Heavy Duty Brass Final Line Pressure Regulator

BR-1780 Series

Application

The BR-1780 Series Regulators are designed for final line pressure regulation on medical oxygen systems. They are equally suitable for a variety of gases in medical or industrial applications. The BR-1780 Series Regulators have a balanced seat, are constructed with oxygen compatible materials, and offer a tamper resistant adjustment screw cap. Flow performance is impressive as well offering up to 30,000 SCFH for the 3/4" and 1" model and up to 20,000 SCFH for the 1/2" model.

Features

- Maintains a steady downstream pressure across a range of inlet pressure commonly provided by a cryogenic bulk tank.
- Large seat and diaphragm areas provide high capacity with sensitive control of delivery pressure with low falloff.
- Two 1/4" FNPT delivery pressure gauge ports are located (plugged) on each side of the valve.
- Two bonnet drain/vent holes to allow for different mounting orientation.
- Bonnet cap to cover adjusting screw for tamper protection.
- Maximum inlet pressure is 400 psig.
- Available in four delivery pressure ranges.
- Temperature range: -40° F to 165° F.
- Cleaned per CGA G-4.1 for oxygen service.

Materials

Body .....Forged Brass
Bonnet.....Cast bronze for BR-1786/1788
Forged brass for BR-1784
Diaphragm .....Nitrile with PTFE liner
Springs, fasteners, and adjusting screw.....Stainless Steel
Other valve parts.....Brass
Seat Disc & O-Rings .....Viton is standard

For Carbon Dioxide and Nitrous Oxide Service: Specify EPDM material for seat disc and 0-Rings, add "E" to end of part number.

BR-1784

BR-1786 and BR-1788

Maintenance and Options Kits

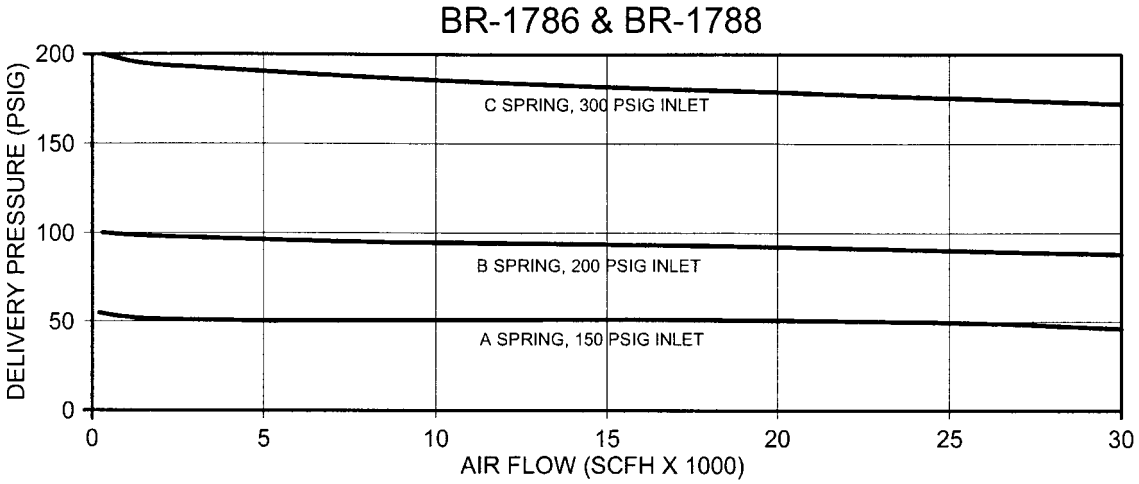
Regulator Models	BR-1784	BR-1786	BR-1788
Repair Kit Part Number	BR-1784-80	BR-1786-80	BR-1786-80
Spring Kit Part Numbers:			
"A" spring 5 –55 psig	BR-1784-7SKA	BR-1786-7SKA	BR-1788-7SKA
"B" spring 40-110 psig	BR-1784-7SKB	BR-1786-7SKB	BR-1788-7SKB
"C" spring 100-200 psig	BR-1784-7SKC	BR-1786-7SKC	BR-1788-7SKC
T-Handle Screw Option Kit	BR-1784ST	BR-1786ST	BR-1786ST

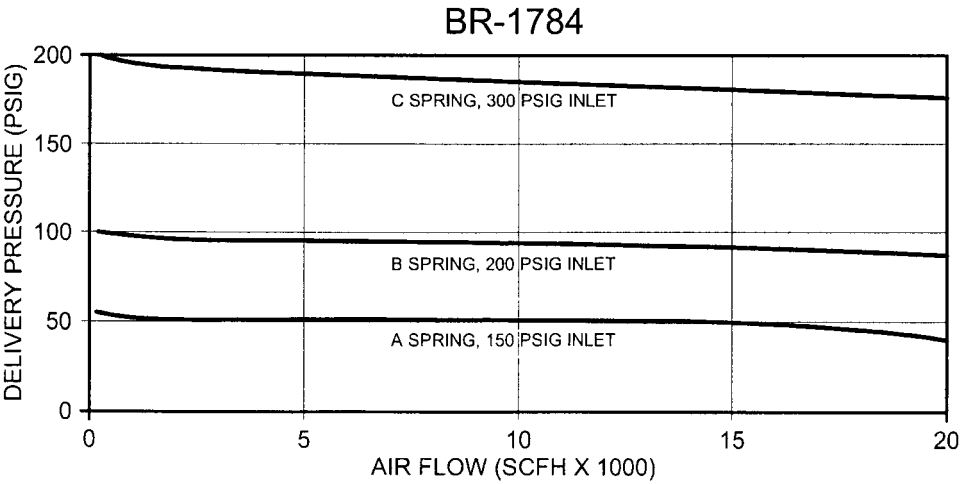
Heavy Duty Brass Final Line Pressure Regulator

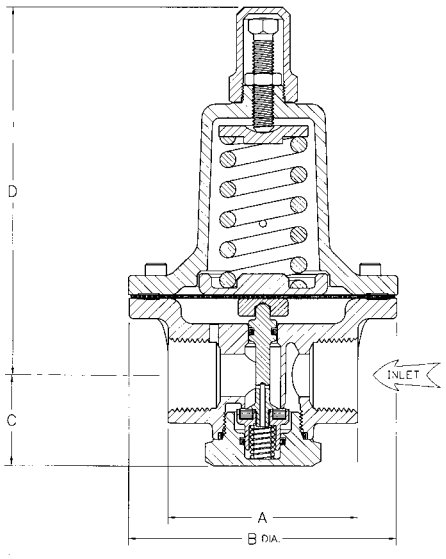
BR-1780 Series

Flow Performance

See the Rego Flow Performance Curves section of the catalog for more detailed flow curves.







Dimensions

The BR-1780 Series Regulators have inlet and outlet connection dimensions similar to the popular 1680 Series aluminum regulators. This means that you can replace the respective size 1680 Series regulator with the new BR-1780 Series regulator and have the improved performance and premium features available on the BR-1780 Series

For Carbon Dioxide or Nitrous Oxide Service, add “E” to end of part number.

Part Number	Delivery Pressure Range	Pressure Gauge*		Inlet & Outlet (F.N.P.T.)	Dimensions				C_v
		Range (PSI)	P/N		"A"	"B"	"C"	"D"	
BR-1784A	5-55 psig	1-100	1286	1/2"	2.82"	3.62"	1.38"	5.21"	3.1
BR-1784B	40-110 psig	1-200	S1679	1/2"	2.82"	3.62"	1.38"	5.21"	3.1
BR-1784C	100-200 psig	1-400	15578	1/2"	2.82"	3.62"	1.38"	5.21"	3.1
BR-1786A	5-55 psig	1-100	1286	3/4"	3.31"	4.69"	1.60"	6.46"	4.8
BR-1786B	40-110 psig	1-200	S1679	3/4"	3.31"	4.69"	1.60"	6.46"	4.8
BR-1786C	100-200 psig	1-400	15578	3/4"	3.31"	4.69"	1.60"	6.46"	4.8
BR-1788A	5-55 psig	1-100	1286	1"	3.31"	4.69"	1.60"	6.46"	5.5
BR-1788B	40-110 psig	1-200	S1679	1"	3.31"	4.69"	1.60"	6.46"	5.5
BR-1788C	100-200 psig	1-400	15578	1"	3.31"	4.69"	1.60"	6.46"	5.5

*Regulator sold without gauge. Order gauge separately.

Heavy Duty Gas Line Regulator

1780 Series

Application

The 1780 Series Regulators are designed for final line pressure regulation on gas distribution systems. They are suitable for a variety of gases in medical or industrial applications. The 1780 Series Regulators have a balanced seat, are constructed with oxygen compatible materials, and have the same valve design, brass body, and internal parts as the premium BR-1780 Series. Flow performance is likewise equal to the BR-1780 Series.

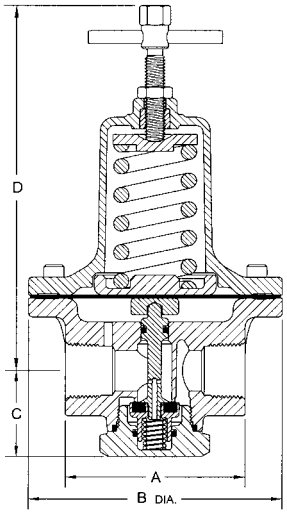
Features

- Maintains a steady downstream pressure across a range of inlet pressure commonly provided by a cryogenic bulk tank.
- Large seat and diaphragm areas provide high capacity with sensitive control of delivery pressure with low falloff.
- Two 1/4" FNPT delivery pressure gauge ports are located (plugged) on each side of the valve.
- Two bonnet drain/vent holes to allow for different mounting orientation.
- T-handle adjusting screw.
- Maximum inlet pressure is 400 psig.
- Available in three delivery pressure ranges.
- Temperature range: -40 F to 165 F.
- Cleaned per CGA G-4.1 for oxygen service.

Materials

- Body.....Forged Brass
- Bonnet.....Nickel Plated Aluminum
- Diaphragm .....Nitrile with PTFE liner
- Springs and fasteners.....Stainless Steel
- Other valve parts.....Brass
- Seat Disc & O-Rings .....Viton is standard

For Carbon Dioxide or Nitrous Oxide service: Specify EPDM material for seat disc and O-rings, add “E” to end of part number.



Dimensions

The 1780 Series Regulators have inlet and outlet connection dimensions similar to the popular 1680 Series aluminum regulators. This means that you can replace the respective size 1680 Series regulator with the new 1780 Series regulator and have the improved balanced seat performance.

Ordering Information

Part Number	Delivery Pressure Range	Pressure Gauge* Range (PSI)	P/N	Inlet & Outlet (F.N.P.T.)	Dimensions				Cv
					"A"	"B"	"C"	"D"	
1784A	5-55 psig	1-100	1286	1/2"	2.82"	3.62"	1.38"	5.47"	3.1
1784B	40-110 psig	1-200	S1679	1/2"	2.82"	3.62"	1.38"	5.47"	3.1
1784C	100-200 psig	1-400	15578	1/2"	2.82"	3.62"	1.38"	5.47"	3.1
1786A	5-55 psig	1-100	1286	3/4"	3.31"	4.69"	1.60"	6.84"	4.8
1786B	40-110 psig	1-200	S1679	3/4"	3.31"	4.69"	1.60"	6.84"	4.8
1786C	100-200 psig	1-400	15578	3/4"	3.31"	4.69"	1.60"	6.84"	4.8
1788A	5-55 psig	1-100	1286	1"	3.31"	4.69"	1.60"	6.84"	5.5
1788B	40-110 psig	1-200	S1679	1"	3.31"	4.69"	1.60"	6.84"	5.5
1788C	100-200 psig	1-400	15578	1"	3.31"	4.69"	1.60"	6.84"	5.5

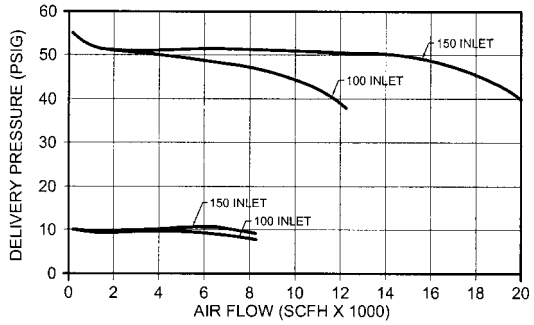
* Regulator sold without gauge. Order gauge separately.

Heavy Duty Line Regulators Performance Curves

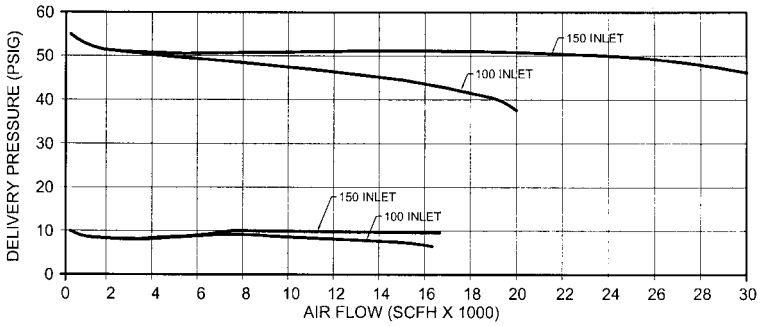
1780 Series
BR-1780 Series

"A" spring range 5 - 55 psig

1784A & BR-1784A

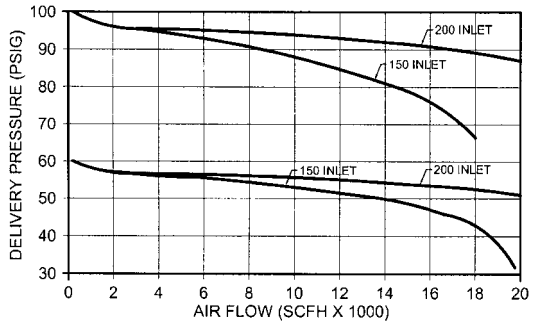


1786A, 1788A, BR-1786A & BR-1788A

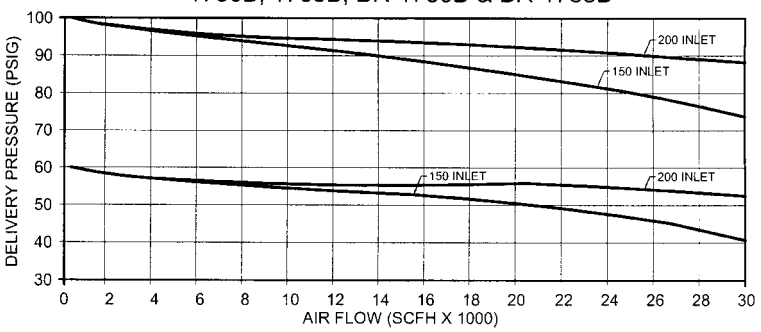


"B" spring range 40 - 110 psig

1784B & BR-1784B

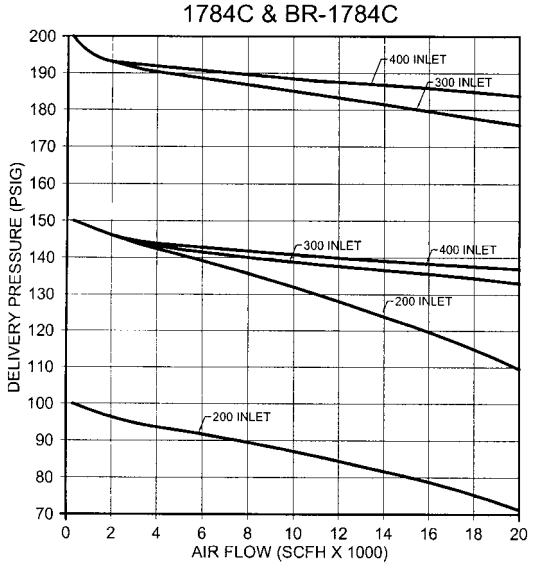


1786B, 1788B, BR-1786B & BR-1788B

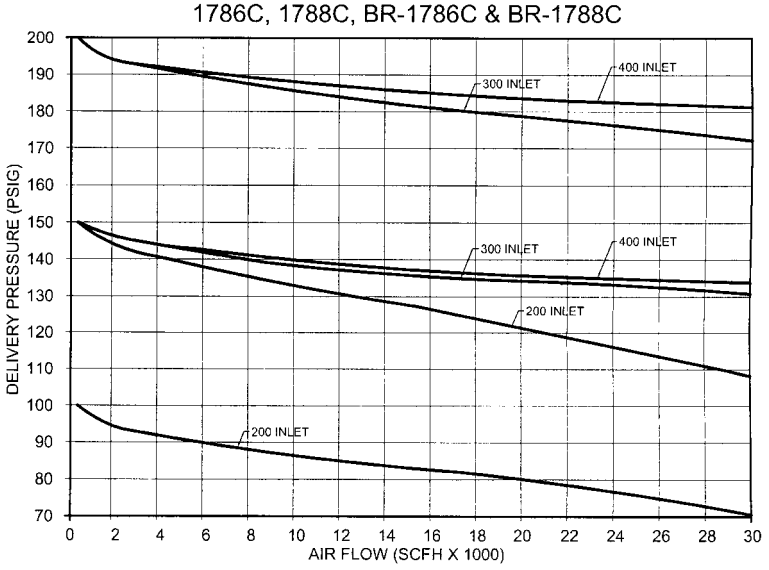


"C" spring range 100 - 200 psig

1784C & BR-1784C



1786C, 1788C, BR-1786C & BR-1788C



Gas Conversion Table

Service	Multiply Air Capacity By:
Acetylene (15 psi max.)	1.06
Argon	0.85
Carbon Dioxide	0.81

Service	Multiply Air Capacity By:
Fuel Gases	0.86
Helium	2.69
Hydrogen	3.79
Nitrogen	1.02

Service	Multiply Air Capacity By:
Nitrous Oxide	0.81
Oxygen	0.95

Automatic Changeover Regulators

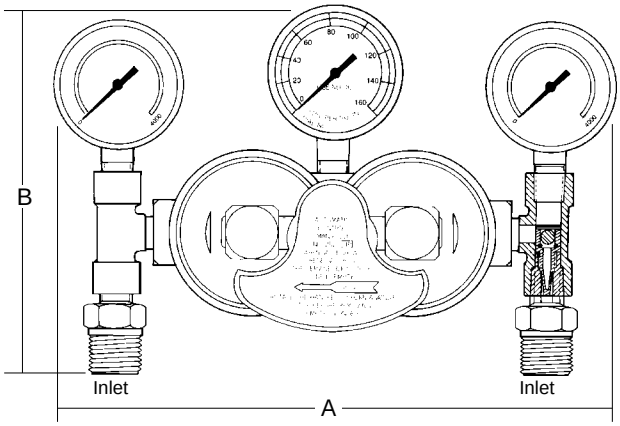
M2523HP Series

Application

The M2523HP series automatic changeover regulators are designed especially for use in systems where a reserve cylinder is used to provide a continuous, uninterrupted supply of gas. These regulators are suitable for use with carbon dioxide, hydrogen, oxygen, industrial air, nitrous oxide, nitrogen, helium and argon.

Features

- Automatically withdraws from reserve cylinder after exhausting the “service” cylinder.
- Cylinder pressure gauges let you know at a glance which cylinder is in use. There is no need to shutdown the system to replace empty cylinders.
- Nickel plated.
- Porous bronze filters are installed in each inlet to minimize the entry of foreign particles.
- Back pressure check valves are installed in each inlet to help assure positive shut-off in case of reverse flow.
- Each unit comes complete with mounting bracket and a special delivery pressure adjustment wrench.
- Factory set at 50 PSIG on service side. CO2 and N2O regulators are factory set at 100 PSIG on service side.



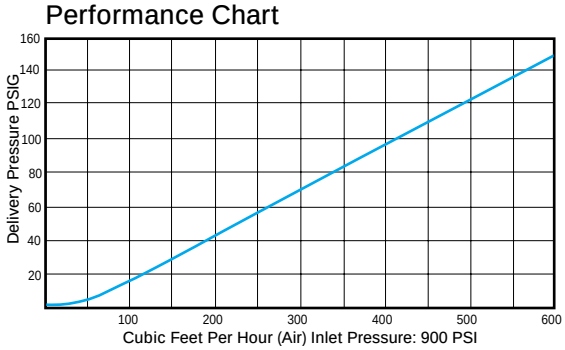
Materials

Body.....Brass
Bonnet.....Brass
Seat Disc (all gases except CO_2).....Viton
(CO_2 only).....Butyl Rubber
Diaphragm (all gases except CO_2).....Neoprene
(CO_2 only).....Buna N
Handle.....Aluminum
Bonnet Spring.....Steel
Backcap Spring.....Stainless Steel

Conversion Table

Service	Multiply
Carbon Dioxide	.81
Nitrogen	1.02
Nitrous Oxide	.81
Argon	.85
Oxygen	.95
Helium	2.69
Hydrogen	3.79

Performance Chart



Ordering Information

Part Number	Gas Service	CGA Inlet Connection	Outlet Connection	Width A	Height B	Maximum Inlet Pressure (PSIG)	Delivery Pressure Range (PSIG)	Accessory Regulators*
M2523HP320	Carbon Dioxide	320	¼” F.NPT	7¾”	5⅛”	1800	30-130	BR-1784E, 1784E C-1682 M Series
M2523HP326	Nitrous Oxide	326						
M2523HP350	Hydrogen	350				3000		1784 Series 1682 M Series BR 1784 Series
M2523HP540	Oxygen	540						
M2523HP580	Nitrogen, Argon, Helium	580						
M2523HP590	Industrial Air	590						

* Can be used downside of the M2523HP as a final line pressure regulator. See pages 22 through 25 and page 29.

Low Temperature Line Regulators

B-9470M Series
BR-9470 Series

BR-9470
Brass Body
& Bonnet

B-9470
Aluminum
Body & Bonnet

Application

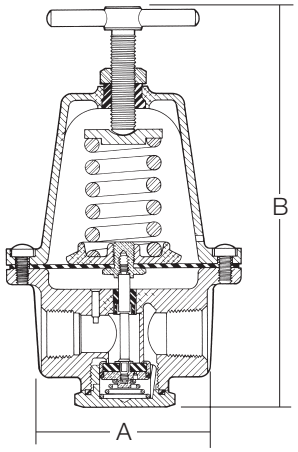
The 9470 Series Regulators are designed to help prevent downstream regulation failures caused by slugs of liquid drawn into the regulator during heavy flow requirements.This series is suitable for continuous temperatures down to -40°F.

Features

- Two ¼" F.NPT gauge ports are located 180° apart to allow for convenient gauge mounting.
- Each regulator is cleaned and packaged per CGA G-4.1.
- Maximum inlet pressure is 400 PSIG.
- Working temperature range is -40°F to +165°F.
- Available with Brass Body and Bonnet.

Materials

Body	B-9470M	Forged Aluminum
	BR-9470	Brass
Bonnet	B-9470M	Cast Aluminum
	BR-9470	Brass
Seat Disc	B-9470M	Fluorosilicone
	BR-9470	Fluorosilicone
Diaphragm		Phosphor Bronze and PTFE

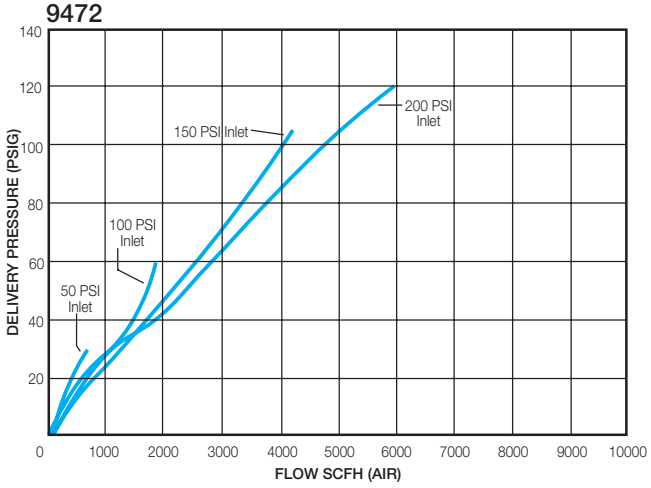


Ordering Information

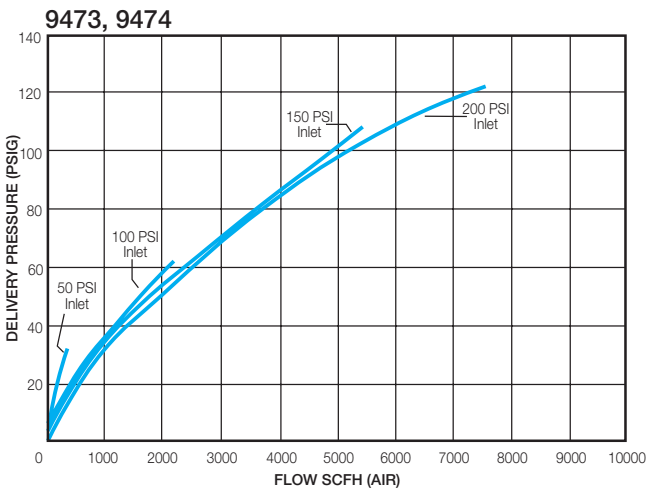
Part Number		Inlet / Outlet Connections (F.NPT)	Width A	Height (Maximum) B	Delivery Pressure Range (PSIG)
B-9472M	BR-9472	½"	2 15/16"	4⅞"	10-125
B-9473M	BR-9473	¾"	3½"	7"	
B-9474M		1"			

Performance Charts

9472



9473, 9474



Low Pressure Line Regulators

4403 Series

Application

The 4403 series regulators provide very sensitive control of a variety of gases at low pressures. The large molded diaphragm assures responsive regulation with inlet pressures up to 250 PSI.

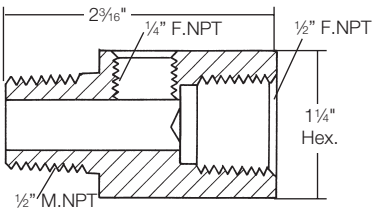
Features

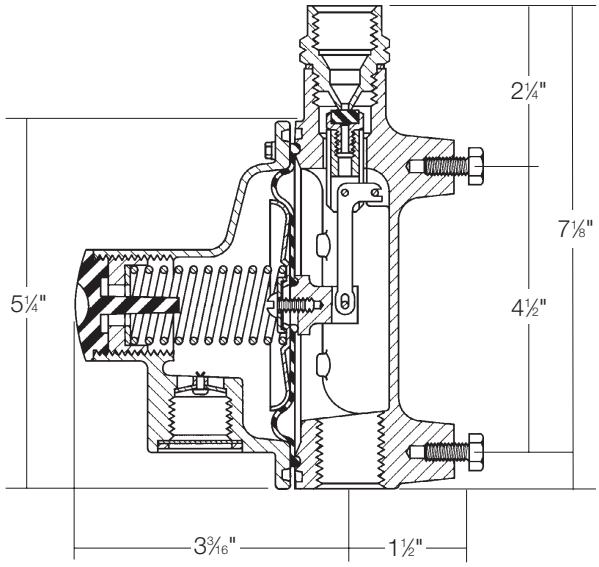
- Large molded diaphragm provides highly sensitive and accurate low pressure control.
- Zinc body and bonnet resist corrosion and provide for longer life.
- Teflon seat disc, teflon faced diaphragms, and stainless steel nozzles make the T4403J regulators compatible with a variety of gases.
- LV4403C2H42 features integral relief valve set at 3 psig.
- Adjusting screw is concealed by a plastic cap which helps prevent pressure adjustments by unauthorized personnel.
- Working temperature range is -40°F to +165°F.

Materials

Body .....Zinc
Bonnet .....Zinc
Diaphragm ...T4403J, 4403W, S4, T4, U4 Teflon Faced Buna N
4403WP4, R4 .....Buna N
(LV4403C) .....Integrated Fabric and Synthetic Rubber
Spring .....Steel
Seat (T4403J) .....PTFE
(4403W) (LV4403C) .....Buna N
Nozzle (T4403J).....Stainless Steel
(4403W, LV4403C) .....Brass

1494-1 Pressure Gauge Adapter





Ordering Information

Part Number	Inlet Connection	Outlet Connection	Factory Delivery Pressure*	Delivery Adjustment Range	Relief Setting
4403W-P4	½" F. NPT	½" F. NPT	6" w.c.	3.5 - 6" w.c.	None
4403W-R4			25" w.c.	15 - 28" w.c.	
4403W-S4			5 PSIG	1 - 5 PSIG	
4403W-T4			10 PSIG	5 - 10 PSIG	
4403W-U4			15 PSIG	10 - 15 PSIG	
LV4403C2H42	¼" F. NPT		1.5 PSIG	1.5 PSIG	3 PSIG ± 20%
T4403JS2			5 PSIG	1 - 5 PSIG	None
T4403JT2			10 PSIG	5 - 10 PSIG	

* Based on 50 PSIG inlet pressure. LV4403C2H42 based on 100 PSIG inlet pressure.

Aluminum Pressure Regulators

1682M Series
C-1682M Series

Application
The 1682M Series Regulators are designed primarily for second stage regulation of a variety of gases in industrial piping systems, hospital piping systems and manifold systems.
The C-1682M Series is specifically designed for use with Carbon Dioxide.

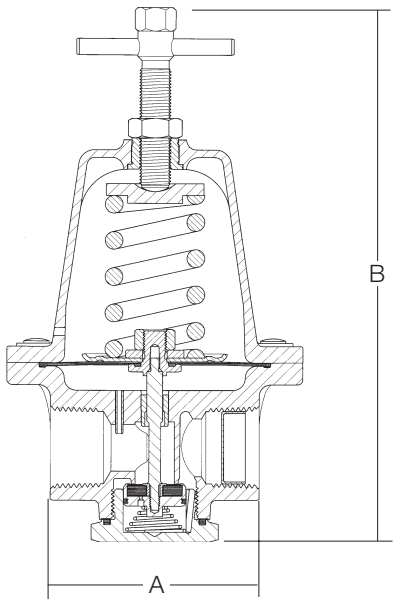
Features
- Maximum inlet pressure is 400 PSIG.
- Two ¼" F.NPT gauge ports are located 180° apart to allow for gauge mounting in the most convenient positions.
- Each 1680M Series regulator is cleaned and packaged per CGA G-4.1.

Materials
Body.....Forged Aluminum
Bonnet.....Cast Aluminum
Seat Disc (1682M) .....Neoprene
(C-1682M) ..... EPDM
Diaphragm (1682M) .....Neoprene
(C-1682M) ..... EPDM

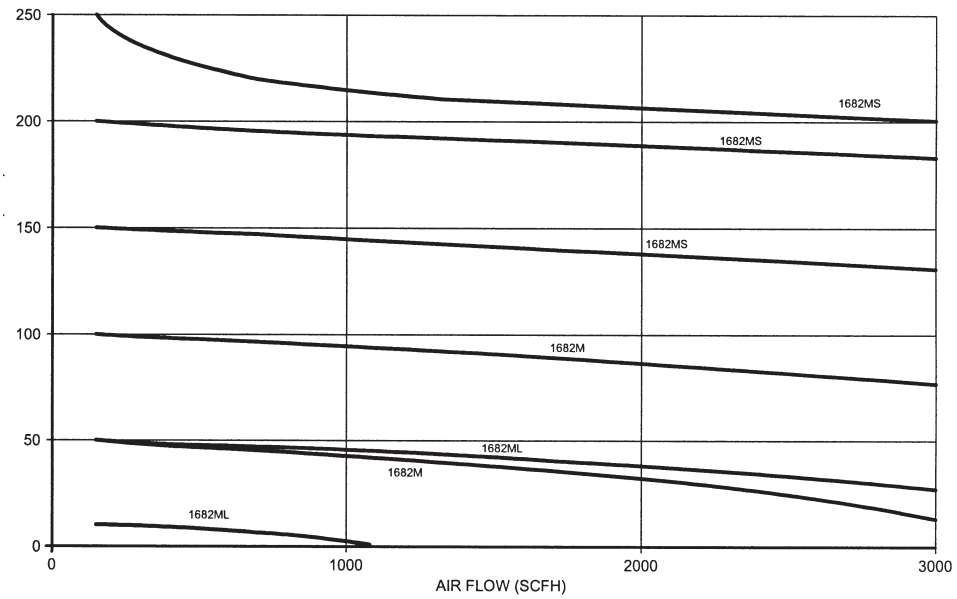
Ordering Information

Part Number		Delivery Pressure Range (PSI)	Pressure Gauge		Inlet & Outlet Conn. (F.NPT)	Width A	Maximum Height B
			Range (PSI)	Part Number			
1682ML	C-1682ML	5-50	*	*	¼"	2 3/16"	4 1/8"
1682MLG	C-1682MLG		1-100	1286			
1682M	C-1682M	50-125	*	*			
1682MG	C-1682MG		1-200	S1679			
1682MS	C-1682MS	100-250	*	*			
1682MSG	C-1682MSG		1-400	15578			

* Pressure gauge not included.

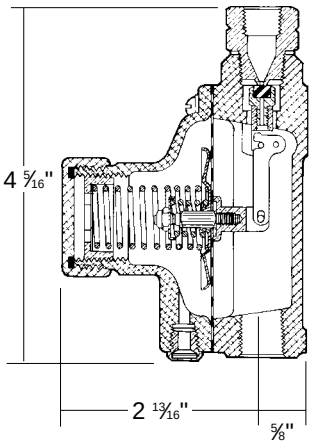


1682M SERIES REGULATOR FLOW PERFORMANCE



Low Pressure Regulators

4286-10 Series
4289-10 Series



Application

The 4286 and 4289 series inertrol third-stage low pressure regulators are designed especially for secondary regulation of gaseous nitrogen on electrical transformer systems.

These regulators are factory preset at 14” to 15” water column delivery pressure with an inlet pressure of 5 to 10 PSIG.

Features

- Large diaphragm allows for highly sensitive and accurate low pressure control.
- Incorporates integral relief valves (except on 4289-10).
- Aluminum body and bonnet resist corrosion and provide longer life.
- Adjusting screw is concealed by a cap to help prevent against tampering by unauthorized personnel.
- Operating temperature range is -40°F to +160°F.

Materials

Body.....Aluminum
Bonnet.....Aluminum
Diaphragm.....Buna N
Seat Disc.....Buna N
Spring .....Steel

Ordering Information

Part Number	Inlet (NPT)	Outlet (NPT)	Delivery Pressure Setting	Relief Valve Setting
4286-10-5	¼”	⅜”	14”-15” w. c.	5 PSIG
4286-10-8				8 PSIG
4289-10				None

Alarm Gauges

4285-9A

Application

The 4285-9A inertrol alarm gauges are designed to alert the user when pressure has fluctuated ±90 PSIG from the 300 PSIG factory setting. Under these conditions, electrical contacts in the gauge will close and set off a user-furnished alarm system.

Features

- Solid brass gauge casing resists corrosion and provides for longer life.
- Equipped with a heavy-duty, 36” long, 3-wire electrical cable.
- Each gauge is factory pre-set at 300 PSIG, then sealed to help prevent against tampering once in service.
- Electrical circuit is rated for a maximum of 3 AMPS at 460 volts AC.

Materials

Gauge Casing .....Brass

Ordering Information

Part Number	Inlet M.NPT	Diameter	Pressure Range (PSIG)	Adjustable	Alarm Furnished
4285-9A	¼”	2½”	0-4000	No	None