

PR-1 Series*

Adjustable Pressure Control Regulator



The PR-1 Series is a versatile specialty pressure reducing control regulator designed to fulfill a wide range of needs in instrumentation sample systems and other applications such as semiconductor processing gases. The many features of the PR-1 make it ideal for a wide range of applications controlling pressures at low to moderate flows in gas or liquid service. 316L material is used to facilitate welded connections. Stainless steel caps and adjusting screws prevent atmospheric corrosion and maintain appearance. Enhanced internal body surface finish of better than 25 Ra plus electropolishing allows easier cleaning and potentially less particle contamination in the flow stream.

Six different seat materials, three alternate orifice sizes and eight pressure control ranges with stainless diaphragms offer the user a wide spectrum of capabilities for pressure control with inlet pressures up to 6,000 psig and standard operating temperatures up to 500° F (260° C).

* Replaces the LPR and MR Series.

Features & Specifications

- Gas or liquid service
- 316L stainless steel, Inconel®, Teflon®, and Tefzel® only in flow stream
- Electropolished 316L body with better than 25 Ra diaphragm cavity surface finish
- Stainless steel cap with stainless steel adjusting screw
- Inlet pressures of up to 6,000 psi
- Adjustable outlet pressure ranges of 0–6 psig, 0–10 psig, 0–25 psig, 0–50 psig, 0–100 psig, 0–250 psig, 0–500 psig, and 0–750 psig
- Operating temperatures of –40° F to +500° F (–40° C to +260° C)
- 20µ filters
- Bubble-tight shutoff under most conditions
- Cv flow coefficient: 0.06

Options

- Wetted materials of construction: Monel®, Hastelloy® and titanium
- Diaphragm attached poppet
- Special fittings
- Diaphragm assist spring for vacuum purging
- Larger Cv's of 0.2 and 0.5, smaller Cv's of 0.025
- Panel mount (1 $\frac{3}{8}$ " mounting hole)

Maximum Temperature & Operating Inlet Pressures

Seat Material	Maximum Temperature*	@	Maximum Operating Inlet Pressure
Tefzel®	150° F (66° C)	@	3,600 psig (24.82 MPa)
High density Teflon®	150° F (66° C)	@	3,600 psig (24.82 MPa)
CF Teflon®	175° F (80° C)	@	3,600 psig (24.82 MPa)
PCTFE (formerly Kel-F® 81)	175° F (80° C)	@	6,000 psig (41.37 MPa)
Polyimide	500° F (260° C)	@	3,600 psig (24.82 MPa)
Polyimide	175° F (80° C)	@	6,000 psig (41.37 MPa)
PEEK™	500° F (260° C)	@	3,600 psig (24.82 MPa)
PEEK™	175° F (80° C)	@	6,000 psig (41.37 MPa)

* Temperatures in excess of 175° F (80° C) require the use of a metal knob or the tamper-proof option.

Circle Seal Controls

2301 Wardlow Circle • Corona, CA 92880
 Phone (951) 270-6200 • Fax (951) 270-6201
 www.circle-seal.com

pressure regulators

PR-1 Series

How to Order

K/ PR1 - 1 A 1 1 A 3 C 1 1 1 C

REPAIR KIT

BODY MATERIALS

- 1 316L stainless steel
- 4 Monel®
- 5 Hastelloy® B
- 6 Hastelloy® C
- 7 Titanium
- 0 Inconel® 625

PORT CONFIGURATION

- A Standard (one inlet & one outlet port)
- For more port configurations, see page 35.

PROCESS PORT TYPES

- 0 1/8" FNPT
- 1 1/4" FNPT
- 3 1/4" sch 80 pipe (1/4" FNPT gauge ports)
- 4 3/8" FNPT
- 8 SAE J514 (1/4" NPT gauge ports)
- 9 MS33649 (1/4" NPT gauge ports)
- A 1/4" ISO 7-Rc taper
- H 1/2" sch 160 pipe
- K 1/4" sch 40 pipe

CAVITY FINISH

- 1 < 25 Ra, standard

SEAT MATERIALS

- A Tefzel®
- B CF Teflon®
- C Polyimide, high temperature service
- H PCTFE (formerly Kel-F® 81)
- I High-density Teflon®
- N Polyimide, low temperature service
- Q PEEK™

FLOW COEFFICIENT

- 3 0.06 (standard)
- 5 0.2
- C 0.025
- H 0.50

OUTLET RANGE

- C 0-10 psig
- D 0-25 psig
- E 0-50 psig
- G 0-100 psig
- I 0-250 psig
- J 0-500 psig
- L 0-6 psig
- W 0-750 psig

CAP ASSEMBLY

- 1 Standard stainless steel
- 4 Panel mount, stainless steel
- 5 Captured vent, aluminum
- 6 Captured vent, panel mount, aluminum
- 8 Tamper-proof, stainless steel
- 9 Fine adjust, 1/2" panel mount, aluminum
- 0 Fine adjust, 1/8" panel mount, aluminum
- A Captured vent, tamper-proof, aluminum
- E Tamper-proof, panel mount, aluminum
- H 1/4" NPT dome-loaded, stainless steel

DIAPHRAGM FACING/BACKING

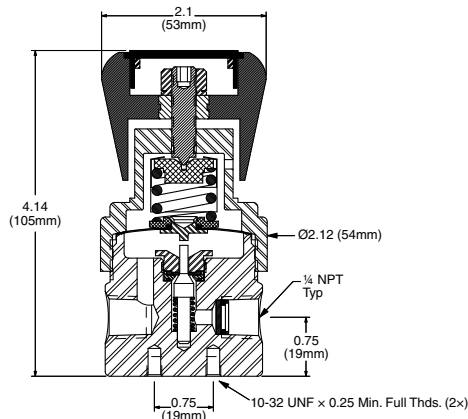
- 1 Teflon®/stainless steel
- 2 Teflon®/Viton® (0-50 psig max.)
- 6 Tefzel® ring/stainless steel
- 7 Viton®/stainless steel
- 8 Teflon®/Inconel®
- 9 Teflon®/Hastelloy® B
- 0 Teflon®/Hastelloy® C
- A Teflon®/tantalum
- B Teflon®/Inconel® 625
- J Tefzel® ring/Inconel®

DIAPHRAGM TYPE

- 1 Standard diaphragm
- 2 Diaphragm attached poppet
- 3 Self-relieving
- 4 Vacuum assist spring, standard diaphragm
- 5 Vacuum assist spring, diaphragm attached poppet
- 6 Vacuum assist spring, self-relieving
- 7 Liquid service

Outline & Mounting Dimensions

Weight = 1.9 lbs (0.86kg)



For Your Safety

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Teflon® and Tefzel® are registered trademarks of the DuPont Company.
 PEEK™ is a trademark of Victrex PLC.
 Inconel® and Monel® are registered trademarks of Special Metals Corporation.
 Hastelloy® is a registered trademark of Haynes International, Inc.
 Kel-F® is a registered trademark of 3M Company.

PR-2 Series*

Economy Brass Pressure Reducing Regulator



The PR-2 Series are compact brass body regulators designed for maximum flexibility in many classes of instrumentation service. Specifically designed for gas applications, this regulator is capable of accepting high pressures directly from cylinders and other high pressure, non-corrosive systems. It is ideally suited for carrier gas pressure regulation, yet it is economical enough to use in low-pressure air systems such as instrument cabinet air purge service.

* Replaces the LPR Series.

Features & Specifications

- Gas or liquid service
- Brass (alloy 360) construction
- Stainless steel diaphragm with Teflon® lining
- Stainless steel poppet
- Better than 25 Ra finish in diaphragm cavity
- 20µ inlet filter
- Bubble-tight shutoff
- Outlet pressure ranges: 0–10 psig, 0–25 psig, 0–50 psig, 0–100 psig, 0–250 psig, 0–500 psig and 0–750 psig
- Operating temperatures: –40° F to +175° F (–40° C to +80° C)
- Inlet and outlet connection: ¼" FNPT

Options

- ½" or ¾" FNPT connections
- Panel mount (requires 1 ⅜" mounting hole)
- Extra ports
- Pressure gauges

Maximum Temperature & Operating Inlet Pressures

Seat Material	Maximum Temperature*	@	Maximum Operating Inlet Pressure
Tefzel®	150° F (66° C)	@	3,600 psig (24.82 MPa)
High density Teflon®	150° F (66° C)	@	3,600 psig (24.82 MPa)
CF Teflon®	175° F (80° C)	@	3,600 psig (24.82 MPa)
PCTFE (formerly Kel-F® 81)	175° F (80° C)	@	3,600 psig (24.82 MPa)
Polyimide	175° F (80° C)	@	3,600 psig (24.82 MPa)
PEEK™	175° F (80° C)	@	3,600 psig (24.82 MPa)

* Temperatures in excess of 175° F (80° C) require the use of a metal knob or the tamper-proof option.

Circle Seal Controls

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pressure regulators

PR-2 Series

How to Order

K/ PR2 - 2 A 1 1 A 3 C 1 1 1 C

REPAIR KIT ———

BODY MATERIALS ———

- 2 Brass
- 8 Brass, chrome-plated
- A Brass, nickel-plated

PORT CONFIGURATION ———

- A Standard (one inlet & one outlet port)
For more port configurations, see page 35.

PROCESS PORT TYPES ———

- 1 1/4" FNPT (1/4" FNPT gauge ports)
- 4 3/8" FNPT (1/4" FNPT gauge ports)
- 0 1/8" FNPT (1/8" FNPT gauge ports)
- A 1/4" ISO 7-Rc taper (1/4" FNPT gauge ports)

SURFACE FINISH/DIAPHRAGM CAVITY ———

- 1 < 25 Ra, standard

SEAT MATERIALS ———

- A Tefzel®
- B CF Teflon®
- C Polyimide
- H PCTFE (formerly Kel-F® 81)
- I High-density Teflon®
- Q PEEK™

FLOW COEFFICIENT ———

- 3 0.06
- 5 0.2
- C 0.025
- H 0.50

OUTLET RANGE ———

- C 0-10 psig
- D 0-25 psig
- E 0-50 psig
- G 0-100 psig
- I 0-250 psig
- J 0-500 psig
- W 0-750 psig

OPTIONAL CAP FINISH

- Blank Black anodize (standard)
- 1 Chrome-plated
- 2 Electroless nickel-plated

CAP ASSEMBLY

- 1 Standard, aluminum
- 3 1" panel mount, aluminum
- 4 Panel mount, aluminum
- 5 Captured vent, aluminum
- 6 Captured vent, panel mount, aluminum
- 8 Tamper-proof, aluminum
- 9 Fine adjust, 1/2" panel mount, aluminum
- 0 Fine adjust, 1 3/8" panel mount, aluminum
- A Captured vent, tamper-proof, aluminum
- E Tamper-proof, panel mount, aluminum

DIAPHRAGM FACING/BACKING

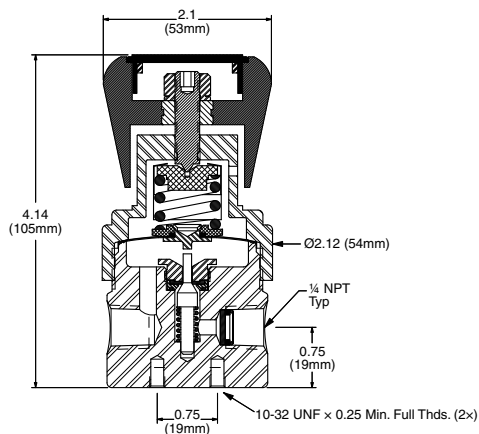
- 1 Teflon®/stainless steel
- 2 Teflon®/Viton®
- 6 Tefzel® ring/stainless steel

DIAPHRAGM TYPE

- 1 Standard diaphragm
- 2 Diaphragm attached poppet
- 3 Self-relieving
- 4 Vacuum assist spring, standard diaphragm
- 5 Vacuum assist spring, diaphragm attached poppet
- 6 Vacuum assist spring, self-relieving
- 7 Liquid service

Outline & Mounting Dimensions

Weight = 1.7 lbs (0.77kg)



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PEEK™ is a trademark of Victrex PLC.
Kel-F® is a registered trademark of 3M Company.

PVR Series

Low Pressure Regulator

Inlet 0 to 3,000 psig & Outlet 2" H₂O to 60 psig



Features

- Low pressure control
- Exceptional accuracy & response
- Compatible with corrosive and non-corrosive gases & liquids

Applications

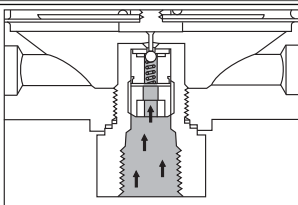
- Chromatography
- Process stream sampling
- Bubbling operations
- Medical instrumentation
- Research laboratories
- Instrument calibration

Technical Data

Body Construction Material	Polyvinyl chloride
Spring Housing Materials	• PVR1, PVR2 & PVR3: Polyvinyl chloride • PVR4 & PVR5: Aluminum alloy
Seat Materials	Kel-F® with synthetic sapphire ball poppet
Diaphragm Material	Teflon®
Adjustment Screw Material	Delrin®
Trim Material	316 stainless steel or Monel®
Port Sizes	1/4" NPT female
Pressure Ratings	Inlet: 3,000 psig (207 BAR) Outlet: 2" H ₂ O to 60 psig (4 BAR), 5 ranges
Temperature Range	0° F to +125° F (-18° C to +52° C)
Flow Capacity	Cv = 0.011 maximum Orifice diameter = 0.025"
Weight	PVR1, PVR2 & PVR3: 14 oz PVR4 & PVR5: 1.5 lbs
Leakage	Bubble-tight
Sensitivity	Less than 1/2 psi on all ranges over 2 psig

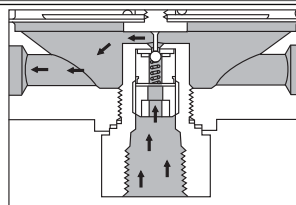
Note: Proper filtration is recommended to prevent damage to sealing surfaces.

How it Works



Closed

With the poppet against the seat, full upstream pressure is applied to the poppet effecting a bubble-tight seal.



Regulating

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

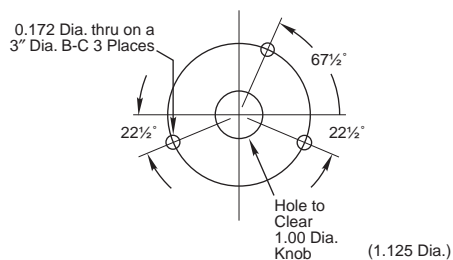
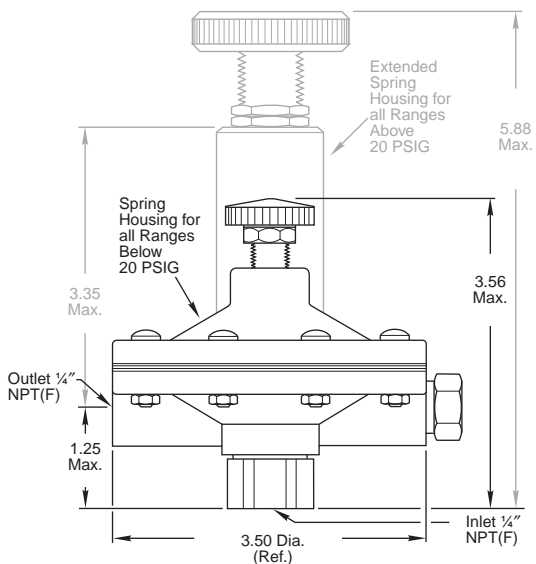
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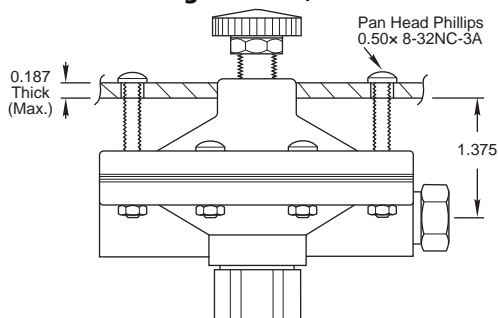
pressure regulators

PVR Series

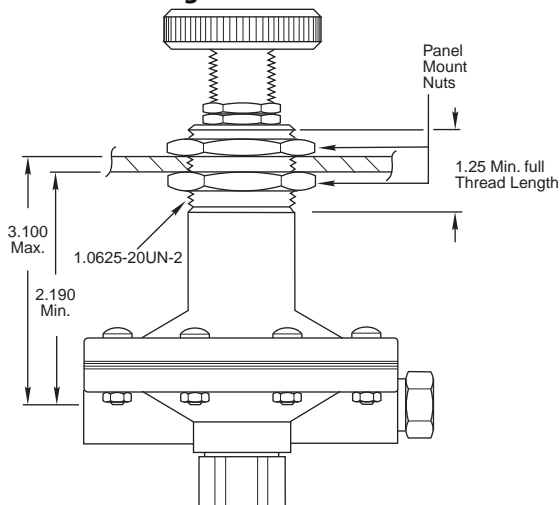
Dimensions



Panel Mounting for PVR1, PVR2 & PVR3



Panel Mounting for PVR4 & PVR5



How to Order

K/ PVR 3 M PM

REPAIR KIT

PRESSURE RANGE

- 1 2" to 27" H₂O*
- 2 1 to 6 psig
- 3 6 to 20 psig
- 4 20 to 40 psig
- 5 40 to 60 psig

OPTIONS

- Blank** None
- PM** Panel mount

TRIM MATERIAL

- Blank** 316 stainless steel
- M** Monel®

* 27" H₂O model is not recommended for dead-end service

Note: if this regulator is to be used in oxygen service, specify "GENERAL OXYGEN SERVICE" when ordering or furnish the factory a copy of the special requirements.

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

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 Teflon® is a registered trademark of the DuPont Company.
 Delrin® is a registered trademark of DuPont.
 Monel® is a registered trademark of Special Metals Corporation.



PR01 Series

*Miniature Non-venting Regulator
Inlet 200 to 3,000 psig & Outlet 10 to 720 psig*



Features

- Miniature size: 1¾" diameter by 3½" high
- Soft seat—suitable for dead-end service
- Tight shutoff
- Single hole panel mounting
- Optional pressure gauges

Applications

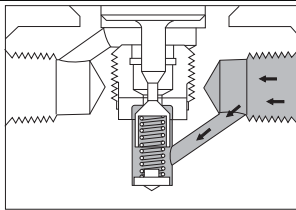
- R & D pilot plants
- Research laboratories
- Chromatography
- Cylinder pressurization
- Bubbling operations
- Instrument pressurization
- Slow gas purge control
- Inert gas blanketing (food processing)
- Pilot control for large control units
- Lecture bottles

Technical Data

Body Construction Materials	Aluminum alloy, anodized blue, or brass
Seat Materials	Kel-F® or Nylatron®
Seal Materials	Buna N, ethylene propylene, neoprene, or Viton®
Trim Material	Stainless steel or plated steel
Handle Material	ABS plastic
Gauge material	Brass
Port Size	½" NPT female
Media	Inert gases
Pressure Ratings	Inlet: 200 to 3,000 psig (207 BAR) Outlet: 10 to 720 psig
Temperature Range	-65° F to +160° F (-54° C to +71° C)
Weight	Regulators: 8.2 oz Gauges: 5.2 oz

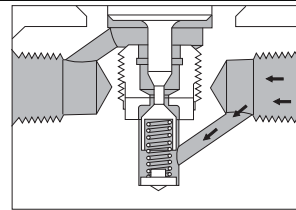
Note: Proper filtration is recommended to prevent damage to sealing surfaces.

How it Works



Closed

With the poppet against seat, full upstream pressure is applied to the poppet, effecting a bubble-tight seal.



Regulating

As the downstream process demands flow, the pressure acting on the piston decays, allowing the adjusting spring force to push the piston down, which in turn unseats the poppet. This permits flow to start, 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 which point increasing pressure overcomes spring force, moving piston up and allowing the poppet to close.

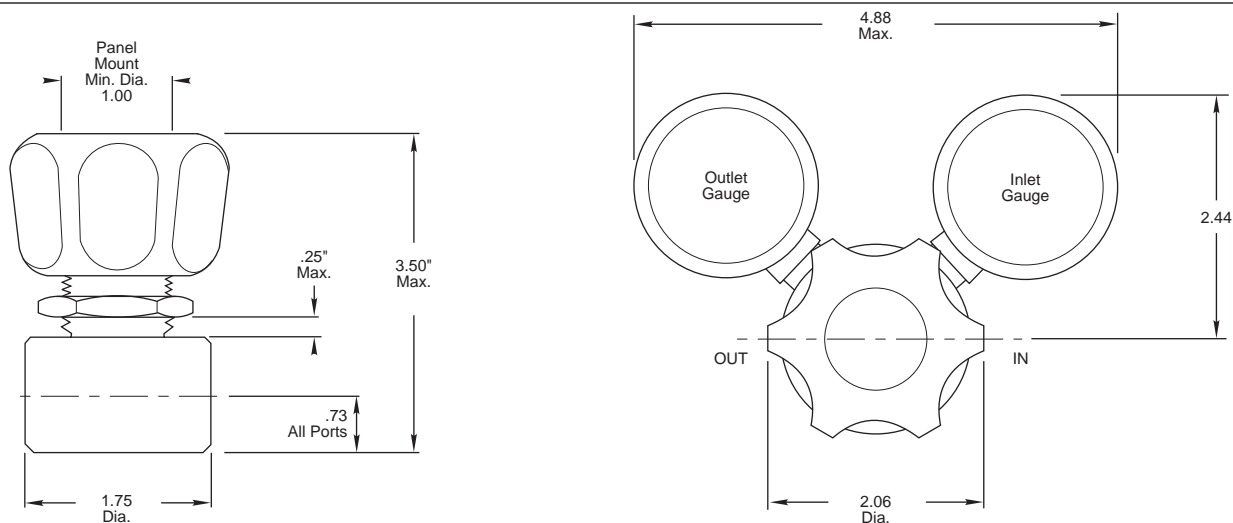
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pressure regulators

PR01 Series

Dimensions



How to Order

K/ PR01 3 A 1P N D O

REPAIR KIT ————— **K**

MAXIMUM OUTLET PRESSURE ————— **3**

1 100 psig (7 BAR)
 2 200 psig (14 BAR)
 3 400 psig (28 BAR)
 4 800 psig (55 BAR)

BODY & PANEL NUT MATERIAL ————— **A**

A Aluminum alloy, anodized blue
 B Brass

PORT SIZE & TYPE ————— **1P**

1P 1/8" NPT female

OPTIONS

O None
 G Gauges, 1 1/2" diameter
 P Panel mount

SEAL MATERIAL

D Nylatron® (standard)
 B Kel-F®

SEAL MATERIAL

E Ethylene propylene
 N Neoprene
 V Viton®
 9 Buna N

Model Number	Operating Pressure Range (psi)	Approx. Outlet Pressure Increase per 100 psi, Inlet Decrease PSI	Approx. Air Flow vs. Outlet Pressure (SCFM/PSI)*	Approx. Cv*
PR011	10–90 psi	3.5 psi	10 scfm/70 psi	0.007
PR012	20–180 psi	3.5 psi	18 scfm/140 psi	0.012
PR013	40–360 psi	3.5 psi	31 scfm/280 psi	0.021
PR014	80–720 psi	8.0 psi	47 scfm/560 psi	0.031

* At maximum inlet and set at maximum rated outlet lock-up pressure. 40µ absolute filtration of inlet fluid media recommended. Relief valve downstream of outlet port should always be used. Main seat is factory tested to be bubble-tight for a period of one minute with full inlet pressure.

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

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Kel-F® is a registered trademark of 3M Company.
 Nylatron® is a registered trademark of DSM Engineering Plastic Products.
 Viton® is a registered trademark of DuPont Dow Elastomers.

SR800 Series

*High Capacity Pressure Regulator
Inlet to 3,600 psig & Outlet to 250 psig*



Features

- High flow rates of 1.65 Cv
- Diaphragm provides maximum sensitivity
- Pressure relief valve for safety protection
- Panel mounting standard
- Wide range of fluid compatibility

Applications

- Manifold pressure control
- Process gas control
- Blanket or purge gas control
- High flow station or main line controls

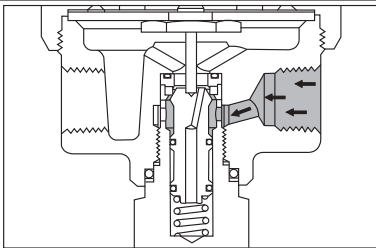
Technical Data

Body Construction Material	Brass forging
Seat Material	Nylatron® GS (standard)*
Seal & Diaphragm Material	Neoprene (standard)*
Spring Material	Steel
Spring Housing Material	Brass
Port Size	½" NPT female
Pressure Ratings	Inlet: 3,600 psig (248 BAR) Outlet: • SR800: 250 psig (17 BAR) max. • SR830: 125 psig (8.6 BAR) max.
Temperature Range	-60° F to +160° F (-51° C to +71° C)
Flow Capacity	Cv = 1.65 max. Orifice diameter = 0.30"

* See "How to Order" for optional materials

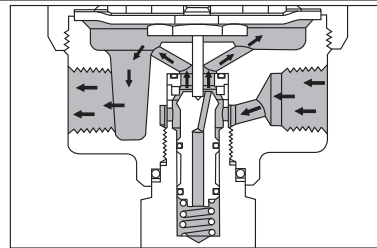
Note: Proper filtration is recommended to prevent damage to sealing surfaces.

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

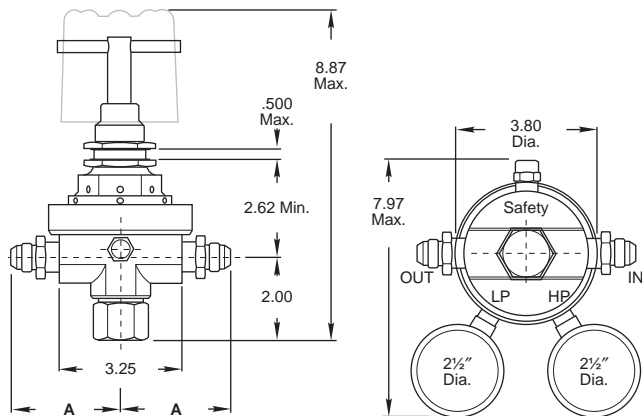
As the downstream process demands flow, the pressure acting on the bottom of the diaphragm decays, allowing the adjusting spring force to push the poppet down. This in turn unseats the poppet, allowing flow to begin and pressure under the diaphragm to increase until balance is achieved between adjusting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

Circle Seal Controls

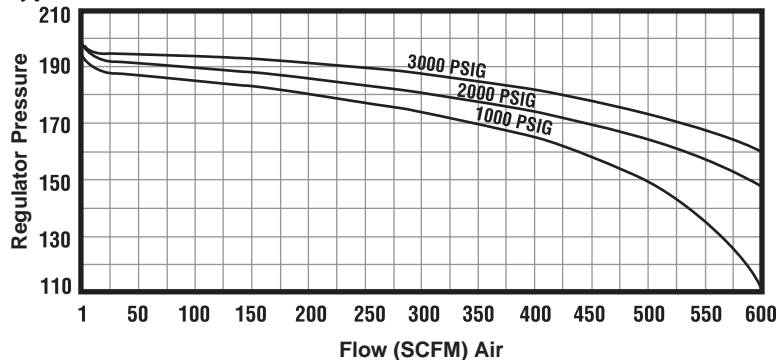
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SR800 Series

Dimensions & Flow Curves



Typical Flow Curve



Inlet Connections

Part No.	Connection	A
-1	MS33656-8	2 ³ / ₃₂ "
-2	MS33656-12	3 ³ / ₄ "
-3	1/2" NPT female	1 ¹ / ₂ "
-xxx	CGA fitting	—

Pressure Range

Gauge Ranges		Safety Valve Set
Inlet	Outlet	Pressure
0-5,000 psig	0-600 psig	400 psig
0-5,000 psig	0-200 psig	200 psig

How to Order

K/ SR800 B 3 3 1 1 2 G

REPAIR KIT

BASIC MODEL NUMBER & OUTLET PRESSURE RANGE

SR800 0 to 250 psig (0 to 17 BAR)

SR830 0 to 125 psig (0 to 9 BAR)

BODY MATERIAL

B Brass forging

INLET CONNECTION

1 MS33656-8

2 MS33656-12

3 1/2" NPT female

xxx Insert CGA number (example: 580)

OUTLET CONNECTION

1 MS33656-8

2 MS33656-12

3 1/2" NPT female

OPTIONS

G Pressure gauges, brass

B Bell handle

L Hex head adjustable screw with lock nut

CLEANING LEVELS*

1 For general oxygen service

2 For general pneumatic service

3 Specify (define on sales order)

4 For precision pneumatic service

SEAT MATERIAL

1 Nylatron® GS (standard)

2 Kel-F® (3,000 psig max.)

4 KYNAR®

5 Polyimide (Vespel® SP-21)

6 Polyurethane

SEAL & DIAPHRAGM MATERIAL

1 Neoprene (standard)

3 Viton®

4 Buna N

5 Teflon® seal, Teflon®-coated neoprene diaphragm

* If this regulator is to be used in oxygen service, specify "GENERAL OXYGEN SERVICE" when ordering or furnish the factory a copy of the special requirements. Vespel® SP-21 or Kel-F® seat, Viton® diaphragm and seals. Temperature range: -20° F to +250° F.

Outlet pressure rise per 100 psi inlet pressure decay 1/4 psi max.

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

Nylatron® is a registered trademark of DSM Engineering Plastic Products.

Kel-F® is a registered trademark of 3M Company.

KYNAR® is a registered trademark of ATOFINA Chemicals, Inc.

Vespel® is a registered trademark of E.I. du Pont de Nemours and Company.

Viton® is a registered trademark of DuPont Dow Elastomers.

Teflon® is a registered trademarks of the DuPont Company.

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IR10 Series

Brass Pressure Regulator

Inlet to 4,000 psig & Outlet to 2,500 psig



Features

- Medium pressure and high flow
- Balanced poppet provides precise control
- Soft seat for dead-end service
- Pressure relief valve for extra safety

Applications

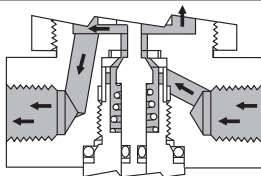
- Chromatography
- Manifold & cylinder regulation
- Bubbling operations
- Hydrogenation
- Research laboratories
- Pressure testing

Technical Data

Body Construction Material	Brass
Seat Material	Nylatron®
Seal Material	Neoprene
Diaphragm Material	Stainless steel
Gauge Material	Brass, 2½" diameter
Trim Materials	Brass or stainless steel
Port Size	¼" NPT female, CGA inlet fitting optional
Pressure Ratings	Inlet: 0 to 4,000 psig (276 BAR) Outlet: 0 to 2,500 psig (172 BAR)
Temperature Range	-40° F to +160° F (-40° C to +71° C)
Flow Capacity	Cv = 0.42 Orifice diameter = 0.15"
Weight	Approximately 4 lbs

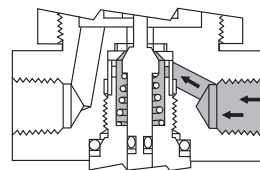
Note: Proper filtration is recommended to prevent damage to sealing surfaces.

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 bottom of the diaphragm decays, allowing the adjusting spring force to push the poppet down. This in turn unseats the poppet, allowing flow to begin and pressure under the diaphragm 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 diaphragm up, allowing the poppet to close.

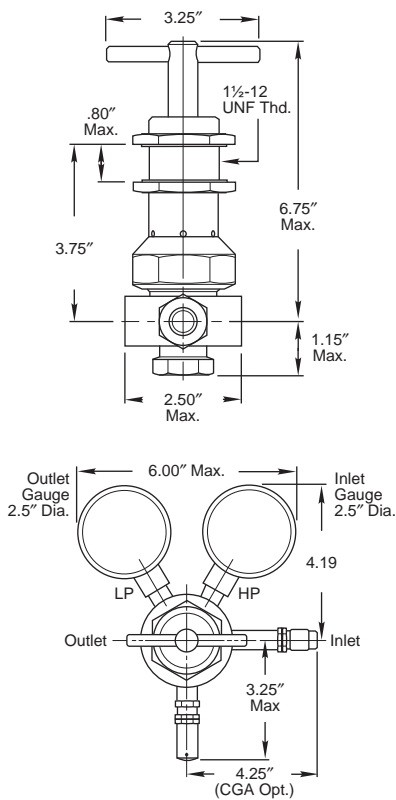
Circle Seal Controls

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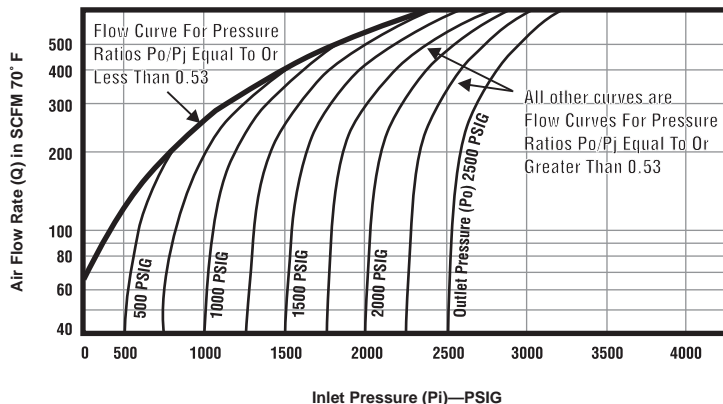
pressure regulators

IR10 Series

Dimensions & Flow Curves



Air Flow Chart



Correction factors for gases other than air:

Gas	Correction Factor
Air	1.000
Helium	2.690
Hydrogen	3.795
Nitrogen	1.016
Oxygen	0.951

Flow rates for gases other than air:

Air Flow Rate (Q) × correction factor

How to Order

K/ IR1 0 250 G

REPAIR KIT

OUTLET PRESSURE RANGE

- 0 0 to 500 psig (0 to 34 BAR)
- 1 0 to 1,000 psig (0 to 70 BAR)
- 2 0 to 2,500 psig (0 to 172 BAR)

OPTIONS

- G Inlet & outlet gauges
- P Panel mounting provisions

INLET PORT

- 250 1/4" NPT female
- 500 Specify CGA fitting number

Outlet pressure rise per 100 psi pressure decay: 0.1 psi max. Maximum inlet pressure: 4,000 psi

If this regulator is to be used in oxygen service, specify "GENERAL OXYGEN SERVICE" when ordering or furnish the factory with a copy of the special requirements.

Fluid media: non-corrosive gases and liquids.

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

Inlet/Outlet Ranges

Model	Outlet Pressure Range	Inlet Gauge Range	Outlet Gauge Range	Safety Valve Set Pressure	Max. Air Flow
IR10	0–500 psig	0–5,000 psi	0–600 psi	0–600 psi	200 scfm
IR11	0–1,000 psig	0–5,000 psi	0–1,500 psi	0–1,400 psi	400 scfm
IR12	0–2,500 psig	0–5,000 psi	0–3,000 psi	0–2,900 psi	1,000 scfm

For Your Safety

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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

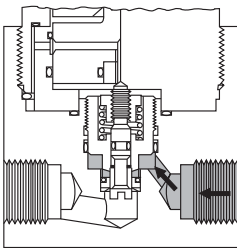
- High pressure testing
- Purging & charging
- Research laboratories
- Chemical/petroleum plants
- Manufacturing processes

Technical Data

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

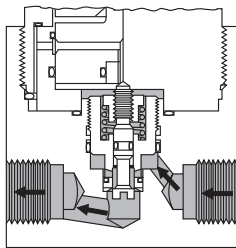
Note: Proper filtration is recommended to prevent damage to sealing surfaces.

How it Works



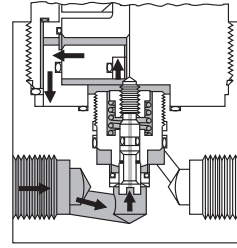
Closed

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.

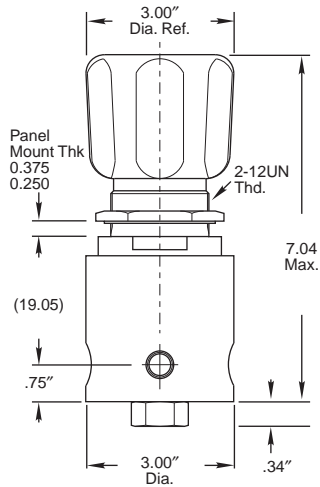
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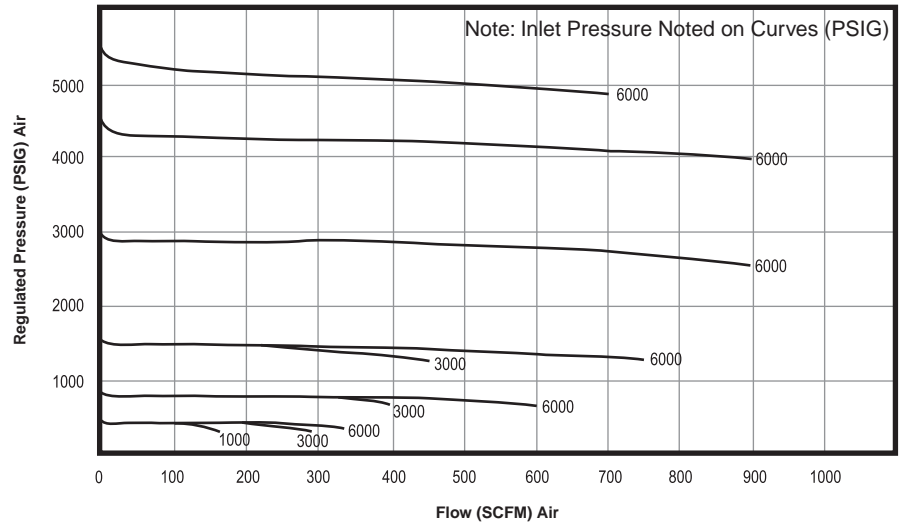
pressure regulators

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

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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.

HPR50 Series

*High Pressure, High Flow, Fluid Pressure Regulator
Inlet 0 to 10,000 psig & Outlet 40 to 10,000 psig*



Features

- Balanced poppet design
- Metal-to-metal seating
- Captured self-venting
- 303 or 316 stainless steel, or brass body
- High pressure 0–10,000 psig inlet and outlet range
- High flow equal to Cv of 0.30
- Internal damper for surge flows
- Ryton™ 7 plastic handle

Applications

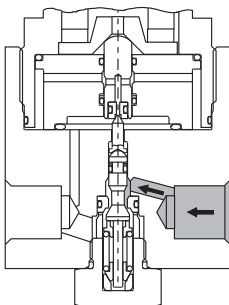
- Hydraulic test systems—high pressure
- Off-shore platforms—valve actuation
- Deep water drilling—hydraulic support
- Manufacturing processes

Technical Data

Body Construction Materials	303 or 316 stainless steel, or brass construction
Seat Material	17-4 PH CRES
Port Sizes	¼" and ½" NPT female, ½" tube, or ½" BSPP
Pressure Ratings	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)
Temperature Range	–40° F to +225° F (–40° C to +107° C)
Flow Capacity	Cv = 0.30

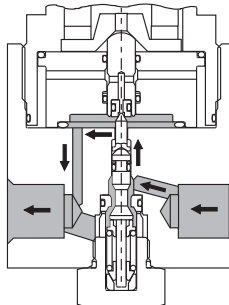
Note: Proper filtration is recommended to prevent damage to sealing surfaces.

How it Works



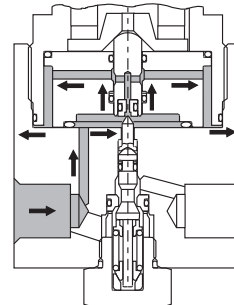
Closed

The balanced poppet is spring-loaded against the seat.



Regulating

As the downstream process demands flow, the pressure acting on the piston decays, allowing the adjusting spring force to push the piston down, at which point increasing pressure overcomes spring force, moving the piston up and allowing the poppet to close.



Venting

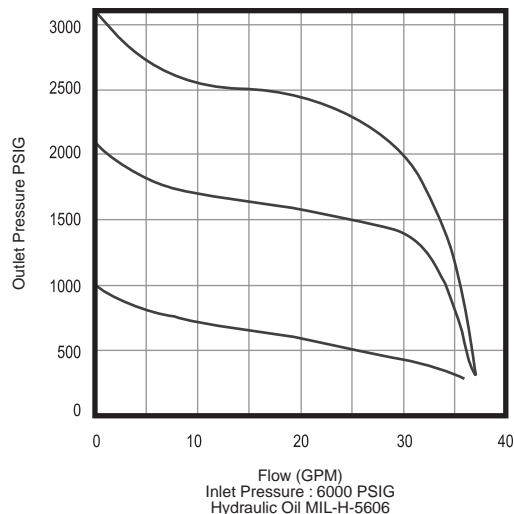
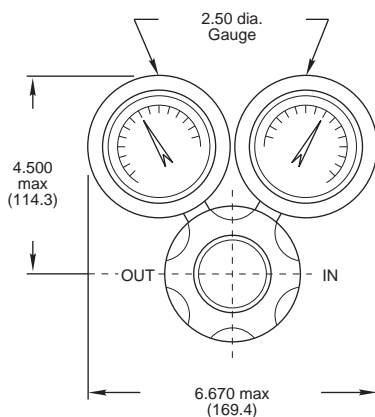
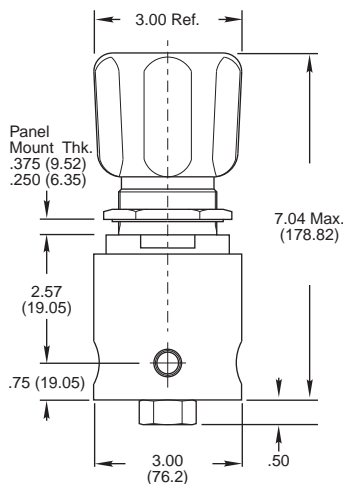
If the downstream pressure should increase beyond regulation set point or the handle is backed off to decrease the regulated pressure level, the downstream pressure will vent through the piston and the guide to the vent port.

Circle Seal Controls

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HPR50 Series

Dimensions, Gauges & Typical Flow Curves



How to Order

K/ HPR5 0 T 1 1 N

REPAIR KIT

OUTLET PRESSURE RANGE

- 0** 150 to 1,500 psig (10 to 103 BAR)
- 1** 300 to 3,000 psig (20 to 206 BAR)
- 2** 600 to 6,000 psig (40 to 414 BAR)
- 3** 1,000 to 10,000 psig (69 to 690 BAR)
- 4** 40 to 400 psig (2.7 to 28 BAR)

BODY MATERIAL

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

OPTIONS

- N** 316 stainless steel panel nut

SEAT MATERIALS

- 0** Ethylene propylene
- 1** Neoprene
- 3** Viton®
- 4** Buna N

INLET & OUTLET PORTS

- 1** ¼" NPT female
- 2** ½" NPT female
- 3** ½" tube (MS33649-8)
- 4** ½" British parallel pipe
(vent pipe: ¼" BSPP)
(gauge ports: ¼" BSP)

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

For Your Safety

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GD720 Series

*High Pressure, Manually Controlled Pressure Reducing Regulator
Inlet 0 to 10,000 psig & Outlet 5 to 6,000 psig*



Features

- Full range capability
- Single hand wheel control
- Balanced poppet insures accuracy
- Integral vent valve

Applications

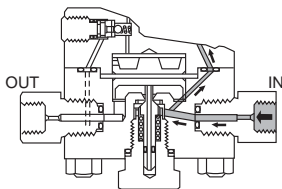
- Air compressor systems
- Oxygen system charging
- Aircraft tire struts
- Aircraft component pressure testing

Technical Data

Body Construction Materials	Bronze or stainless steel
Seat Material	Vespel® SP-21
Seals & Diaphragm Material	Neoprene
Adjustment Spring Material	Zinc chromate over black oxide high carbon steel
Valve Spring Material	Stainless steel
Other Components	Same as body material, stainless steel & Teflon®
Port Sizes	¼", ½" NPT female; ¼", ⅝" Aminco, AND10050-4 or AND10050-8
Pressure Ratings	Maximum inlet pressure: • Bronze: 7,000 psig (483 BAR) • Stainless steel: 10,000 psig (690 BAR) Maximum outlet pressure: 6,000 psig (414 BAR)
Temperature Range	-65° F to +160° F (-54° C to +71° C)
Flow Capacity	Cv = 0.44 Orifice diameter = 0.155"
Weight	11 lbs

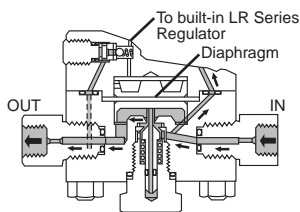
Note: Proper filtration is recommended to prevent damage to sealing surfaces.

How it Works



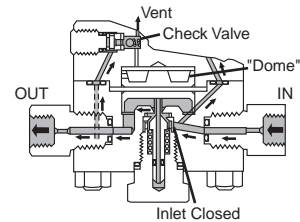
Closed

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



Venting

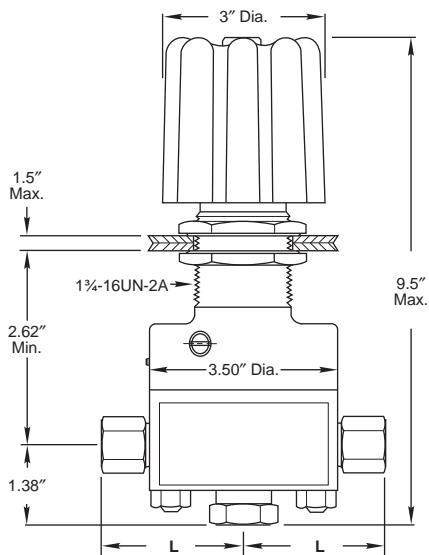
If the downstream pressure should increase beyond regulation set point, or handle is backed off to decrease regulated pressure level, downstream and dome pressure will vent through check valve and through the built-in LR Series regulator.

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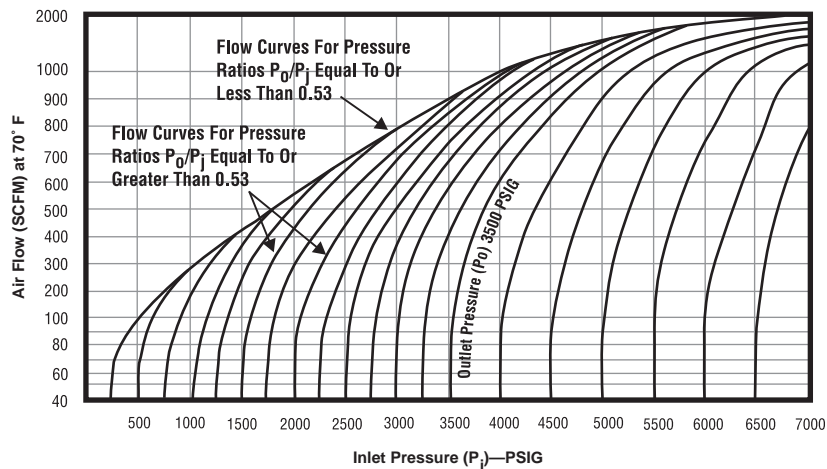
GD720 Series

Dimensions & Flow Curve



Port Size	L
AND10050-4	2.90
AND10050-8	3.16
1/4" NPT female	2.72
1/2" NPT female	3.16
1/4" Aminco	2.90
5/16" Aminco	3.34

Air Flow Chart



Correction factors for gases other than air:

Gas	Correction Factor
Air	1.000
Helium	2.690
Hydrogen	3.795
Nitrogen	1.016
Oxygen	0.951

Flow rates for gases other than air:

Air Flow Rate (Q) × correction factor

How to Order

K/ GD72 0 B 3 3 2 D

REPAIR KIT

OUTLET PRESSURE

- 0** 20 to 3,600 psig (1.40 to 248 BAR)
- 1** 15 to 2,000 psig (1.04 to 138 BAR)
- 2** 10 to 800 psig (0.69 to 55 BAR)
- 3** 5 to 200 psig (0.35 to 14 BAR)
- 4** 40 to 6,000 psig (2.76 to 414 BAR)

BODY MATERIAL

- B** Bronze
- T** 303 stainless steel

INLET PORT

- 1** AND10050-4
- 2** AND10050-8
- 3** 1/4" NPT female
- 4** 1/2" NPT female
- 5** 1/4" Aminco
- 6** 5/16" Aminco

OPTIONS

- D** 1/8" NPT female, dome pressure tap port
- G** Gauges, 2 1/2" brass only
1/4" NPT female gauge port

CLEANING LEVELS

- 1** General oxygen service
- 2** General pneumatic service
- 3** Specify (define on sales order)
- 4** Precision pneumatic service

OUTLET PORT

- 1** AND10050-4
- 2** AND10050-8
- 3** 1/4" NPT female
- 4** 1/2" NPT female
- 5** 1/4" Aminco
- 6** 5/16" Aminco

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

For Your Safety

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Vespe!® is a registered trademark of E.I. du Pont de Nemours and Company.
Viton® is a registered trademark of DuPont Dow Elastomers.

PR-57 Series*

High Pressure Corrosion Resistant Regulator (10,000 psig Inlet)



To meet the demands for the safe reduction of inlet pressures up to 10,000 psig, Circle Seal Controls provides the PR-57 Series regulator. This precision regulator features a piston-sensing design which provides the operator with low adjusting torque requirements when setting the outlet pressure. The body is constructed from 316L stainless steel, providing the ultimate in safety and corrosion resistance.

The optional self-relieving feature provides an additional level in operational ease, as it allows for trapped downstream pressure to be safely vented to atmosphere through the bonnet.

** Replaces the LRxxE Series.*

Features & Specifications

- Gas or liquid service
- 316L stainless steel construction
- Better than 25 Ra finish in diaphragm cavity
- Stainless steel spring-loaded piston sensor
- 20 μ filter
- Bubble-tight shutoff
- Inlet pressure maximum 10,000 psig
- Outlet pressure ranges are 0–250 psig, 0–500 psig, 0–750 psig, 0–1,000 psig, 0–2,000 psig, 0–4,000 psig, 0–6,000 psig, 0–7,500 psig, and 0–10,000 psig
- Operating temperatures: –40° F to +150° F (–40° C to +66° C)
- Cv flow coefficient 0.05 or 0.2 (optional)

Applications

- Pilot plants
- Specialty gas
- Compressors
- High pressure test systems
- Breathing air tank refill

Options

- Gauges and CGA fittings for cylinder gas applications
- Self-relieving and captured vent
- 3/8" FNPT, 1/4" AND10050–4, 1/4" SAE J514, 1/4" MS33649, 1/4" Aminco, or 1/4" sch 40 pipe

Circle Seal Controls

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 www.circle-seal.com

pressure regulators

PR-57 Series

How to Order

K/ PR57 - 1 A 1 1 C 2 N 1 4 1 C

REPAIR KIT ————

BODY MATERIALS ————

- 1 316L stainless steel
- 4 Monel®

PORT CONFIGURATION ————

- A Standard (one inlet & one outlet port)

For more port configurations, see page 35.

PROCESS PORT TYPES ————

- 1 ¼" FNPT (¼" FNPT gauge ports)
- 2 ¼" tube (¼" tube gauge ports)
- 4 ⅜" FNPT (¼" FNPT gauge ports)
- 7 AND10050-4 (¼" FNPT gauge ports)
- 8 SAE J514 (¼" FNPT gauge ports)
- 9 MS33649 (¼" FNPT gauge ports)
- F ¼" Aminco (¼" FNPT gauge ports)
- K ¼" sch 40 pipe (¼" FNPT gauge ports)

SURFACE FINISH/DIAPHRAGM CAVITY ————

- 1 < 25 Ra
- 5 < 25 Ra, with 10-32 mounting holes

SEAT MATERIALS ————

- C Polyimide (standard)
- Q PEEK™

FLOW COEFFICIENT ————

- 2 0.05 (standard)
- 5 0.2

CAP ASSEMBLY

- 1 Standard, aluminum
- 4 Panel mount, aluminum
- 5 Captured vent, aluminum
- 6 Captured vent, panel mount, aluminum
- 7 Captured vent, stainless steel
- F Stainless steel
- W Panel mount, stainless steel
- V Captured vent, panel mount, stainless steel

PISTON MATERIAL

- 4 Stainless steel/Teflon® cavity o-ring
- 5 Stainless steel/Viton® cavity o-ring
- 6 Monel®/Viton® cavity o-ring
- 7 Monel®/Teflon® cavity o-ring

PISTON TYPE

- 1 Non-self-relieving
- 3 Self-relieving

OUTLET RANGE

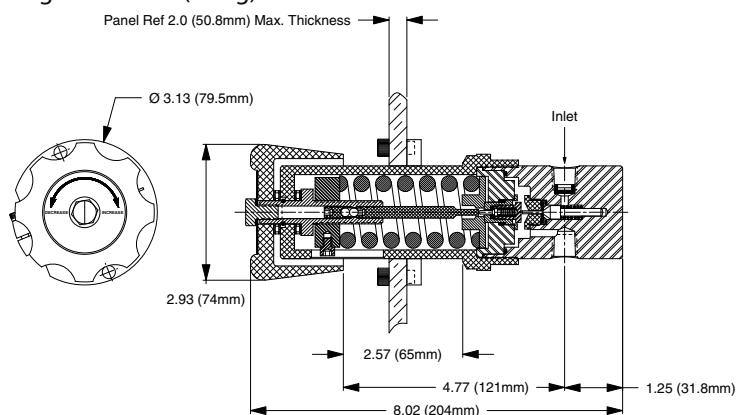
- I 0-250 psig
- J 0-500 psig
- W 0-750 psig
- K 0-1,000 psig
- L 0-2,000 psig
- N 0-4,000 psig
- O 0-6,000 psig
- P 0-7,500 psig
- Q 0-10,000 psig

Maximum Temperature & Operating Inlet Pressures

Seat Material	Maximum Temperature*	@	Maximum Operating Inlet Pressure
Polyimide	150° F (66° C)	@	10,000 psig (68.95 MPa)
PEEK™	150° F (66° C)	@	10,000 psig (68.95 MPa)

Outline & Mounting Dimensions

Weight = 4.4 lbs (2.0kg)



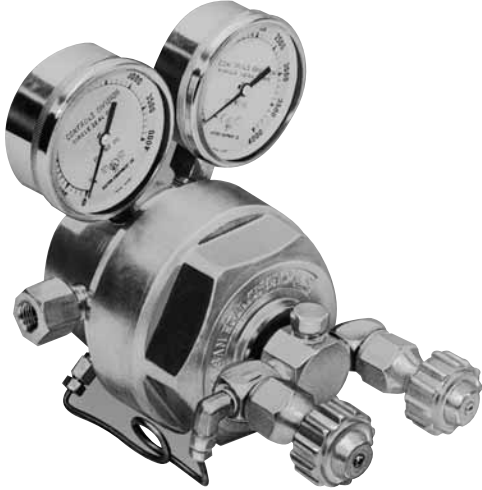
For Your Safety

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 PEEK™ is a trademark of Victrex PLC.
 Teflon® is a registered trademark of the DuPont Company.
 Viton® is a registered trademark of DuPont Dow Elastomers.

GD30 Series

Inlet & Outlet 0–3,600 psig Dome-loaded Pressure Regulators



Features

- Bubble-tight seal
- Precise control
- Rapid delivery
- Easily adjusted

Applications

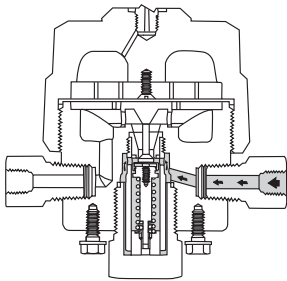
- Breathing systems
- Research laboratories
- Aircraft servicing
- Gas manifold systems
- Industrial gas plants
- Process gas control

Technical Data

Body Construction Material	Bronze
Seat Material	Neoprene
Seal Material	Copper
Diaphragm Material	Stainless steel
Gauge Material	Brass, 2½" diameter
Spring Material	Stainless steel
Port Sizes	<ul style="list-style-type: none"> • ¼", ½" pipe; AND10050–4 or –8 • Gauge ports: ¼" pipe • Dome-loaded ports: AS4395 (MS33656–4)
Pressure Rating	Inlet/Outlet: to 3,600 psig (248 BAR)
Temperature Range	–65° F to +160° F (–54° C to +71° C)
Flow Capacity	Cv = 0.35 Orifice diameter = 0.14"
Weight	<ul style="list-style-type: none"> • GD31 = 14.00 lbs • GD31R = 12.00 lbs

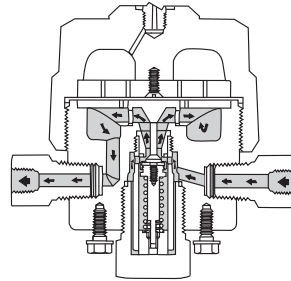
Note: Proper filtration is recommended to prevent damage to sealing surfaces.

How it Works



Closed

The unbalanced poppet is spring-loaded against the valve seat. Dead-tight sealing is ensured by a considerable force when full upstream pressure is applied over the entire effective area of the seating diameter.



Regulating

Dome-loading may be accomplished by the built-in load and bleed valve combination (or by an externally located pressure regulator) depending upon the specific model used for the application.

As the downstream process demands flow, the decreasing pressure (acting on the outlet side of the diaphragm) allows the dome pressure force to push the diaphragm and lower plate down which, in turn, unseats the poppet.

The described action permits flow to start and the pressure under the piston to gradually increase until balance is achieved between dome pressure forces and opposing downstream pressure forces.

The modulation of the poppet position continues in this manner until process flow demand ceases. The diaphragm is then moved in an upward direction, thus allowing the spring-loaded poppet to close off flow from the upstream side of the regulator

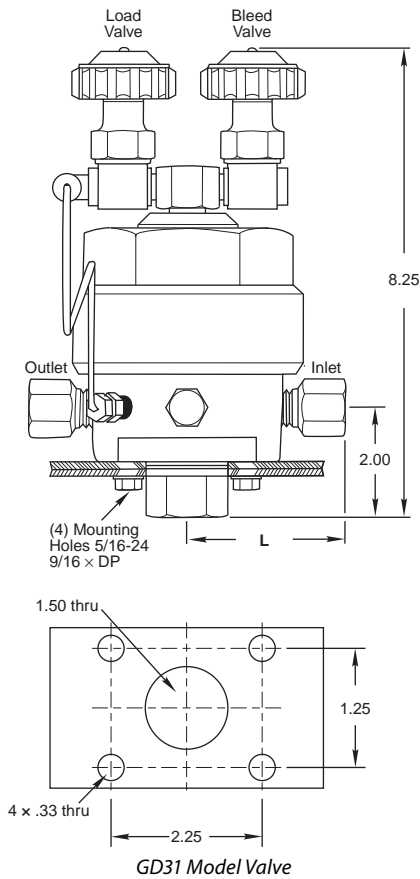
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pressure regulators

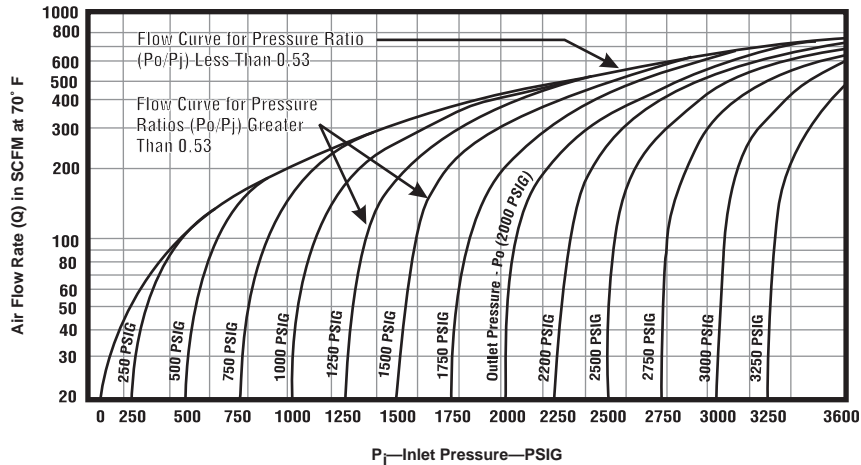
GD30 Series

Dimensions & Flow Curves



Connection	Dim. L
-1 AND10050-4	3.06
-2 AND10050-8	3.31
-3 ¼" NPT female	2.75
-4 ½" NPT female	3.31

Air Flow Chart



Correction factors for gases other than air:

Gas	Correction Factor
Air	1.000
Helium	2.690
Hydrogen	3.795
Nitrogen	1.016
Oxygen	0.951

Flow rates for gases other than air:

Air Flow Rate (Q) × correction factor

How to Order

K/ GD31 B 4 4 2 G

REPAIR KIT —————

BASIC MODEL NUMBER —————

GD31 Internal dome-loaded
GD31R Externally dome-loaded

BODY MATERIAL —————

B Bronze

INLET PORT —————

1 AND10050-4
2 AND10050-8
3 ¼" NPT female
4 ½" NPT female

OPTIONS —————

G Gauges (0-5,000 psig)

CLEANING LEVELS —————

1 For general oxygen service*
2 For general pneumatic service
3 Specify (define on sales order)

OUTLET PORT —————

1 AND10050-4
2 AND10050-8
3 ¼" NPT female
4 ½" NPT female

Outlet pressure changer per 100 psig inlet pressure change = 2.2 psi.

* Temperature range for oxygen service = -20° F to +250° F

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

For Your Safety

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BLR50 Series

Dynadome Pressure Regulator

Inlet: 600–6,000 psig ; Outlet: 100–5,800 psig



Features

- Quarter-turn control
- Accurate
- Self-venting
- High flow ($C_v = 0.50$)
- Highly reliable (no springs, diaphragms, or pistons)
- Excellent sensitivity
- 100% tested

Applications

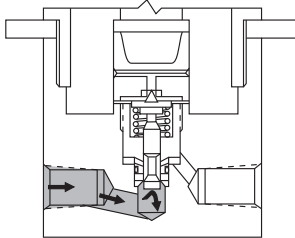
- Manufacturing process
- High pressure test systems
- Compressors
- Bulk gas delivery

Technical Data

Body Construction Material	Brass
Seat Materials	Nylatron®, Kel-F® or Polyimide
Seal Materials	Ethylene propylene, neoprene, Viton® or Buna
Port Sizes	¼", ½" pipe or ½" AND10050 ¼" gauge and vent port
Pressure Ratings	• Inlet = 600–6,000 psig (41.4–414 BAR) • Outlet = 100–5,800 psig (7–400 BAR)
Temperature Range	–65° F to +160° F (–54° C to +71° C)
Flow Capacity	$C_v = 0.50$

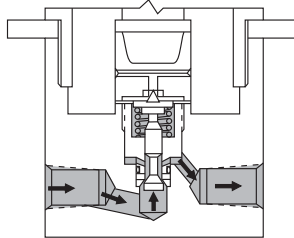
Note: Proper filtration is recommended to prevent damage to sealing surfaces.

How it Works



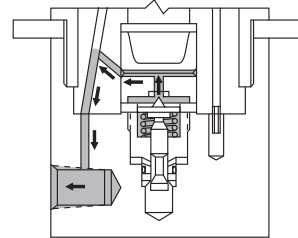
Closed

The balanced poppet is spring-loaded against the valve seat. When full upstream pressure is applied, a slight unbalanced force is developed which further enhances sealing.



Regulating

As the downstream process demands flow, the decreasing pressure (acting on the outlet side of the piston) allows the dome pressure force to push the piston down. This in turn unseats the poppet, which permits flow to start and pressure under the piston to gradually increase until a balance is achieved between the dome pressure forces. The modulation of the poppet position continues in this manner until the process flow demand ceases.



Venting

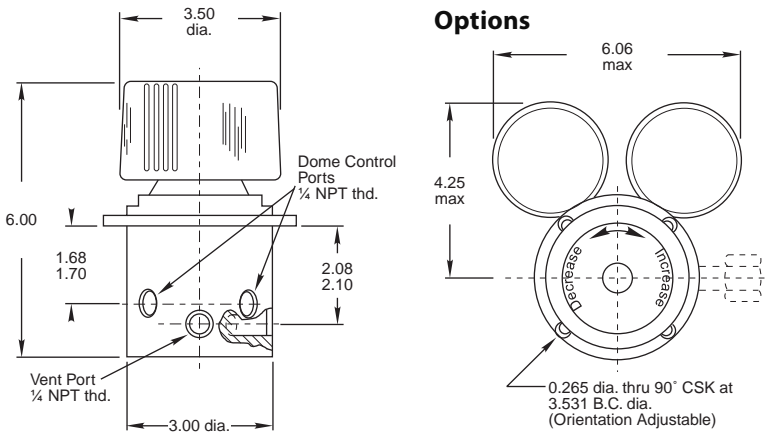
When the handle is turned to decrease the regulated pressure level, the dome pressure will vent through the dome vent and the downstream pressure will vent through the piston to the vent port.

Circle Seal Controls

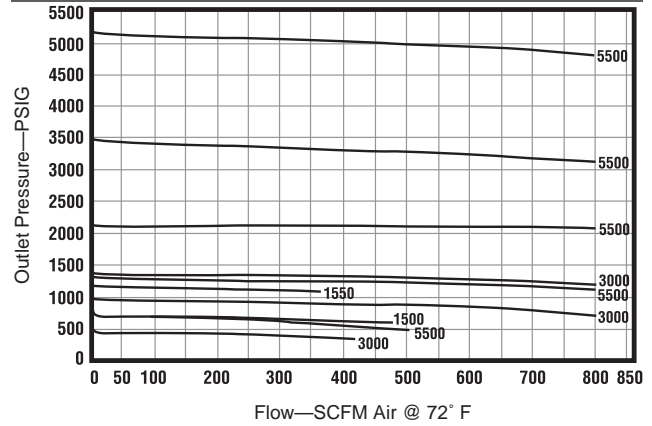
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BLR50 Series

Dimensions



Air Flow Curve



How to Order

K/ BLR50 B 1 1 1 2 G

REPAIR KIT ————— K

BODY MATERIAL ————— B
B Brass

BODY PART NUMBER INLET & OUTLET PORTS ————— 1 1 1 2
1 1/4" NPT female
2 1/2" NPT female
3 AND10050-8

SEAT MATERIAL ————— 1
0 Ethylene propylene
1 Neoprene (standard)
3 Viton®
4 Buna N

OPTIONS ————— G
G Gauges (0-7,500 psig)

CLEANING LEVELS ————— 1 1 1 2
1 General oxygen* (CSC/CCD 29.20)
2 General pneumatic (GEN CL'G)
3 Specify (define on sales order)

SEAT MATERIALS ————— 1 1 1 2 G
1 Nylatron® GS (standard)
2 Kel-F® (limited to 3,600 psig max. inlet, 3,400 psig max. outlet)
9 Polyimide (Vespel® SP-21)

* For oxygen service: 3,600 psig max. inlet pressure and temperature range of -20° F to +250° F.

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

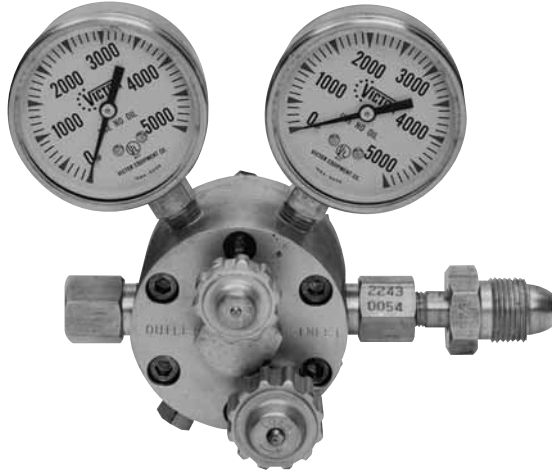
For Your Safety

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

GD62C & GD65C Series

*Internally Dome-loaded Regulator
Inlet & Outlet to 7,000 psig*



Features

- Bubble-tight seal
- High pressure
- Constant rapid delivery

Applications

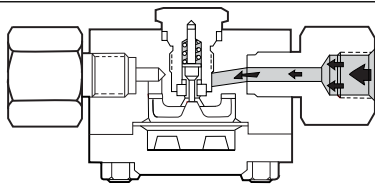
- Breathing systems
- Research laboratories
- Aircraft servicing
- Facility gas systems
- Industrial gas products
- Process gas control

Technical Data

Body Construction Material	Bronze
Seal & Diaphragm Materials	Neoprene or Viton®
Seat Material	Nylatron® or Vespel® SP-21
Gauge Material	Brass, 2½" diameter
Port Sizes	¼", ½" pipe, AND10050-4 or -8 or CGA fittings
Pressure Ratings	Inlet/Outlet: • GD62C Series: to 3,500 psig (241 BAR) • GD65C Series: to 7,000 psig (483 BAR)
Temperature Range	-65° F to +160° F (-54° C to +71° C)
Flow Capacity	Cv = 0.17 Orifice diameter = 0.095"
Weight	• GD62C = 7.00 lbs • GD65C = 10.25 lbs

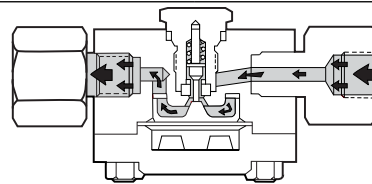
Note: Proper filtration is recommended to prevent damage to sealing surfaces.

How it Works



Closed

The unbalanced poppet is spring-loaded against the valve seat. Dead-tight sealing is ensured by a considerable force when full upstream pressure is applied over the entire effective area of the seating diameter.



Regulating

Dome-loading may be accomplished by the built-in load and bleed valve combination. The rate of pressurization of the dome may be adjusted by the small screw-type needle valve located on the side of the unit.

As the downstream process demands flow, the decreasing pressure (acting on the outlet side of the diaphragm) allows the dome pressure force to push the diaphragm and lower plate down which, in turn, unseats the poppet.

The described action permits flow to start and the pressure under the piston to gradually increase until balance is achieved between dome pressure forces and opposing downstream pressure forces.

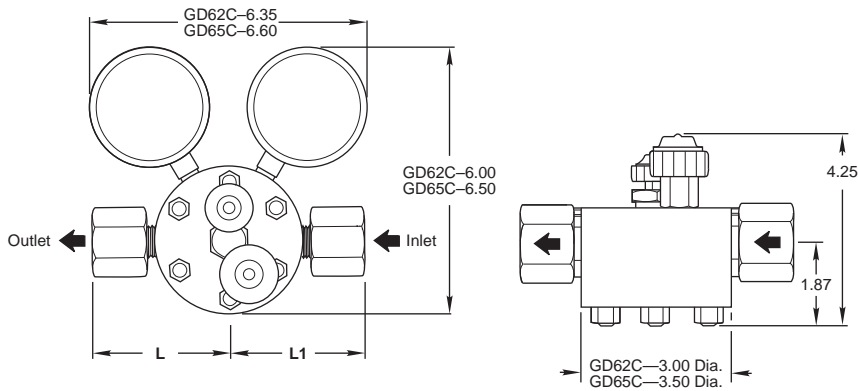
The modulation of the poppet position continues in this matter until process flow demand ceases. The diaphragm is then moved in an upward direction, thus allowing the spring-loaded poppet to close off flow from the upstream side of the regulator.

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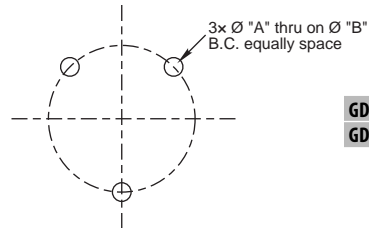
GD62C & GD65C Series

Dimensions & Flow Curves



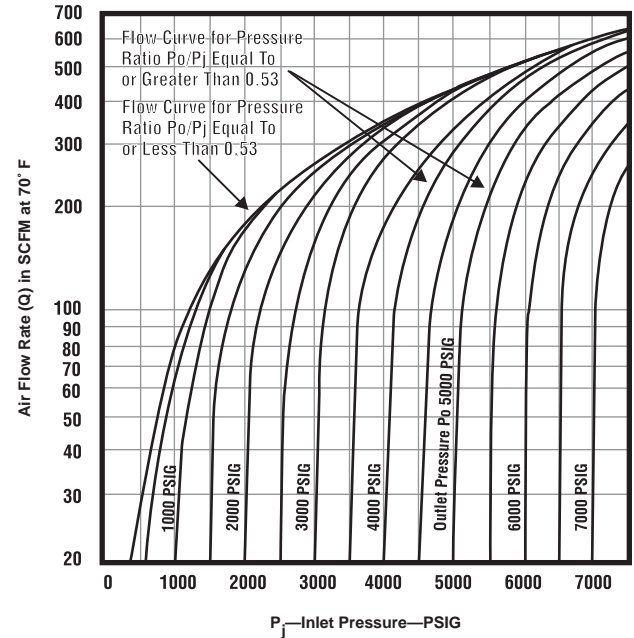
Connection	Dim	GD62C	GD65C
-1	L, L1	2.75	2.90
-2	L, L1	3.00	3.15
-3	L, L1	2.57	2.72
-4	L, L1	3.00	3.15
-7 & -8	L1	4.20	4.35

Panel Mount Detail



	A	B
GD62C	0.328	2.437
GD65C	0.390	2.812

Air Flow Chart



Correction factors for gases other than air:

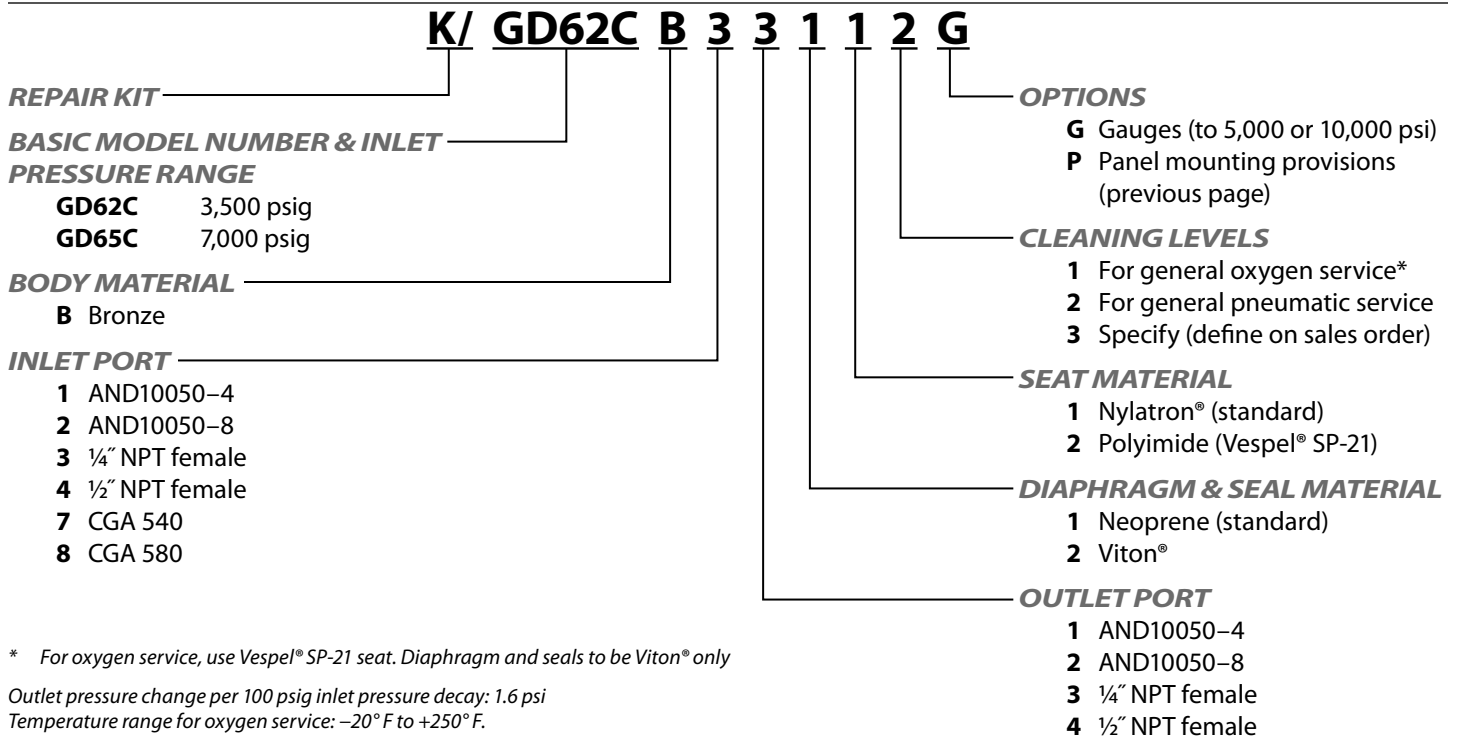
Gas	Correction Factor
Air	1.000
Helium	2.690
Hydrogen	3.795
Nitrogen	1.016
Oxygen	0.951

Flow rates for gases other than air:

Air Flow Rate (Q) × correction factor

GD62C & GD65C Series

How to Order



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

For Your Safety

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Viton® is a registered trademark of DuPont Dow Elastomers.
 Nylatron® is a registered trademark of DSM Engineering Plastic Products.

GD67A Series

*High Pressure Dome-loaded Regulator
Inlet & Outlet to 6,000 psig*



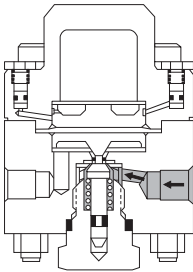
Features

- Reliable
- Accurate
- Positive shutoff for zero-leak
- Remote operated
- Rapid response
- High pressure, medium flow
- Internal pressure load or external dome loading
- Panel mount option

Applications

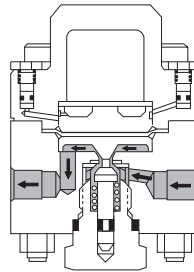
High pressure testing
Facility gas systems
Industrial gas plants
Process gas controls
Chemical/petroleum plants

How it Works



Closed

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



Regulating

Dome-loading may be accomplished by the built-in load and bleed valve combination or by an externally located pressure regulator. As the downstream process demands flow, the decreasing pressure (acting on the outlet side of the diaphragm) allows the dome pressure force to push the diaphragm and lower plate down which, in turn, unseats the poppet. This action permits flow to start and the pressure under the piston to gradually increase until balance is achieved between dome pressure forces and opposing downstream pressure forces. The modulation of the poppet position continues in this manner until process flow demand ceases. The diaphragm is then moved in an upward direction, thus allowing the spring-loaded poppet to close off flow from the upstream side of the regulator.

Technical Data

Body Construction Materials	Bronze or 303 stainless steel
Seal Materials	Neoprene, butyl, Viton® or Buna N
Seat Material	Polyimide or Kel-F®
Diaphragm Materials	Neoprene, butyl, Viton® or Buna N
Trim Material	Stainless steel
Port Size	¼" NPT female
Pressure Ratings	Inlet/Outlet: 0 to 6,000 psig (0 to 414 BAR)
Temperature Range	-65° F to +160° F (-54° C to +71° C)
Flow Capacity	Cv = 0.37 Orifice diameter = 0.145"
Weight	• Bronze = 5.50 lbs • Stainless steel = 5.00 lbs

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

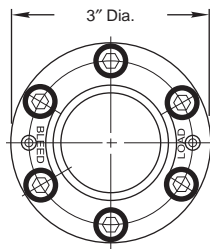
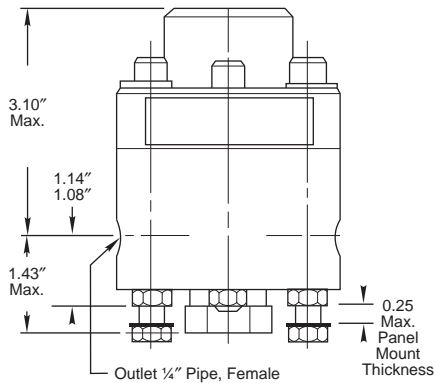
pressure regulators

Circle Seal Controls

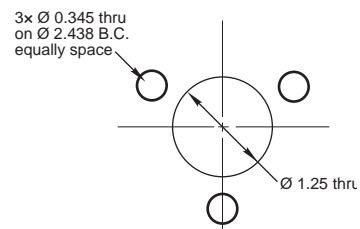
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GD67A Series

Dimensions



Panel Mount Detail



How to Order

K/ GD67A E B 4 1 5 2 P

REPAIR KIT

DOME-LOADING

- E** External
- I** Internal

INLET PORT

- B** Bronze
- T** 303 stainless steel

INLET/OUTLET PORT

- 4** 1/4" NPT female

SPECIAL FEATURES

- P** Panel mounting (see below)

CLEANING LEVELS

- 1** For general oxygen service
- 2** For general pneumatic service
- 3** To customer specifications

SEAT MATERIAL

- 2** Kel-F®
- 5** Polyimide (Vespel® SP-21)

DIAPHRAGM & SEAL MATERIAL

- 1** Neoprene (standard)
- 2** Butyl
- 3** Viton®
- 4** Buna N

* Adapter can be used to accommodate other port configurations

** For oxygen service, use Vespel® SP-21 seat, diaphragm and seals to be Viton® only. Temperature range: -20° F to +250° F.

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

For Your Safety

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Kel-F® is a registered trademark of 3M Company.

Vespel® is a registered trademark of E.I. du Pont de Nemours and Company.

GD80 Series

*High Pressure Dome-loaded Regulator
Inlet & Outlet to 10,000 psig*



Features

- High pressure
- Bubble-tight seal
- Internally or externally dome loaded

Applications

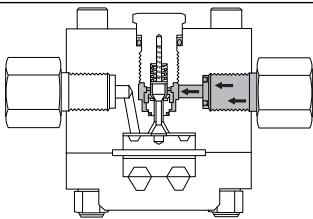
- High pressure testing
- Facility gas systems
- Industrial gas plants
- Process gas controls
- Chemical/petroleum plants

Technical Data

Body Construction Material	303 stainless steel
Seal & Diaphragm Material	Neoprene
Seat Material	Nylatron® GS
Spring Material	Stainless steel
Port Size	<ul style="list-style-type: none"> • Inlet & outlet: ¼" & ½" NPT female, ¼" & ⅝" Aminco • Dome port GD81B Series only: ¼" NPT female or ¼" Aminco
Pressure Ratings	Inlet/Outlet: 0 to 10,000 psig (690 BAR)
Temperature Range	-65° F to +160° F (-54° C to +71° C)
Flow Capacity	Cv = 0.365
Weight	28 lbs

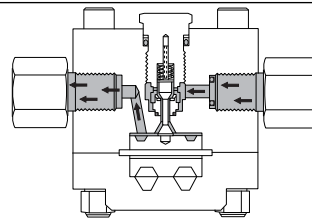
Note: Proper filtration is recommended to prevent damage to sealing surfaces.

How it Works



Closed

The balanced poppet is spring-loaded against the seat. Bubble-tight sealing is ensured (by a considerable force) when full upstream pressure is applied over the entire effective area of the seating diameter.



Regulating

Dome-loading may be accomplished by the built-in load and bleed valve combination or by an externally located pressure regulator.

As the downstream process demands flow, the decreasing pressure (acting on the outlet side of the diaphragm) allows the dome pressure force to push the diaphragm and lower plate up which, in turn, unseats the poppet.

This action permits flow to start and the pressure under the piston to gradually increase until balance is achieved between dome pressure forces and opposing downstream pressure forces. The modulation of the poppet position continues in this manner until process flow demand ceases. The diaphragm is then moved in a downward direction, thus allowing the spring-loaded poppet to close off flow from the upstream side of the regulator.

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GD80 Series

How to Order

K/ GD80A T 4 2 L M

REPAIR KIT

BASIC MODEL NUMBER

GD80A Internally dome-loaded
GD81B Externally dome-loaded

BODY MATERIAL

T 303 stainless steel

OPTIONS

L 10,000 psig 2-12" brass gauges, gauge port 1/4" pipe
M Extended bolts for mounting

CLEANING LEVELS

2 For general pneumatic service
3 Specify*
4 Precision pneumatic service

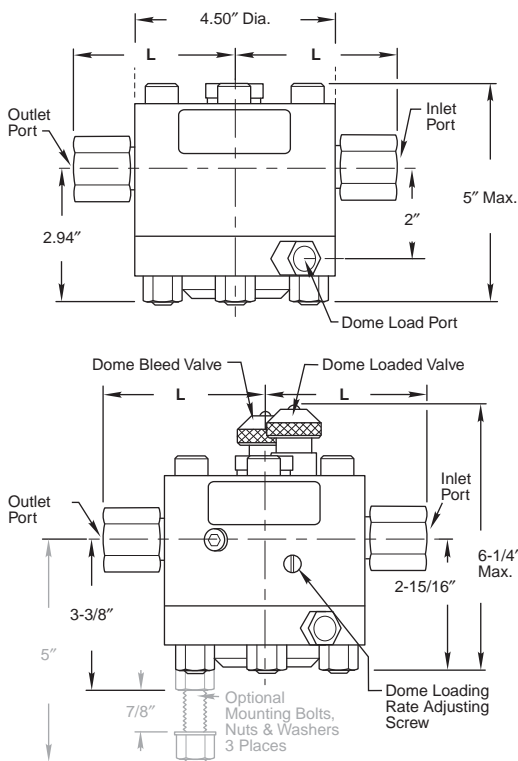
INLET/OUTLET PORT

	Size & Type	Dimension "L" (below)
4	1/4" NPT female	3 11/32"
6	1/2" NPT female	3 19/32"
7	1/4" Aminco	3 11/32"
8	3/16" Aminco	3 25/32"

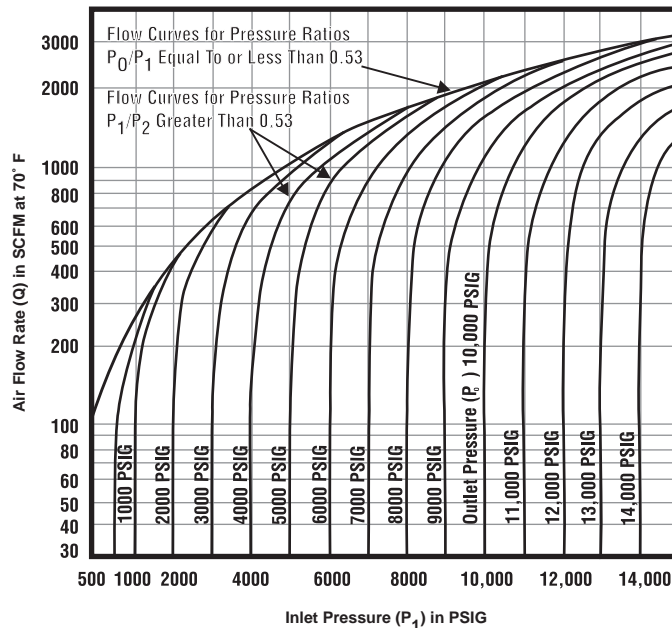
* List requirements or furnish the factory a copy of the requirements or specifications.

Outlet pressure change per 100 psig of inlet pressure change is 2 psig.

Dimensions & Flow Curves



Air Flow Chart



For Your Safety

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Nylatron® is a registered trademark of DSM Engineering Plastic Products.

GD90 Series

*Dynadome High Flow Dome-loaded Regulator
Inlet & Outlet to 6,000 psig*



Features

- High flow capacity
- Accurate pressure regulation
- Wide fluid compatibility

Applications

- High pressure testing
- Facility gas systems
- Industrial gas plants
- Process gas controls
- Bulk facility installations
- Gas turbine engine starter

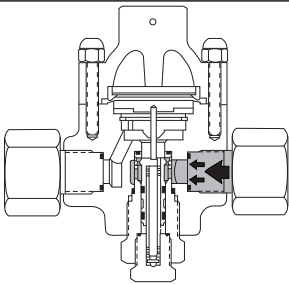
Technical Data

Body Construction Material	Bronze
Seal & Diaphragm Material	Neoprene*
Seat Material	Nylatron**
Spring Material	Stainless steel
Port Sizes	Inlet & outlet: 3/4", 1" & 1 1/4" NPT female, AND10050-12, -16, or -24
Pressure Ratings	Inlet/Outlet to 6,000 psig (414 BAR)
Temperature Range	-65° F to +160° F (-54° C to +71° C)
Flow Capacity	Cv = 5.0 Orifice diameter = 0.50"
Weight	Approx. 25 lbs

* Optional materials available, see "How to Order".

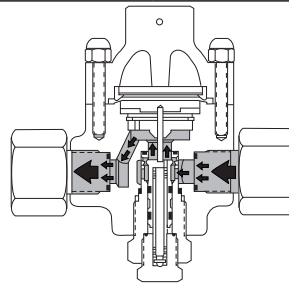
Note: Proper filtration is recommended to prevent damage to sealing surfaces.

How it Works



Closed

The balanced poppet is spring-loaded against the valve seat. When full upstream pressure is applied, a slight unbalanced force is developed which further enhances sealing.



Regulating

Dome-loading may be accomplished by the load and bleed valve combination or by an externally located pressure regulator, depending on the specific model used for the application.

As the downstream process demands flow, the decreasing pressure (acting on the outlet side of the diaphragm) allows the dome pressure force to push the diaphragm and lower plate down which, in turn, unseats the poppet.

The described action permits flow to start and the pressure under the piston to gradually increase until balance is achieved between dome pressure forces and opposing downstream pressure forces.

The modulation of the poppet position continues in this manner until process flow demand ceases. The diaphragm is then moved in an upward direction, thus allowing the spring-loaded poppet to close off flow from the upstream side of the regulator.

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GD90 Series

How to Order

K/ GD91 B 1 1 1 1 1 M X

REPAIR KIT —————

BASIC MODEL NUMBER —————

GD91 Externally remote dome-loaded
 GD92 Internally dome-loaded

BODY MATERIAL —————

B Bronze

INLET PORT TYPE & SIZE —————

1 AND10050-12
 2 AND10050-16
 3 AND10050-24
 4 3/4" NPT female
 5 1" NPT female
 6 1 1/4" NPT female

OUTLET PORT TYPE & SIZE —————

1 AND10050-12
 2 AND10050-16
 3 AND10050-24
 4 3/4" NPT female
 5 1" NPT female
 6 1 1/4" NPT female

OPTIONS

M Extended bolts for mounting
 X Downstream sensing

CLEANING LEVELS

1 For general oxygen service*
 2 For general pneumatic service
 3 Specify (define on sales order)
 4 Precision pneumatic service

SEAT MATERIAL

1 Nylatron® GS (standard)
 2 Kel-F®**
 3 Polyimide (VespeI®)

SEAL MATERIAL

1 Neoprene (standard)
 2 EPR
 3 Viton®
 4 Buna N

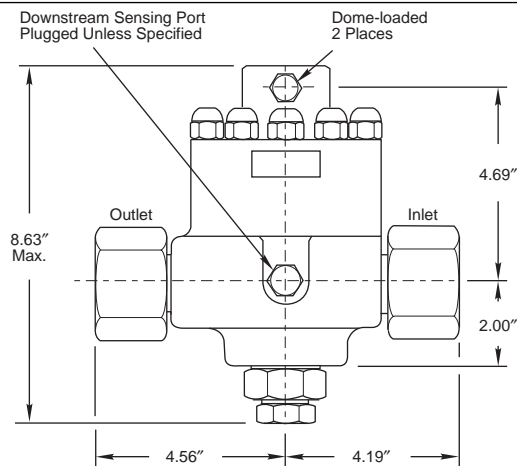
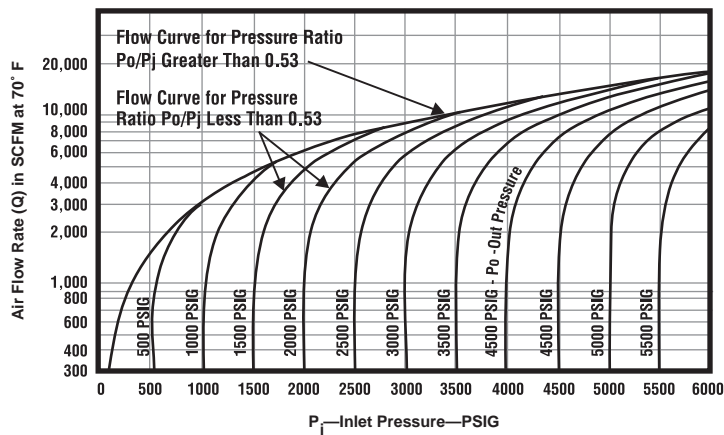
* For oxygen service, use VespeI® seat; seal and diaphragm to be Viton® only
** Kel-F® seat: inlet & outlet pressures limited to 3,000 psig

Dome-loading ports are AND10050-4 with tube fittings and 1/4" NPT female with pipe on inlet and outlet fittings.
Outlet pressure change rate: 0.10 psi per 100 psi inlet pressure change

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

Flow Curves & Dimensions

Air Flow Chart



Correction factors for gases other than air:

Gas	Correction Factor
Air	1.000
Helium	2.690
Hydrogen	3.795
Nitrogen	1.016
Oxygen	0.951

Flow rates for gases other than air:

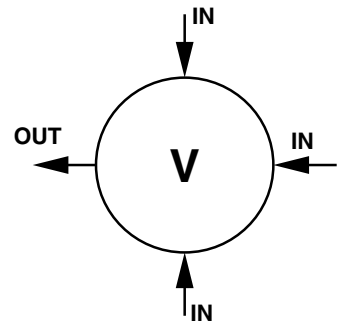
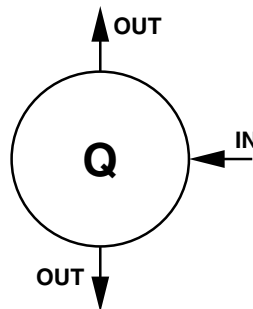
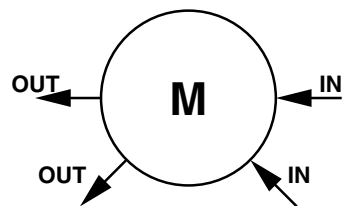
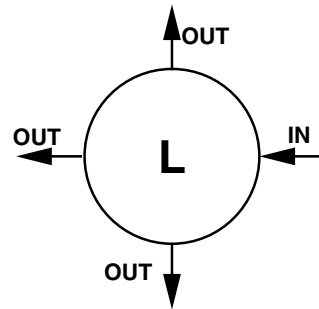
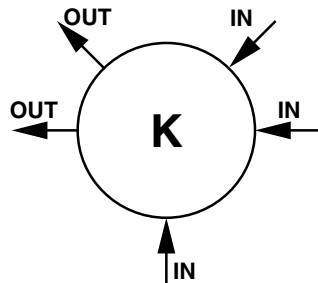
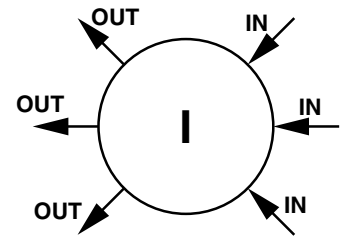
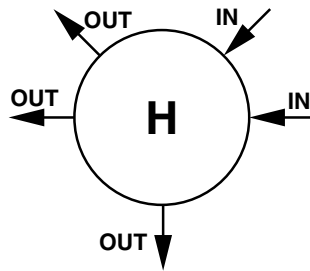
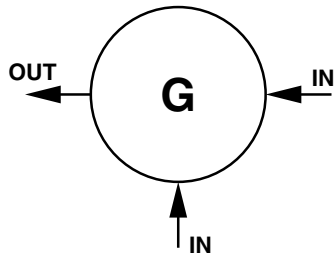
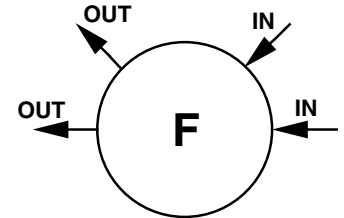
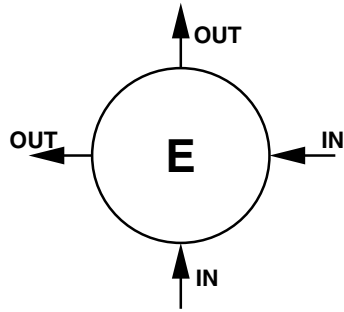
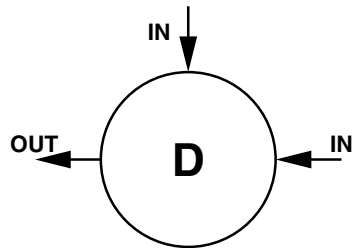
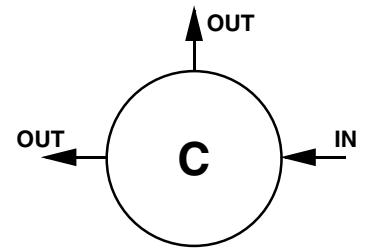
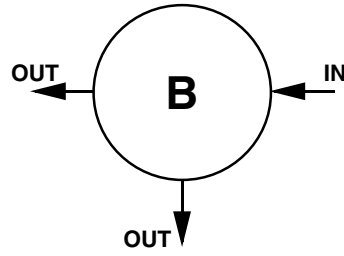
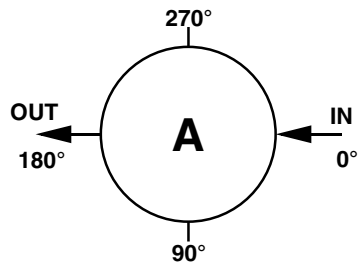
Air Flow Rate (Q) × correction factor

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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.

Porting Configurations for Pressure Regulators



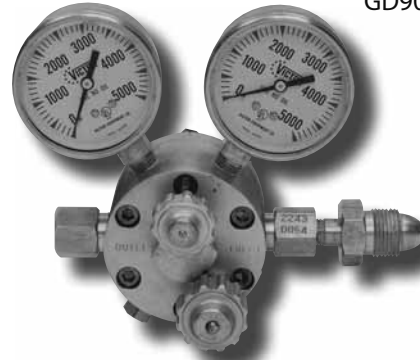
Location Of Ports From Top View

Pressure Regulators

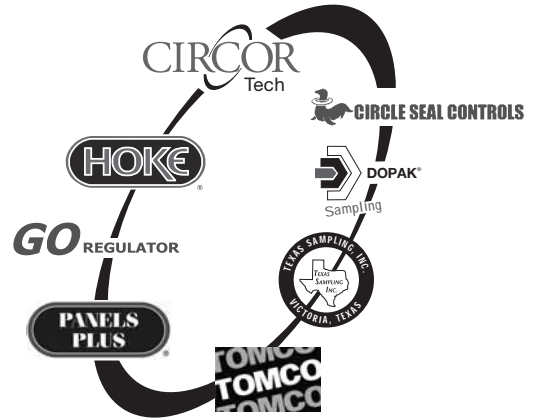
Manual Adjusted and Dome-loaded

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pressure regulators



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CIT markets primarily to the petrochemical, refining, power generation, food and beverage, semiconductor, and pharmaceutical industries, and to OEM's. CIT separates itself from the competition by offering highly engineered components manufactured to exacting standards and a variety of custom options.