

# PR50 Series

*High Pressure Self-venting Pressure Regulator  
Inlet & Outlet to 10,000 psig*



## Features

- Balanced poppet design
- Self-relieving captured vent
- Low operating torque

## Applications

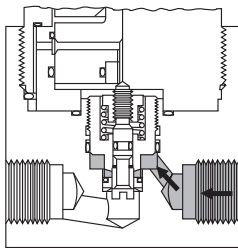
- High pressure testing
- Purging & charging
- Research laboratories
- Chemical/petroleum plants
- Manufacturing processes

## Technical Data

<b>Body Construction Materials</b>	Brass, 303 or 316 stainless steel
<b>Seat Materials</b>	Kel-F® or Vespel®
<b>Seal Materials</b>	Buna N, ethylene propylene, neoprene or Viton®
<b>Port Sizes</b>	¼" and ½" NPT female, ½" male tube, or ½" British parallel pipe
<b>Pressure Ratings</b>	Inlet: • CRES: to 10,000 psig (690 BAR) • Brass: to 6,000 psig (414 BAR) Outlet: 40 to 10,000 psig (2.7 to 690 BAR)
<b>Temperature Range</b>	Viton®: -20° F to +225° F (-29° C to +107° C) All others: -40° F to +225° F (-40° C to +107° C)
<b>Flow Capacity</b>	Cv = 0.30 Orifice diameter = 0.13"
<b>Weight</b>	8.5 lbs (less gauges)
<b>Leakage</b>	Bubble-tight (air)

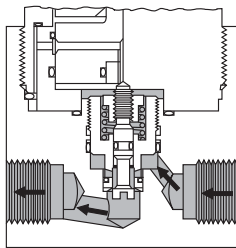
*Note: Proper filtration is recommended to prevent damage to sealing surfaces.*

## How it Works



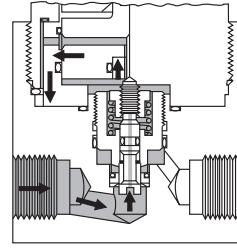
### Closed

Balanced poppet is spring-loaded against the seat. When full upstream pressure is applied, a slightly unbalanced force is developed which enhances sealing.



### Regulating

As the downstream process demands flow, the pressure acting on the piston decays, allowing the adjusting spring force to push the piston down. This unseats the poppet, allowing flow to begin and pressure under the piston to increase until balance is achieved between adjusting spring force and downstream pressure. This condition continues until process demand ceases. At this point, increasing pressure overcomes the spring force, moving the piston up, allowing the poppet to close.



### Venting

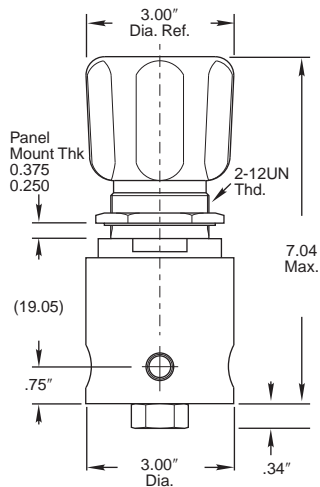
If the downstream pressure should increase beyond regulation set point or handle is backed off to decrease regulated pressure level, downstream pressure will vent through the piston and guide to the vent port. The pressure load from the piston overcomes the "set" spring load and moves the piston upward. The poppet is thereby unseated to allow venting flow. As pressure decreases under the piston, the reverse action occurs and the vent seat is closed off.

## Circle Seal Controls

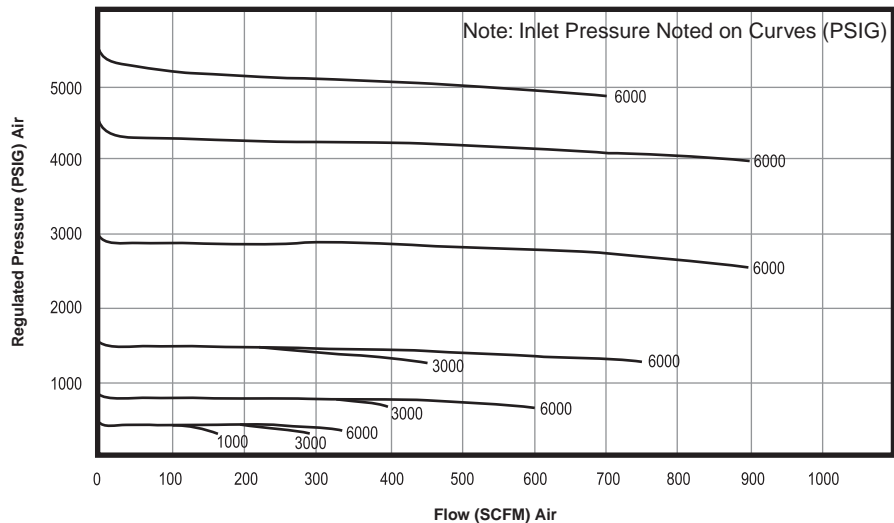
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# PR50 Series

## Dimensions & Flow Curves



**Air Flow Chart**



## How to Order

**K/ PR5 2 U 1 1 1 2 G**

**REPAIR KIT**

**MAXIMUM OUTLET PRESSURE**

- 2 40 to 400 psig (28 BAR)
- 3 80 to 800 psig (55 BAR)
- 4 150 to 1,500 psig (103 BAR)
- 5 300 to 3,000 psig (207 BAR)
- 6 450 to 4,500 psig (310 BAR)
- 7 600 to 6,000 psig (414 BAR)
- 8 1,000 to 10,000 psig (690 BAR)

**BODY MATERIAL**

- B Brass
- U 316 stainless steel
- T 303 stainless steel

**INLET & OUTLET PORTS**

- 1 1/4" NPT female
- 2 1/2" NPT female
- 3 1/2" tube (MS55649-8)
- 4 1/2" British parallel pipe thread  
(vent port 1/4" BPPT, gauge port  
1/4" BS taper thread)

**OPTIONS**

- G Gauges
- N 316 CRES panel nut

**CLEANING LEVELS**

- 1 General oxygen service\*\*
- 2 General pneumatic service
- 3 Specify
- 4 Precision pneumatic service

**SEAT MATERIAL**

- 1 Vespel®
- 2 Kel-F® (limited to 3,000 psi inlet pressure, PR52-PR55 Series only)

**SEAL MATERIAL**

- 0 Ethylene propylene
- 1 Neoprene (standard)
- 3 Viton® (standard for oxygen service)
- 4 Buna N

\* For best regulating characteristics, use only within 10% to 90% of maximum outlet pressure range. Either liquid or gas is handled equally well by the PR50 Series. No modification is required to convert from gas service to liquid. Seals and seats are available for nearly all liquids or gases. The PR50 is not recommended for continuous liquid service.

\*\* For oxygen service, use Vespel® SP-21 seat and Viton® or neoprene seals.

Please consult your Circle Seal Controls distributor, representative, or the factory for information on special connections, operating pressures and temperature ranges.

## For Your Safety

It is solely the responsibility of the system designer and user to select products suitable for their specific application requirements and to ensure proper installation, operation, and maintenance of these products. Material compatibility, product ratings and application details should be considered in the selection. Improper selection or use of products described herein can cause personal injury or property damage.

Kel-F® is a registered trademark of 3M Company.  
Vespel® is a registered trademark of E.I. du Pont de Nemours and Company.  
Viton® is a registered trademark of DuPont Dow Elastomers.