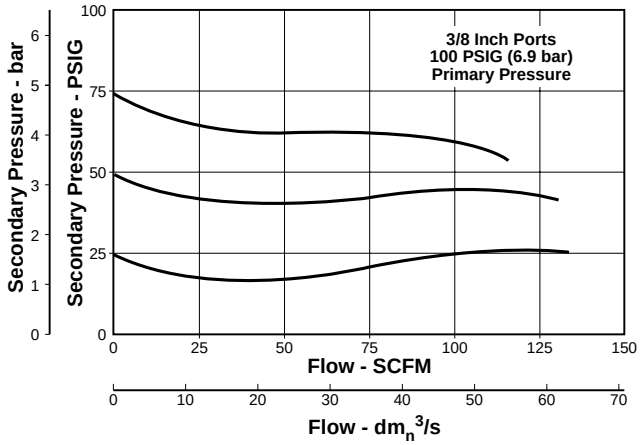
Pneumatic Division
Richland, Michigan
www.wattsfluidair.com

Technical Information

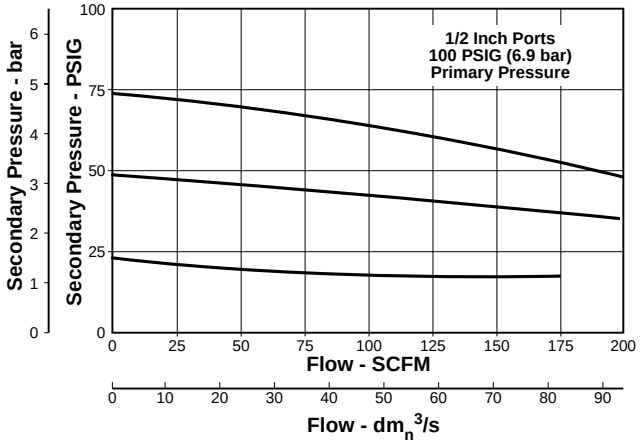
Flow Characteristics
R119-02J



Flow Characteristics
R119-03J



Flow Characteristics
R119-04J



R119 Regulator Kits & Accessories

Gauges –

2" Dial Size, 1/4" Back Connection
0 to 60 PSIG (0 to 400 kPa) 275Y60S

2" Dial Size, 1/4" Back Connection
0 to 160 PSIG (0 to 1100 kPa) 275Y160S

2" Dial Size, 1/4" Back Connection
0 to 300 PSIG (0 to 2068 kPa) 275Y300S

Repair Kits –

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.

Specifications

Gauge Ports (2) ..... 1/4 Inch

Port Threads ..... 1/4, 3/8, 1/2 Inch

Reduced Pressure Range –
Adjustable to within 5 to 7 PSIG of Supply Pressure

Supply Pressure ..... 300 PSIG Maximum (20.4 bar)

Air Consumption –
Constant bleed from air pilot chamber: approx. 0.17 SCFM (10 SCFH)

Temperature Rating ..... 40°F to 125°F (4.4°C to 52°C)

Weight –

R119-02J, R119-03J ..... 1.6 lb. (0.73 kg) / Unit
19 lb. (8.62 kg) / 12-Unit Master Pack

R119-04J ..... 2.6 lb. (1.18 kg) / Unit
21 lb. (9.53 kg) / 8-Unit Master Pack

Materials of Construction

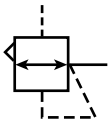
Body, Ring, Top Plate ..... Zinc

Bottom Plug, Innervalve ..... Brass

Seals ..... Buna N

Pneumatic Division
Richland, Michigan
www.wattsfluidair.com

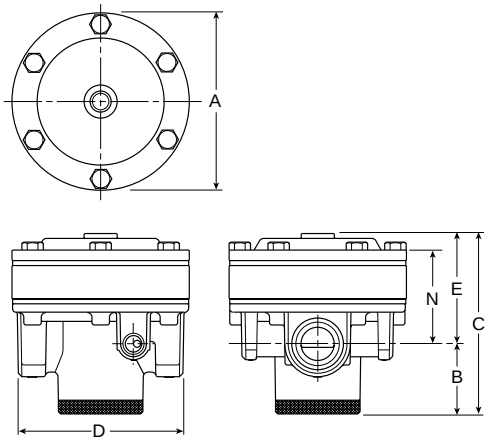
R119 Pilot Operated Regulators



Features

- 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
- High Flow: 3/4", 1" - 300 SCFM, 1-1/4" & 1-1/2" - 380+ SCFM§

§ SCFM = Standard cubic feet per minute at 100 PSIG inlet, 75 PSIG no flow secondary setting, and 20 PSIG pressure drop.



Port Size	NPT	BSPP
	Relieving	Relieving
Without Gauge 0-125 PSIG Reduced Pressure		
3/4"	**R119-06J**	R119G06J
1"	**R119-08J**	R119G08J
1-1/4"	**R119-10J**	R119G10J
1-1/2"	**R119-12J**	R119G12J

Standard part numbers shown bold.
For other models refer to ordering information below.

R119 Regulator Dimensions					
A	**B**	**C**	**D**	**E**	**N**
R119-06J, R119-08J					
4.72 (120)	1.87 (47)	2.94 (75)	4.38 (111)	4.81 (122)	2.47 (63)
R119-10J, R119-12J					
4.94 (125)	1.81 (46)	3.32 (84)	4.94 (125)	5.13 (130)	2.88 (73)

inches
(mm)

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

Ordering Information

R	119	—	06	J		/**

Port Threads
- **— NPT**
- G BSPP

Port Size
- **06 3/4 Inch**
- **08 1 Inch**
- **10 1-1/4 Inch**
- **12 1-1/2 Inch**

Reduced Pressure Range
- **J Air Pilot Operated**

Options
- K Non-Relieving
- X64 Fluorocarbon O-Rings and Diaphragm
- X71 Non-Bleed Pilot (For use with Electronic Controllers)

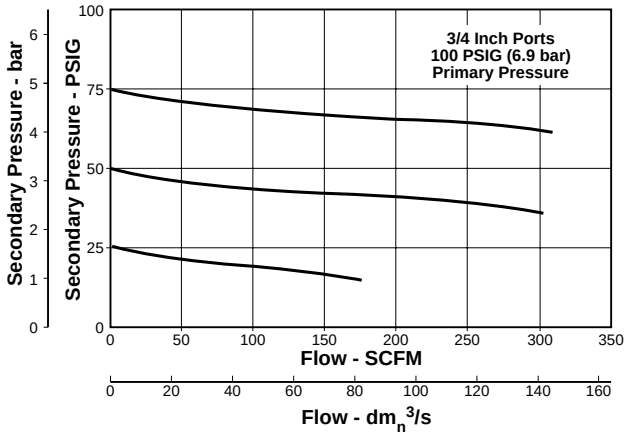
Engineering Change Designator
- Will be entered at factory.

NOTE: BOLD OPTIONS ARE STANDARD.

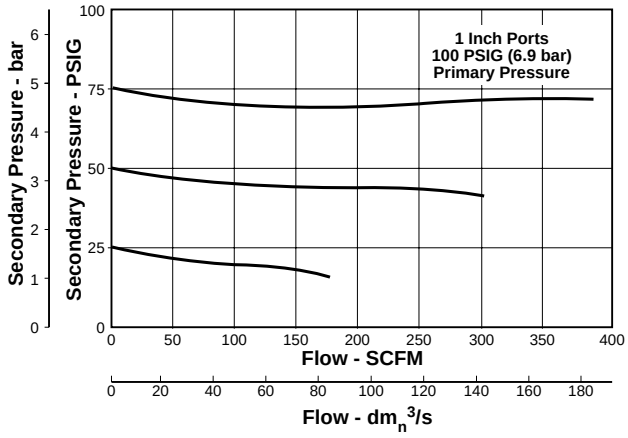
Pneumatic Division
Richland, Michigan
www.wattsfluidair.com

Technical Information

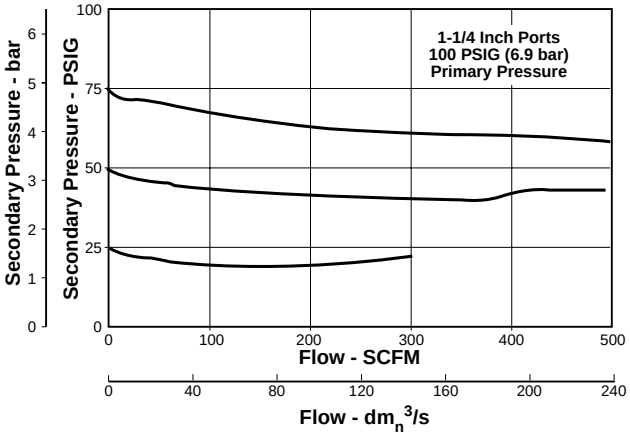
Flow Characteristics
R119-06J



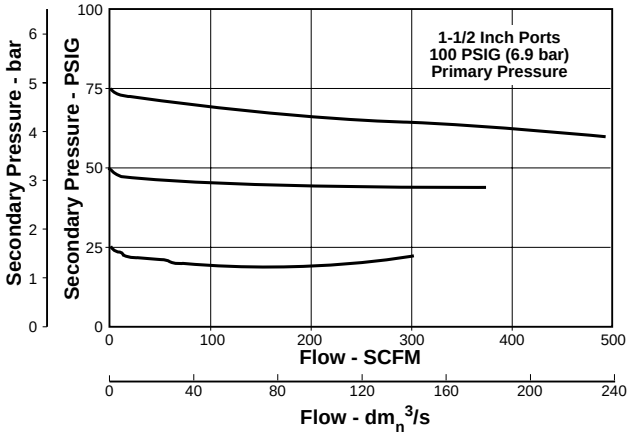
Flow Characteristics
R119-08J



Flow Characteristics
R119-10C



Flow Characteristics
R119-12C



R119 Regulator Kits & Accessories

Gauges –

2" Dial Size, 1/4" Back Connection
0 to 60 PSIG (0 to 400 kPa) 275Y60S

2" Dial Size, 1/4" Back Connection
0 to 160 PSIG (0 to 1100 kPa) 275Y160S

2" Dial Size, 1/4" Back Connection
0 to 300 PSIG (0 to 2068 kPa) 275Y300S

Repair Kits –

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.

Specifications

Gauge Ports (2) ..... 1/4 Inch

Port Threads ..... 3/4, 1, 1-1/4, 1-1/2 Inch

Reduced Pressure Range –
Adjustable to Within 5 to 7 PSIG of Supply Pressure

Supply Pressure ..... 300 PSIG Maximum (20.4 bar)

Air Consumption –
Constant bleed from air pilot chamber: approx 0.17 SCFM (10 SCFH)

Temperature Rating ..... 40°F to 125°F (4.4°C to 52°C)

Weight –

R119-06J, R119-08J ..... 5.2 lb. (2.36 kg) / Unit
42 lb. (19.05 kg) / 8-Unit Master Pack

R119-10J, R119-12J ..... 5.6 lb. (2.54 kg) / Unit
46 lb. (20.87 kg) / 8-Unit Master Pack

Materials of Construction

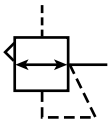
Body, Ring, Top Plate ..... Zinc

Bottom Plug, Innervalve ..... Brass

Seals ..... Buna N

Pneumatic Division
Richland, Michigan
www.wattsfluidair.com

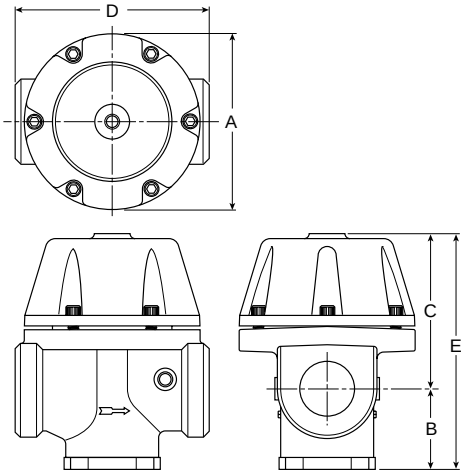
R119 Pilot Operated Regulators



Features

- 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
- High Flow: 2" & 2-1/2" - 1500+ SCFM§

§ SCFM = Standard cubic feet per minute at 100 PSIG inlet, 75 PSIG no flow secondary setting, and 20 PSIG pressure drop.



Port Size	NPT	BSPP
	Relieving	Relieving
Without Gauge 0-125 PSIG Reduced Pressure		
2"	**R119-16J**	R119G16J
2-1/2"	**R119-20J**	R119G20J

Standard part numbers shown bold.
For other models refer to ordering information below.

R119 Regulator Dimensions				
A	B	C	D	E
R119-16J, R119-20J				
6.63 (168)	3.09 (79)	7.78 (147)	7.31 (185)	1.087 (276)

inches
(mm)

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

Ordering Information

R	119	—	16	J

Port Threads
— NPT
G BSPP

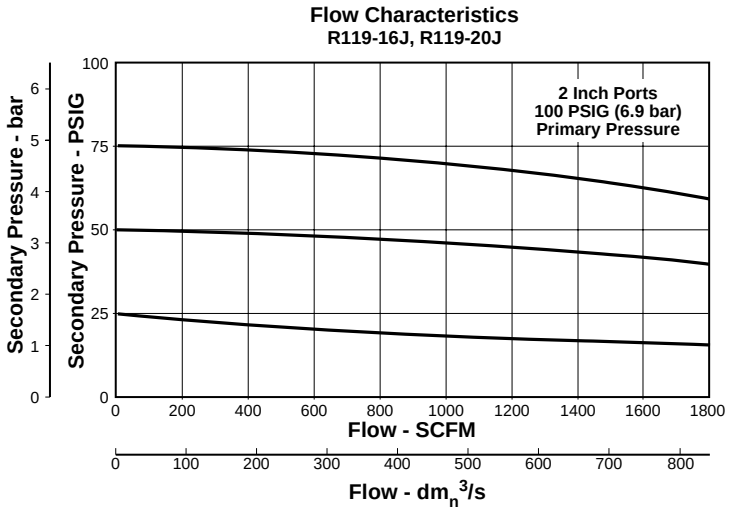
Port Size
16 2 Inch
20 2-1/2 Inch

Reduced Pressure Range
J Air Pilot Operated

NOTE: Non-Relieving Not Available.

NOTE: BOLD OPTIONS ARE STANDARD.

Technical Information



R119 Regulator Kits & Accessories

Gauges –

2" Dial Size, 1/4" Back Connection
0 to 60 PSIG (0 to 400 kPa) 275Y60S

2" Dial Size, 1/4" Back Connection
0 to 160 PSIG (0 to 1100 kPa) 275Y160S

2" Dial Size, 1/4" Back Connection
0 to 300 PSIG (0 to 2068 kPa) 275Y300S

Repair Kits –

Piston Type Regulation (2", 2-1/2") RK119G

Specifications

Gauge Ports (2) ..... 1/4 Inch
(Can be used for Full Flow)
High Pressure Outlet for Pilot (Not seen in photo) ..... 1/4 Inch

Port Threads ..... 2, 2-1/2 Inch

Reduced Pressure Range –
Adjustable to Within 5 to 7 PSIG of Supply Pressure

Supply Pressure ..... 300 PSIG Maximum (20.4 bar)

Air Consumption –
Constant Bleed from Air Pilot Chamber:
Approx.0.17SCFM (10SCFM)

Constant Bleed from Reduced Pressure:
Approx.0.17SCFM (10SCFM)

Temperature Rating ..... 40°F to 125°F (4.4°C to 52°C)

Weight –
R119-16J, R119-20J ..... 15 lb. (6.80 kg) / Unit
15 lb. (6.80 kg) / 1-Unit Master Pack

Materials of Construction

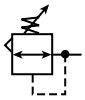
Body, Piston ..... Aluminum

Seals ..... Buna N

Innervalve ..... Brass & Stainless

Pneumatic Division
Richland, Michigan
www.wattsfluidair.com

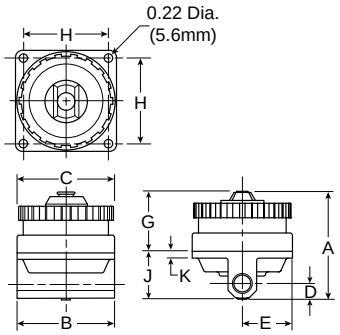
W51R Dial Regulator – Relieving



Features

- Pressure Reference Indicating Dial Face
- Non-rising, Pressure-adjustment Knob
- Self-relieving
- Full Pressure Adjustment in Less than One Full Turn
- Recommended for Pilot-air Applications
- Flow Capacity: 1/4" – 0.7 SCFM§

§ SCFM = Standard cubic feet per minute at 100 PSIG inlet, 90 PSIG no flow secondary setting, and 25 PSIG pressure drop.



Port Size	Standard Pressure 5 to 160 PSIG (0,34 to 11 bar)	Low Pressure 2 to 40 PSIG (0,14 to 3 bar)
1/4"	**W51R126RA**	**W51R125RA**

Standard part numbers shown; for other models refer to ordering information below.

W51R Regulator Dimensions		
A 2.80 (71)	**B** 2.60 (66)	**C** 2.60 (66)
D 0.40 (10)	**E** 1.30 (33)	**G** 1.56 (39.6)
H 2.20 (56)	**J** 1.25 (31.8)	**K** .18 (4.6)

inches
(mm)

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

Ordering Information

W51R	1	26	R	A	—

Port Size
1 1/4 Inch

Springs
25 2 to 40 PSIG
26 5 to 160 PSIG

Adjustment
R Relieving

Engineering Level
A Current

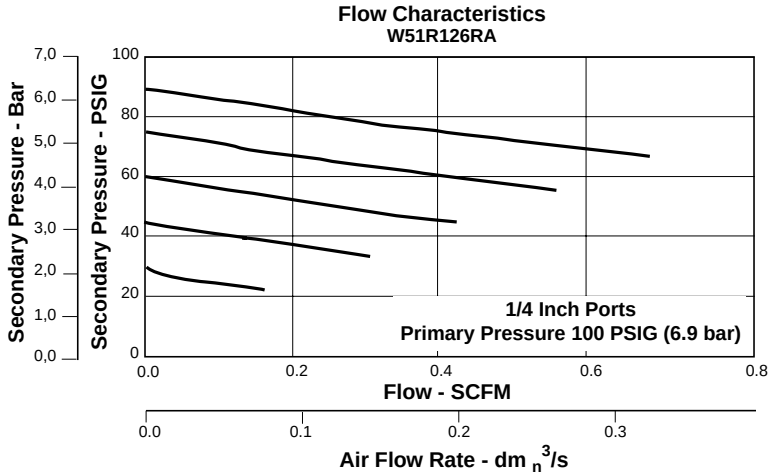
Thread Type
— NPT
1 BSPP

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.

NOTE: BOLD OPTIONS ARE STANDARD.

Technical Information



W51R Regulator Kits & Accessories

Adjustment Dial Knob RRP-16-024-80

O-ring, Repair Kit GRP-95-260-80

Piston and Bonnet Repair Kit RRP-95-765-80

Spring, Regulation, Belleville Washer
2 to 40 PSIG (276 kPa) RRP-95-906-80
5 to 160 PSIG (1103 kPa) RRP-95-905-80

Tamper Resistant Kit RRP-95-585-80

Valve, Pilot with O-ring and Valve Spring RRP-96-934-80

Specifications

Adjusting Range Pressure ..... 2 to 40 PSIG (14 to 276 kPa)
5 to 160 PSIG (34 to 1103 kPa)

Bleed Rate ..... 0.05 SCFM

Maximum Operating Temperature ..... 150°F (65.5°C)

Maximum Supply Pressure ..... 300 PSIG (2068 kPa)

Port Threads ..... 1/4"

Weight ..... 1.3 lb. (0.5 kg)

Materials of Construction

Body ..... Zinc

Bonnet ..... Zinc / Brass

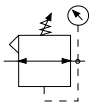
Piston ..... Acetal

Seals ..... Nitrile

Springs ..... Steel

Valve Assembly ..... Brass / Nitrile / Acetal

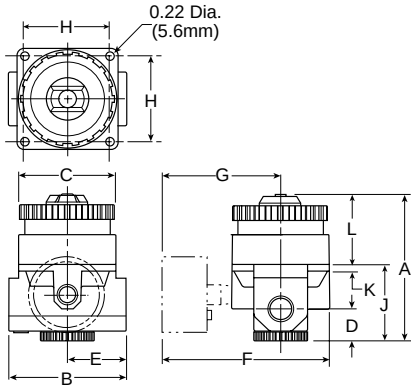
W52R Dial Regulator – Relieving



Features

- Balanced Poppet Design
- Non-rising, Pressure-adjusting Dial
- High-relief Flow (3/16" Relief Orifice)
- Two 1/4" Gauge Ports
- Piston Operated
- Flow Capacity: 1/4" – 117 SCFM§
  3/8" – 180 SCFM§
  1/2" – 195 SCFM§
  3/4" – 220 SCFM§

§ SCFM = Standard cubic feet per minute at 100 PSIG inlet, (1/4, 1/2 & 3/4) 90 PSIG, (3/8) 80 PSIG no flow secondary setting, and 25 PSIG pressure drop.



Port Size	High Flow 5 to 160 PSIG (0,34 to 11 bar)	Low Pressure 2 to 40 PSIG (0,14 to 3 bar)
1/4"	**W52R126RA**	**W52R125RA**
3/8"	**W52R226RA**	**W52R225RA**
1/2"	**W52R326RA**	**W52R325RA**
3/4"	**W52R426RA**	**W52R425RA**

Standard part numbers shown; for other models refer to ordering information below.

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

W52R Regulator Dimensions		
A 4.10 (104)	**B** 3.20 (81)	**C** 2.60 (66)
D 0.95 (24)	**E** 1.60 (71)	**F** 4.30 (109)
G 2.70 (69)	**H** 2.20 (56)	**J** 2.08 (52.8)
K .18 (4.6)	**L** 2.07 (52.6)	

inches
(mm)

Ordering Information

W52R	1	26	R	A	—

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

Springs
25 2 to 40 PSIG
26 5 to 160 PSIG

Adjustment
R Relieving

Engineering Level
A Current

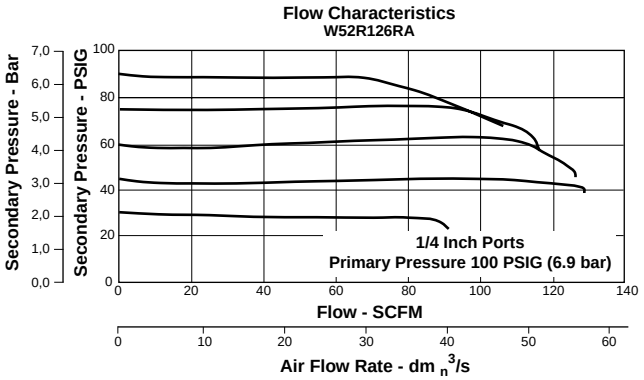
Thread Type
— NPT
1 BSPP

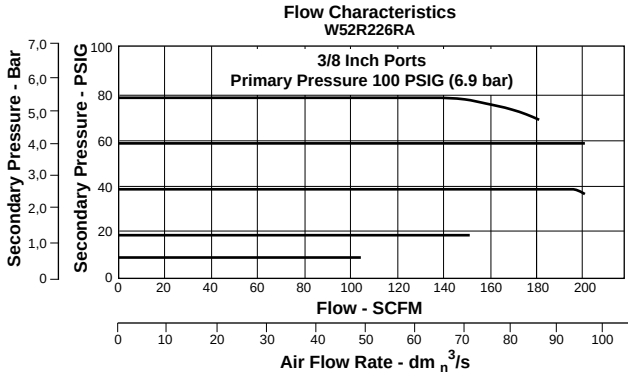
CAUTION:

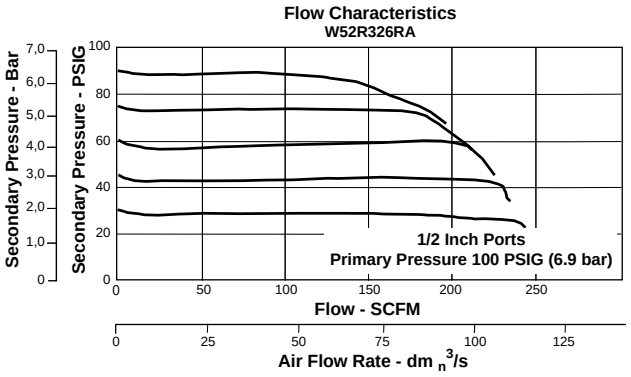
REGULATOR PRESSURE ADJUSTMENT – The working range of knob adjustment is designed to permit outlet pressures within their full range. Pressure adjustment beyond this range is also possible because the knob is not a limiting device. This is a common characteristic of most industrial regulators, and limiting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

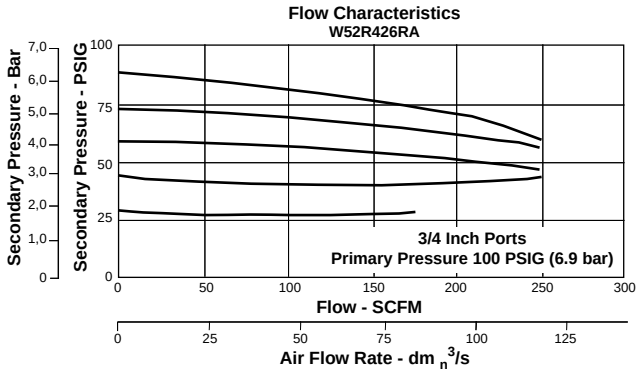
NOTE: BOLD OPTIONS ARE STANDARD.

Technical Information









W52R Regulator Kits & Accessories

Adjustment Dial Knob RRP-16-024-80

O-ring, Repair Kit GRP-95-260-80

Piston Bottom and O-ring Seal RRP-95-192-80

Pistons and Bonnet Repair Kit RRP-95-766-80

Spring, Regulation, Belleville Washer
2 to 40 PSIG Range RRP-95-906-80
5 to 160 PSIG Range RRP-95-905-80

Tamper Resistant Kit RRP-95-585-80

Valve, Main with U-Cup Seal & Bottom Plug RRP-95-914-80

Valve, Main with U-Cup Seal RRP-95-151-80

Valve, Pilot with O-ring and Valve Spring RRP-96-934-80

Specifications

Adjusting Range Pressure ..... 2 to 40 PSIG (14 to 276 kPa)
5 to 160 PSIG (34 to 1103 kPa)

Bleed Rate ..... 0.05 SCFM

Gauge Ports ..... Two Ports 1/4"
(Can be used as additional High Flow 1/4 Inch Outlet Ports)

Maximum Operating Temperature ..... 150°F (65.5°C)

Maximum Supply Pressure ..... 300 PSIG (2068 kPa)

Port Threads ..... 1/4", 3/8", 1/2", 3/4"

Weight ..... 2.3 lb. (1.04 kg)

Materials of Construction

Body ..... Zinc

Bonnet ..... Zinc / Brass

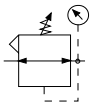
Piston ..... Acetal

Seals ..... Nitrile

Springs ..... Steel

Valve Assembly ..... Brass / Nitrile / Acetal

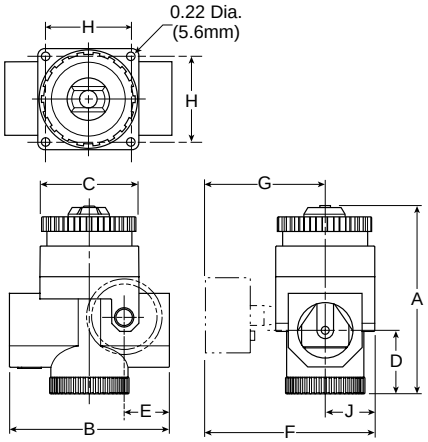
W53R Dial Regulator – Relieving



Features

- Balanced Poppet Design
- Non-rising, Pressure-adjusting Dial.
- High-relief Flow (3/16" Relief Orifice)
- Two 1/4" Gauge Ports
- Piston Operated.
- Flow Capacity: 3/4" – 400 SCFM§
  1" – 650 SCFM§
  1-1/4" – 700 SCFM§

§ SCFM = Standard cubic feet per minute at 100 PSIG inlet, 90 PSIG no flow secondary setting, and 10 PSIG pressure drop.



Port Size	High Flow 5 to 160 PSIG (0.34 to 11 bar)	Low Pressure 2 to 40 PSIG (0.14 to 3 bar)
3/4"	**W53R426RA**	**W53R425RA**
1"	**W53R526RA**	**W53R525RA**
1-1/4"	**W53R626RA**	**W53R625RA**

Standard part numbers shown; for other models refer to ordering information below.

W53R Regulator Dimensions		
A	**B**	**C**
5.20 (132)	4.30 (109)	2.60 (66)
D	**E**	**F**
1.70 (43)	1.23 (31)	4.30 (109)
G	**H**	**J**
3.00 (76)	2.20 (56)	1.21 (33)

inches
(mm)

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

Ordering Information

W53R	4	26	R	A	—

Port Size
4 3/4 Inch
5 1 Inch
6 1-1/4 Inch

Springs
25 2 to 40 PSIG
26 5 to 160 PSIG

Adjustment
R Relieving

Engineering Level
A Current

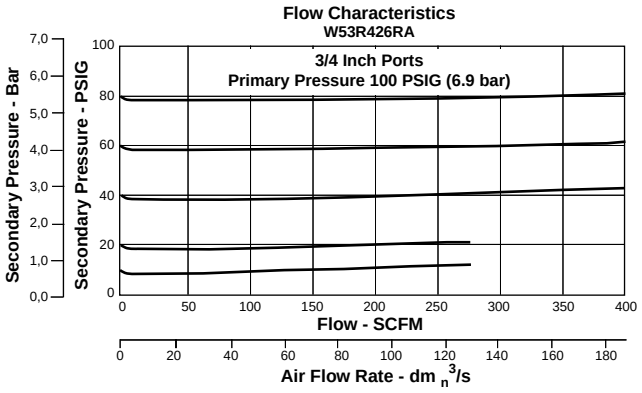
Thread Type
— NPT
1 BSPP

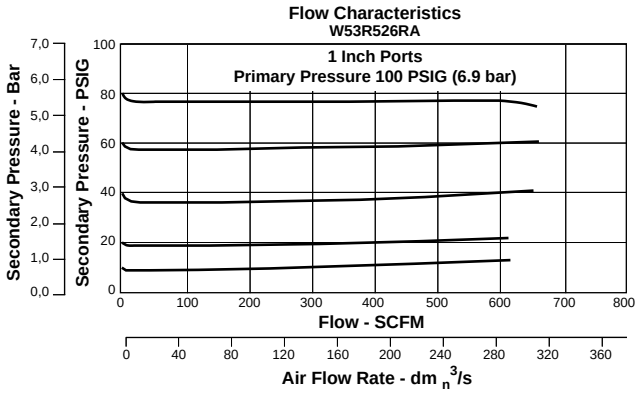
CAUTION:

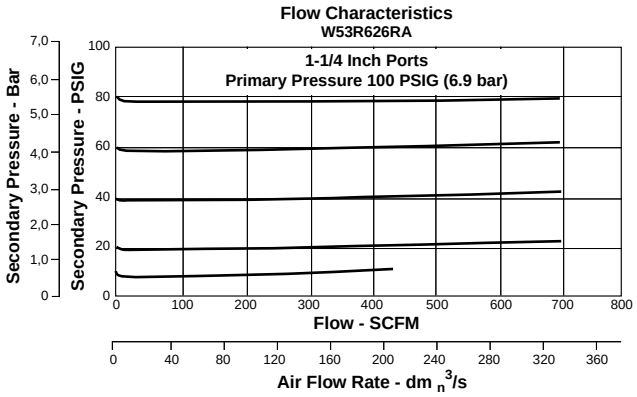
REGULATOR PRESSURE ADJUSTMENT – The working range of knob adjustment is designed to permit outlet pressures within their full range. Pressure adjustment beyond this range is also possible because the knob is not a limiting device. This is a common characteristic of most industrial regulators, and limiting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

NOTE: BOLD OPTIONS ARE STANDARD.

Technical Information







W53R Regulator Kits & Accessories

Adjustment Dial Knob RRP-16-024-80

O-ring, Repair Kit GRP-95-261-80

Piston, Bottom and O-ring Seal RRP-95-192-80

Pistons and Bonnet Repair Kit RRP-95-766-80

Spring, Regulation, Belleville Washer
2 to 40 PSIG Range RRP-95-906-80
5 to 160 PSIG Range RRP-95-905-80

Tamper Resistant Kit RRP-95-585-80

Valve, Main with O-ring Seal RRP-95-152-80

Valve, Pilot with O-ring and Valve Spring RRP-96-935-80

Specifications

Adjusting Range Pressure ..... 2 to 40 PSIG (14 to 276 kPa)
5 to 160 PSIG (34 to 1103 kPa)

Bleed Rate ..... 0.05 SCFM

Gauge Ports ..... Two Ports 1/4"
(Can be used as additional High Flow 1/4 Inch Outlet Ports)

Maximum Operating Temperature ..... 150°F (65.5°C)

Maximum Supply Pressure ..... 300 PSIG (2068 kPa)

Port Threads ..... 3/4", 1", 1-1/4"

Weight ..... 4.0 lb. (1.8 kg)

Materials of Construction

Body ..... Zinc

Bonnet ..... Zinc / Brass

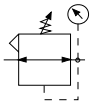
Piston ..... Acetal

Seals ..... Nitrile

Springs ..... Steel

Valve Assembly ..... Brass / Nitrile / Acetal

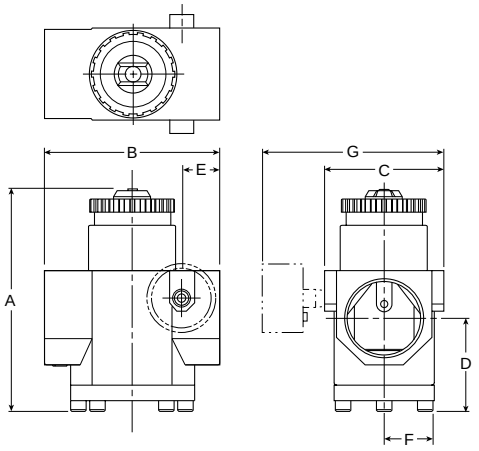
W54R Dial Regulator – Relieving



Features

- Balanced Poppet Design
- Non-rising, Pressure-adjusting Dial
- High-relief Flow (3/16" Relief Orifice)
- Two 1/4" Gauge Ports
- Piston Operated
- Flow Capacity: 1-1/2" – 1,600 SCFM§
  2" – 1,600 SCFM§

§ SCFM = Standard cubic feet per minute at 100 PSIG inlet, 90 PSIG no flow secondary setting, and 10 PSIG pressure drop.



Port Size	High Flow 5 to 160 PSIG (0.34 to 11 bar)	Low Pressure 2 to 40 PSIG (0.14 to 2.8 bar)
1-1/2"	**W54R726RA**	**W54R725RA**
2"	**W54R826RA**	**W54R825RA**

Standard part numbers shown; for other models refer to ordering information below.

W54R Regulator Dimensions		
A 6.80 (173)	**B** 5.30 (135)	**C** 32.60 (90)
D 2.80 (71)	**E** 1.15 (29)	**F** 1.80 (489)
G 5.30 (135)		

inches
(mm)

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

Ordering Information

W54R	7	26	R	A	—

Port Size
7 1-1/2 Inch
8 2 Inch

Springs
25 2 to 40 PSIG
26 5 to 160 PSIG

Adjustment
R Relieving

Engineering Level
A Current

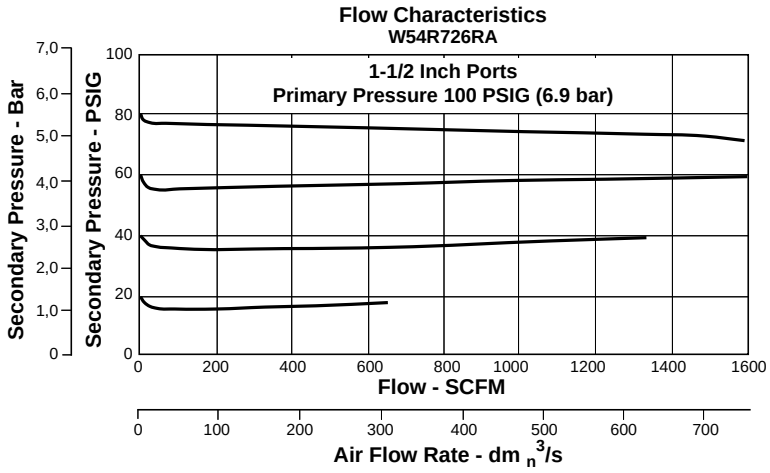
Thread Type
— NPT
1 BSPP

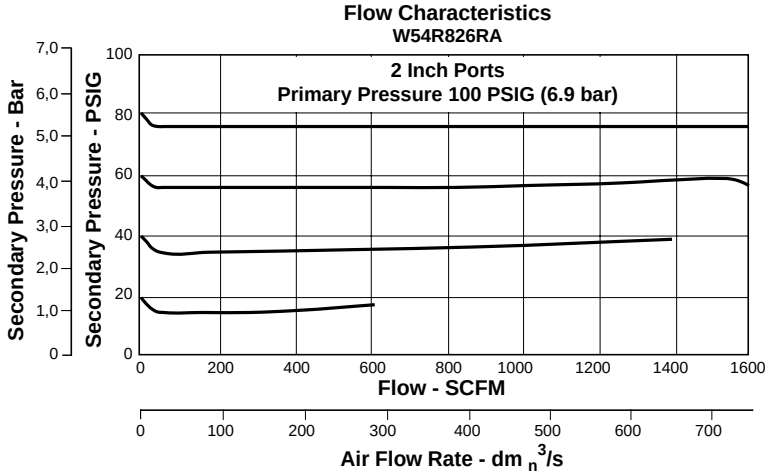
CAUTION:

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.

NOTE: BOLD OPTIONS ARE STANDARD.

Technical Information





W54R Regulator Kits & Accessories

Adjustment Dial Knob RRP-16-024-80

O-ring, Repair Kit GRP-95-262-80

Piston, Bottom and O-ring Seal RRP-95-192-80

Pistons and Bonnet Repair Kit RRP-95-766-80

Spring, Regulation, Belleville Washer
2 to 40 PSIG Range RRP-95-906-80
5 to 160 PSIG Range RRP-95-905-80

Spring, Main Valve RRP-95-024-80

Tamper Resistant Kit RRP-95-585-80

Valve, Main with O-ring Seal RRP-95-153-80

Valve, Pilot with O-ring and Valve Spring RRP-96-935-80

Specifications

Adjusting Range Pressure ..... 2 to 40 PSIG (14 to 276 kPa)
5 to 160 PSIG (34 to 1103 kPa)

Bleed Rate ..... 0.05 SCFM

Gauge Ports ..... Two Ports 1/4"
(Can be used as additional High Flow 1/4 Inch Outlet Ports)

Maximum Operating Temperature ..... 150°F (65.5°C)

Maximum Supply Pressure ..... 300 PSIG (2068 kPa)

Port Threads ..... 1-1/2", 2"

Weight ..... 9 lb. (4.1 kg)

Materials of Construction

Body ..... Zinc

Bonnet ..... Zinc / Brass

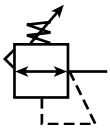
Piston ..... Zinc

Seals ..... Nitrile

Springs ..... Steel

Valve Assembly ..... Brass / Nitrile / Acetal

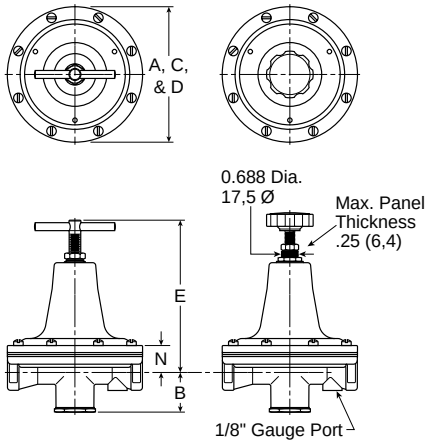
R216 Precision Regulators



Features

- 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
- High Flow: 1/4" & 3/8" - 40 SCFM§

§ SCFM = Standard cubic feet per minute at 100 PSIG inlet, 75 PSIG no flow secondary setting, and 20 PSIG pressure drop.



Port Size	NPT	BSPP
	Relieving	Relieving
T-Handle, Without Gauge 0-20 PSIG Reduced Pressure		
1/4"	**R216-02F**	R216G02F
3/8"	**R216-03F**	R216G03F
Hand Wheel Knob, Without Gauge 0-20 PSIG Reduced Pressure		
1/4"	**R216-02FP**	R216G02FP
3/8"	**R216-03FP**	R216G03FP

Standard part numbers shown bold.
For other models refer to ordering information below.

R216 Regulator Dimensions					
A	**B**	**C**	**D**	**E**	**N**
R216-02F, R216-03F					
4.25 (108)	1.24 (31.6)	4.25 (108)	4.25 (108)	4.78 (121)	0.85 (21.5)
R216-02FP, R216-03FP					
4.25 (108)	1.24 (31.6)	4.25 (108)	4.25 (108)	4.78 (121)	0.85 (21.5)

inches
(mm)

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

Ordering Information

R	216	—	02	F		/**

Port Threads
- **— NPT**
- G BSPP

Port Size
- **02 1/4 Inch**
- **03 3/8 Inch**

Reduced Pressure Range
- E 0-8 PSIG
- **F 0-20 PSIG**
- H 0-50 PSIG

Options
- K Non-Relieving
- P Panel Mount with Knob

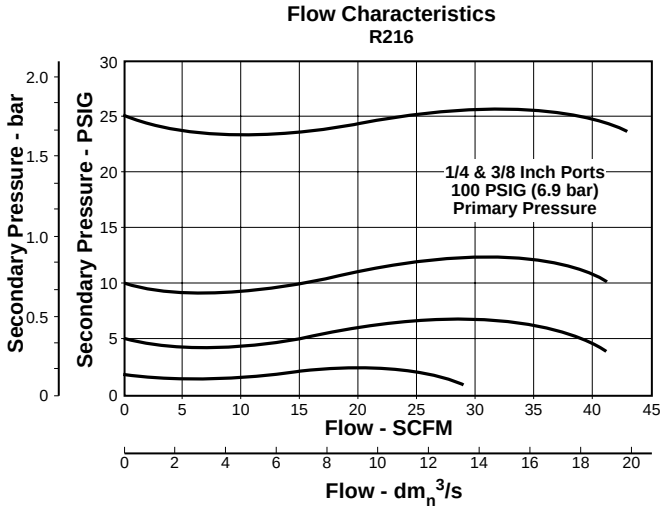
Engineering Change Designator
- Will be entered at factory.

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.

NOTE: BOLD OPTIONS ARE STANDARD.

Technical Information



R216 Regulator Kits & Accessories

Round Plastic Knob 118Y51

Panel Mount Conversion Kit (Spring Cage, Knob, Hardware) 4206

Repair Kits –

Non-Relieving Diaphragm,
Valve Assembly (1/4", 3/8") RK216KY

Relieving Diaphragm,
Valve Assembly (1/4", 3/8") RK216Y

Specifications

Gauge Port (1) ..... 1/8 Inch

Port Threads ..... 1/4, 3/8 Inch

Reduced Pressure Range ..... 5 to 20 PSIG (0.03 to 1.4 bar)

Supply Pressure ..... 300 PSIG Maximum (20.4 bar)

Temperature Rating ..... 40°F to 125°F (4.4°C to 52°C)

Weight ..... 2.2 lb. (1.00 kg) / Unit
18 lb. (8.16 kg) / 8-Unit Master Pack

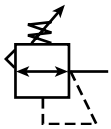
Materials of Construction

Body, Spring Cage ..... Zinc

Bottom Plug ..... Brass

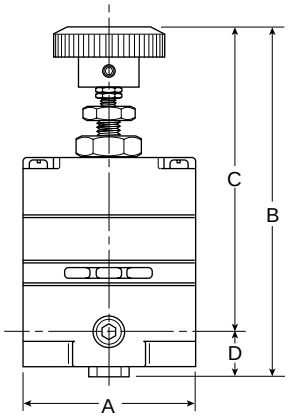
Seals ..... Buna N

R210 / R220 High Precision Regulator



Features

- Accurate Pressure Regulation Controls Output Pressure to within 0.1% Accuracy
- Multi-Stage Regulation for Maximum Control and Stability
- Two Full Flow Gauge Ports
- Super Sensitive Relief. Downstream Pressure Buildup, Down to 0.005 PSIG Above the Set Pressure, is Automatically Vented through Internal Relief Valve
- R220 has High Exhaust Relief Capacity



R210 / R220 Regulator Dimensions		
A 2.06 (52)	**B** 4.35 (110)	**C** 3.82 (97)
D 0.53 (13.5)		

inches
(mm)

The R210 / R220 are high precision, multi-stage pressure regulators. This pressure controller provides the highest level of regulation accuracy and repeatability available and is ideal for applications that call for the utmost in control and maximum stability under variable operating conditions. A stainless steel measuring capsule is used as a sensing element to activate the high gain servo balanced control mechanism in which the main valve is controlled by a pilot valve. This allows for greater accuracy and eliminates many of the problems associated with conventional regulators using range springs and diaphragms.

Applications

The R210 and R220 regulators are well suited for any process that requires very precise regulation of air pressure in pipes and vessels. These regulators are often used, but not limited to the following applications:

- Air Gauging
- Gas Mixing
- Calibration Standards
- Air Hoists
- Web Tensioning
- Gate Actuators
- Roll Loading
- Valve Operators
- Cylinder Loading

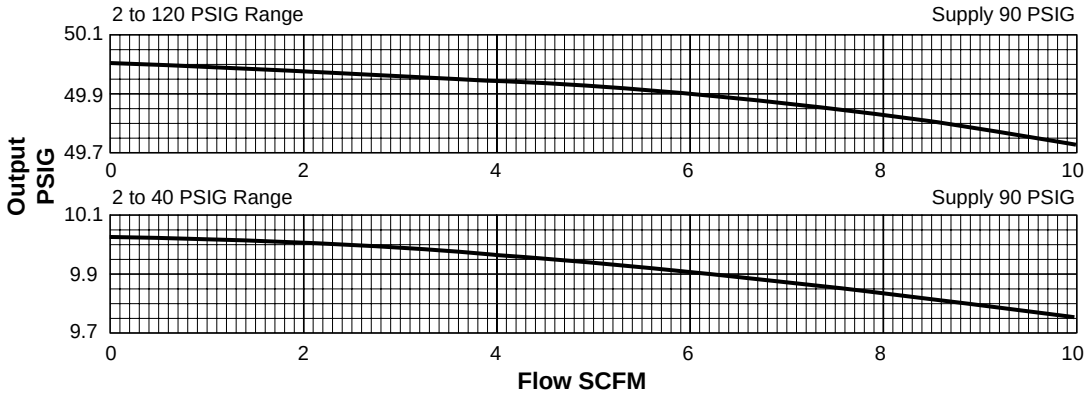
⚠ WARNING
Do not connect regulator to bottled gas.
Do not exceed maximum primary pressure rating.
Product rupture can cause serious injury.

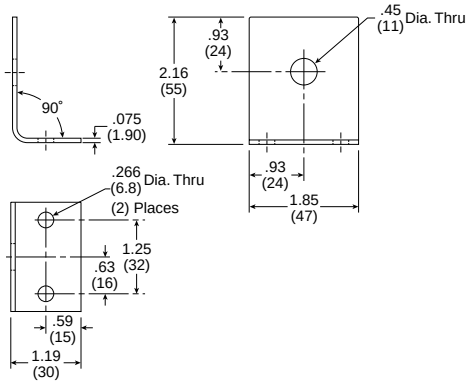
Ordering Information

Relieving		Reduced Pressure Range (PSIG)		
		2 to 40	**2 to 120**	**2 to 120 High Relief**
In / Out Ports	1/4"	R210-02A	R210-02C	R220-02C

Pneumatic Division
Richland, Michigan
www.wattsfluidair.com

Technical Information





Mounting Bracket: 446-707-045

R210 / R220 Regulator Kits & Accessories

Mounting Bracket Kits
Pipe Mounting (Pair) SA200YW57
Right Angle Mounting 446-707-045

Service Kits
2-40 PSIG RKR210A*
2-120 PSIG RKR210C*
2-120 PSIG (High Relieving) RKR220C*

* Parts in Kit: Diaphragms, Gasket, Bleed Orifice

Specifications

Constant Bleed Rate ..... Less than 0.08 SCFM (0.15m³/hr)
(Equals Bleed Rate plus other consumption)

Total Air Consumption ..... 6 SCFH (0.21m³/hr.)

Effect of Supply Pressure Variation
of 25 PSIG (1.7 bar) on outlet: .... Less than 0.005 PSIG (0.0003 bar)

Exhaust (Relief) Capacity
At 5 PSIG (0.34 bar) above 20 PSIG (1.38 bar) Setpoint
Standard Model ..... 3 SCFM (3.4m³/hr)
High-Relief Model ..... 11 SCFM (17m³/hr)

Flow Capacity
At 100 PSIG (6.89 bar) Supply,
20 PSIG (1.38 bar) Outlet ..... 14 SCFM (25m³/hr)

Gauge Ports ..... 1/4" NPTF
(Can be used as additional full flow 1/4" outlet ports)

Operating Pressure Range:		**PSIG**	**bar**
PRIMARY – Maximum		150	10.34
SECONDARY – Spring Pressure			
40 PSIG	**Minimum**	2	0.14
	Maximum	40	2.76
120 PSIG	**Minimum**	2	0.14
	Maximum	120	8.27

Operating Temperature Range ..... -18°C * to 65°C (0°F* to 150°F)

* Temperatures below 0°C (32°F) require moisture free air.

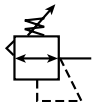
Repeatability / Sensitivity ..... 0.005 PSIG (0.0003 bar)
Inches of Water Column = 1/8"

Weight ..... 1.4 lb (0.64 kg)

Materials of Construction

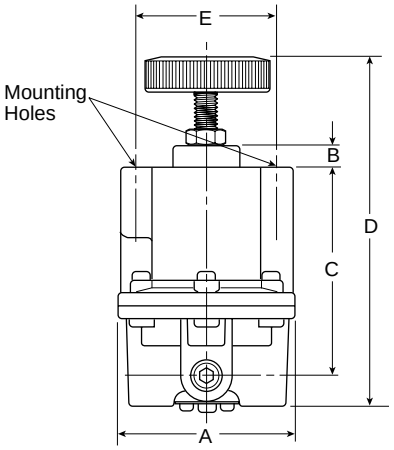
Adjusting Stem & Capsule ..... Stainless Steel
Body ..... Zinc
Control Knob ..... Plastic
Diaphragm(s) ..... Buna-N
Seals ..... Buna-N
Springs ..... Stainless Steel
Valve Poppet ..... Stainless Steel

R230 High Flow Precision Regulator



Features

- Adjusting Knob.
- Diaphragm Design for Good Repeatability, Response and Sensitivity
- Balanced Poppet
- Two Full Flow Gauge Ports
- Precise Regulation. Will Sense a Decrease in Downstream Pressure as Small as 1/4" of Water Column (0.010 PSIG)
- High Fow Capacity. Flows of 80 SCFM Attainable with Minimal Drop
- Stable Output. Dampening Action of Aspiration Tube makes Regulator Insensitive to Changes in Flow
- On-line Maintenance. Can be Serviced Without Removal of Air Line



R230 Regulator Dimensions		
A	**B**	**C**
3.00 (76)	0.38 (10)	3.40 (86)
D	**E**	
6.06 (154)	2.25 (57)	

inches (mm)

The R230 is designed for applications that require high flow 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.

Applications

The R230 regulators are an ideal choice for any application that calls for accurately maintained output pressure under high flow conditions. This includes, but is not limited to such applications as:

Test Equipment

- Gas Mixing
- Valve Operators
- Positioning Cylinders
- Laboratory Equipment
- Web Tensioning
- Clutch & Brake Controls
- Roll Loading
- Test Panels
- Actuators

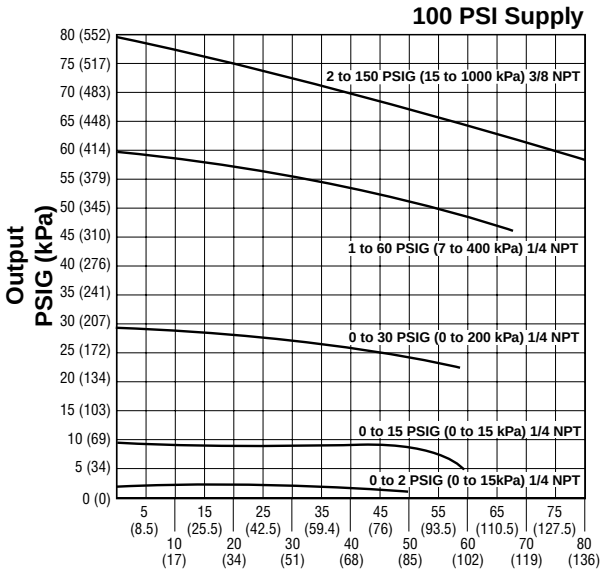
⚠ WARNING
Do not connect regulator to bottled gas.
Do not exceed maximum primary pressure rating.
Product rupture can cause serious injury.

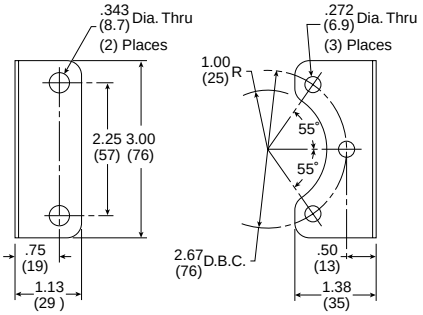
Ordering Information

Relieving		Reduced Pressure Range (PSIG)			
		0 to 2	**0 to 30**	**0 to 60**	**0 to 150**
In / Out Ports	1/4"	R230-02E	R230-02B	R230-02C	R230-02D
	3/8"	N/A	R230-03B	R230-03C	R230-0D

Pneumatic Division
Richland, Michigan
www.wattsfluidair.com

Technical Information





Mounting Bracket: 446-707-025

R230 Regulator Kits & Accessories

Mounting Bracket Kit 446-707-025

Service Kits – Relieving
- 0 to 2 PSIG RKR230E*
- 0 to 30 PSIG RKR230B*
- 0 to 60 PSIG RKR230C*
- 0 to 150 PSIG RKR230D*

* Parts in Kit: Diaphragm, Poppet, O-ring

Specifications

Constant Bleed Rate ..... 1.0 to 12.5 SCFH
(Depending upon output pressure)

Gauge Ports ..... Two Ports 1/4"
(Can be used as additional Full Flow 1/4 Inch Outlet Ports)

Effect of Supply Pressure Variation –
Less than 0.1 PSIG for 100 PSIG (6.89 bar) change

Exhaust (Relief) Capacity –
4 SCFM with downstream pressure 5 PSIG above set pressure.
Exhaust commences at 0.01 PSIG above set pressure.

Flow Capacity –
At 100 PSIG (6.89 bar) Supply,
80 PSIG (5.5 bar) Outlet ..... 80 SCFM (37.8 dm^2/s)

Operating Temperature Range – ..... -40°C to 71°C
(-40°F to 160°F)

Operating Pressure Range –	**PSIG**	**bar**
PRIMARY – Maximum	250	17

Port Threads ..... 1/4"

Exhaust (Relief) Capacity ..... 4.0 SCFM
(Downstream pressure 5 PSI above set pressure)

Repeatability / Sensitivity ..... ±0.010 PSIG (±0.00068 bar)
Inches of Water Column = 1/4"

Response ..... 250 ms
The valve will open to full flow and fill a volume of 1250 cm^3

Weight ..... 1 lb. 10 oz. (0.74 kg)

Materials of Construction

Adjusting Stem & Spring ..... Steel

Biased Spring ..... Stainless Steel

Body, Bonnet ..... Aluminum

Control Knob ..... Plastic

Diaphragm ..... Buna-N Elastomer and Polyester Fabric

Seals ..... Buna-N

Valve Poppet ..... Brass

Valve Poppet Seat ..... Buna-N

Offer of Sale

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

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

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

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

If a claim is based on information provided by Buyer or if the design for an item delivered hereunder is specified in whole or in part by Buyer, Buyer shall defend and indemnify Seller for all costs, expenses or judgements resulting from any claim that such item infringes any patent, trademark, copyright, trade dress, trade secret or any similar right.

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

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