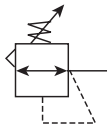
P3RA102 High Precision Regulators

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



Port Size	Description	Part Number
1/4"	0.5 to 30 psig	**P3RA10232**
1/4"	1 to 60 psig	**P3RA10242**
1/4"	2 to 150 psig	**P3RA10262**

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 m3/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

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.

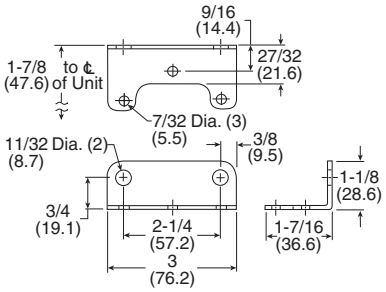
Material Specifications

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

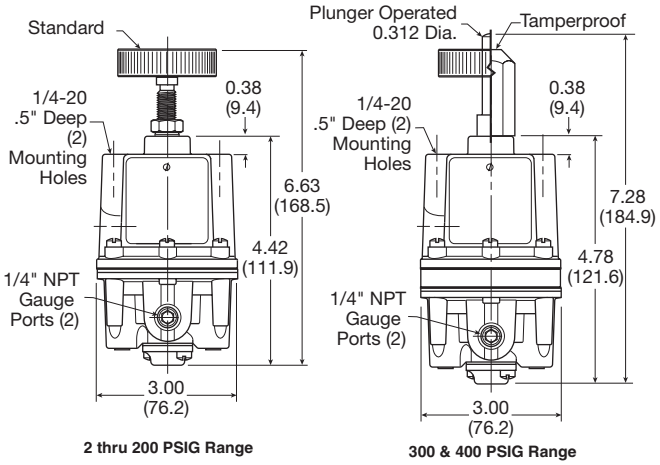


⚠ WARNING

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

CAUTION:

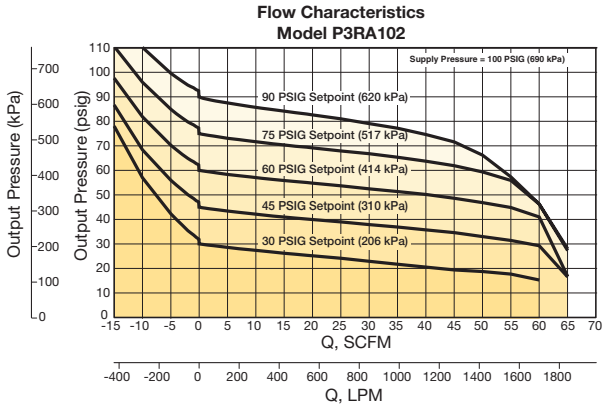
REGULATOR PRESSURE ADJUSTMENT – The working range of knob adjustment is designed to permit outlet pressures within their full range. Pressure adjustment beyond this range is also possible because the knob is not a limiting device. This is a common characteristic of most industrial regulators, and limiting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

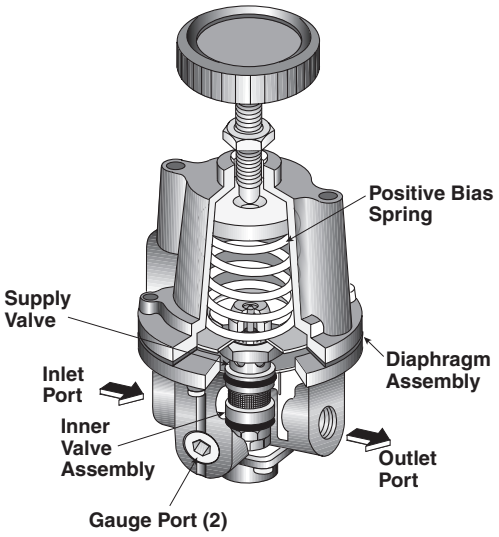


Inches (mm)

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.