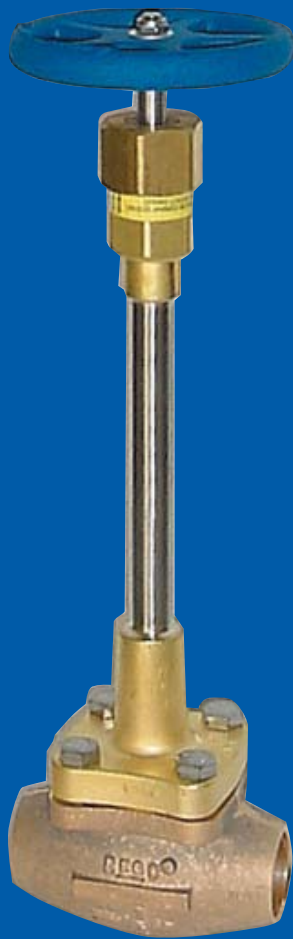


# INDUSTRIAL GAS & CRYOGENIC EQUIPMENT



**REGO**® CRYO-FLOW PRODUCTS

# Foreword

This catalog briefly describes the Rego® Industrial Gas and Cryogenic Equipment available from the Cryo-Flow division of Engineered Controls International, Inc. As a result of condensing information in this catalog, some highly technical and special application material has been omitted. Proper application, installation and maintenance of the product is essential. Buyers should obtain further information if there are any doubts or questions. All information contained in this catalog is subject to change by Engineered Controls International, Inc. without notice. Additional product information is available from Engineered Controls International, Inc. or authorized product distributors.

## Warning

Never use any product on oxygen service if another gas has been previously used on the product.

## Materials

Rego Cryo-Flow Products Division may make suggestions for a material to use with a specific media. These suggestions will be based on technical compatibility resources through associations and manufacturers. Rego does not guarantee the material to be compatible with the specific media – this is the responsibility of the user. Users must test under their own operating conditions to determine the suitability of any material in a particular application.

## Oxygen Service

Rego Cryo-Flow Products Division provides specified product cleaned in accordance with the intermediate level of ASTM-G93 and CGA G-4.1 which assures removal of visible particles and combustible residues. System designers must verify the compatibility of the materials used in this product before installation and operation. Specifications of materials for oxygen service is the **USER'S RESPONSIBILITY**. If there is any doubt consult an expert.

# New Products

This catalog has been updated in August 2007 to include new and improved products. Below is a list of new products, the expanded section of the catalog page(s), and reference to a former product where applicable.

<b>New Products</b>	<b>Page(s)</b>	<b>Former Products</b>
CFM Fill Modules .....	10	New Product
T9454, T9452, T9464 Series Valves.....	15	9452, 9454, 9464 Series
CBC, CBH Combination Regulators.....	18	New Product
NR Series Noise Reducing PRV's.....	20	New Product
4285-9B Pressure Alarm Switch .....	33	

# Table of Contents

<b>Valves</b>	<b>Page</b>
High Pressure Gas Master Valves, 9560 Series.....	2 & 3
Diaphragm Type Globe Valves, 2550 Series.....	4
Diaphragm Type Globe Valves, 2500 Series.....	5
Line Station Valves 7160 Series, CW6900 Series.....	6
Nitrogen Cylinder Valves, CW6900 Series.....	6
Extended Bonnet Cryogenic Globe Valves, BK and BKA Series.....	8 & 9
CFM Fill Module.....	10
Extended Stem/Bonnet Cryogenic Globe Valve, ES8450, BK 9450, and BK9470 Series.....	11
Needle Valves, CMM250 Series and CFF250 Series.....	12
Check Valves.....	13 & 14
Short Stem Cryogenic Valves, T9450 Series and T9460 Series.....	15
Extended Stem Retrofit Kits for 9450 and 9460 Series Valves.....	15
<b>Regulators</b>	
Cryogenic Regulators, RG Series and ECL Series.....	17
CBC, CBH Combination Regulators.....	18
Cryogenic Liquid Cylinder Regulator, LCR Series.....	19
Heavy Duty Brass Final Line Pressure Regulator, BR-1780 Series.....	25 & 26
Heavy Duty Gas Line Regulator, 1780 Series.....	27
Performance Curves for BR-1780 Series and 1780 Series Regulators.....	28
Automatic Changeover Regulators, M2523HP Series.....	29
Low Pressure Line Regulators, 4403 Series.....	30
Aluminum Pressure Regulators.....	31
Inertrol Outfits, 4286, 4289, and 4291 Series.....	32
Low Pressure Regulators, 4286-10 Series and 4289-10 Series.....	33
Alarm Gauges, 4285-9B.....	33
<b>Relief Valves</b>	
Cryogenic Relief Valves, Non-ASME, Brass and St. Stl., 9400 Series.....	21
ASME Relief Valves for Gas and Cryogenic Systems, PRV 19430 and PRV 29430 Series.....	22
NR Series Relief Valves.....	20
ASME Carbon Dioxide Relief Valves, UA 3149A Series.....	23
ASME Relief Valves, B-19434B Series and C-19434B Series.....	24
<b>Check Valves</b>	
Horizontal Cryogenic Check Valves, 8500 Series.....	13
Inline Gas and Cryogenic Check Valves, CG Series.....	14
<b>High Pressure Manifold Components</b>	
Brass Pipe Plugs.....	7
Brass Pipe and Pipe Nipples, Brass Elbows.....	34
Brass Tees, Brass Crosses.....	35
<b>Accessories</b>	
Brass Outlet Cap and Chain Assembly.....	7
Pressure Gauges.....	7
Rego-Lok for Securing CGA fittings on Liquid Cylinders.....	16
Brass Pipe Caps.....	23
Repair Kits for Valves and Regulators.....	36 & 37
Warranty, Liability and CRN/PED Approval Information.....	38

# High Pressure Gas Master Valves

## 9560 Series

### Application

The 9560 Series high pressure brass valves are used on cylinder filling panels, tube trailers, and other high pressure manifolds and piping systems. The 9560 Series exhibits a very low operating torque under pressure for ease of manual operation.

### Features

- 4200 psig maximum working pressure with a 5 to 1 safety factor.
- Non-rising stem design with O-Ring Seal for durable service.
- Large brass handwheel for easy low torque operation under pressure.
- All valves cleaned for use in oxygen per CGA G-4.1.
- Temperature range -40°F to +165°F.

### Materials

- Body, bonnet, stem, and seat retainer, stem seal retaining rings and washer .....Brass
- Stem O-Ring.....Viton
- Handwheel washer.....PTFE

### Soft Seat Option

The soft seat valves use a CTFE seat disc in the seat retainer to create a “bubble-tight” seal against a machined seat surface on the brass body. Valve Cv is 2.6.

The soft seat option is especially useful for small molecule gases like hydrogen and helium, but can be used for a variety of non-corrosive industrial gases including oxygen, argon, nitrogen, carbon dioxide, nitrous oxide, and acetylene.

### Metal Seat Option:

A copper seat disc is used in the seat retainer to create a seal against a Monel body seat, which is installed into the body and can be replaced. Valve Cv is 2.3.

The metal seat option minimizes the possibility of seat decomposition or ignition in oxygen service under adiabatic compression. The metal seat option is recommended for oxygen, and can also be used for other non-corrosive industrial gases. The metal seat option is not to be used for acetylene due to the copper seat. Not to be applied in hydrogen or helium service or where a “bubble-tight” seal is essential. (Note: C in part number)

### Bonnet Versions

- Standard Bonnet for low profile.
- Panel Mount Bonnet for ease of panel installation. Includes threaded bonnet and nickel plated brass mounting nut. Metal Seat Option 1.625" diameter panel hole required for mounting. (Note: P in part number)

### HP Version

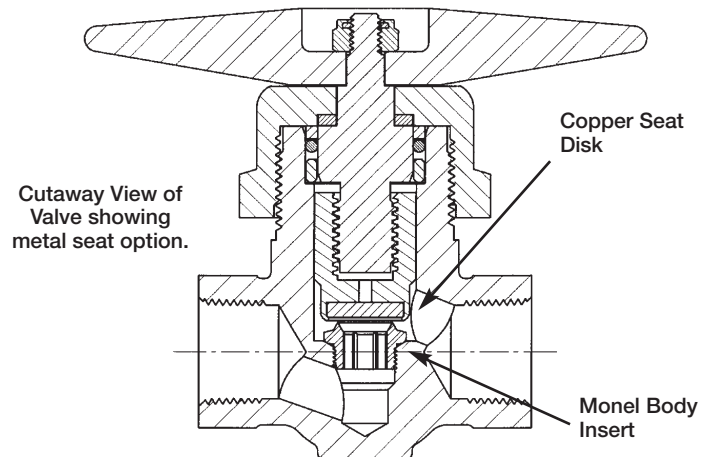
- With metal seat option.
- 5600 psig maximum working pressure with 4 to 1 safety factor. Use “HP” prefix for metal seat. (ex. HP9560CB). Nylon seat option available also (ex. 9560NB).



STANDARD BONNET VALVE

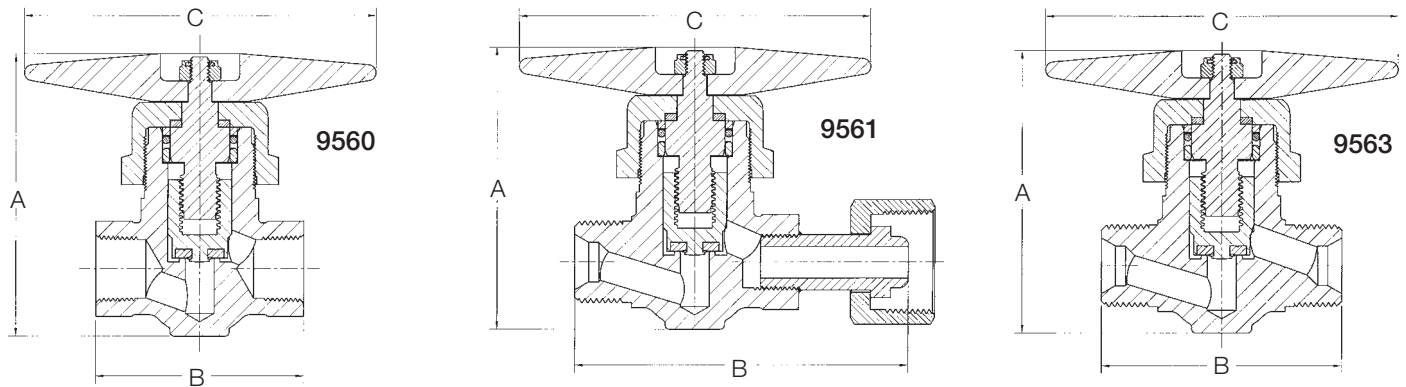


PANEL MOUNT VALVE

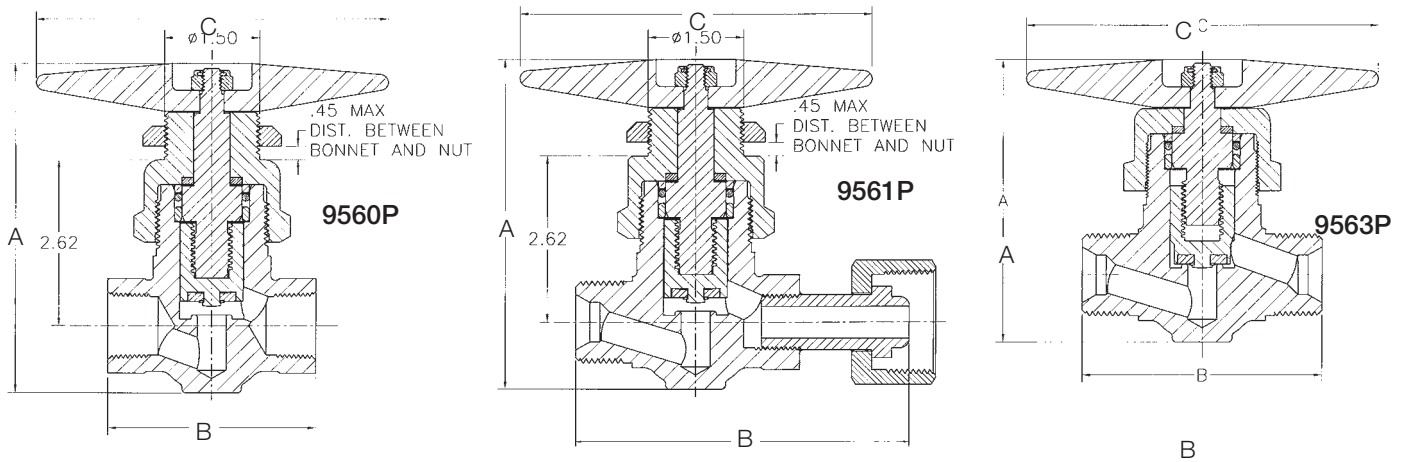


# High Pressure Gas Master Valves

## 9560 Series



STANDARD BONNET VALVE DIMENSIONS



PANEL MOUNT VALVE DIMENSIONS

### Ordering Information

Part Number		Inlet Connection	Outlet Connection	Height A	Width B	Handwheel Width C
Soft Seat	Metal Seat					
9560A	9560CA	1/2" F. NPT	1/2" F. NPT	4.36"  *[6.19" for panel mount version]	3.25"	5.5"
9560B	9560CB	3/4" F. NPT	3/4" F. NPT		5.27"	
9561R	9561CR	1"-11 1/2" NPSM R.H.	1"-11 1/2" R.H. Female Swivel		3.79"	
9561RL	9561CRL	1"-11 1/2" NPSM R.H.	1"-11 1/2" NPS L.H. Female Swivel		3.79"	
9561L	9561CL	1"-11 1/2" NPSM L.H.	1"-11 1/2" L.H. Female Swivel		3.25"	
9563R	9563CR	1"-11 1/2" NPSM R.H.	1"-11 1/2" NPSM R.H.		3.25"	
9563L	9563CL	1"-11 1/2" NPSM L.H.	1"-11 1/2" NPSM L.H.		3.25"	
9560ASE	9560CASE	.843 - .847	.843 - .847			
9560BSE	9560CBSE	1.053 - 1.057	1.053 - 1.057			
9560BSE-B	9560CBSE-B	1.053 - 1.057	3/4" F.NPT			

\*Place "P" at end of part number for panel mount version.

# Diaphragm Type Globe Valves

## 2550 Series

### Application

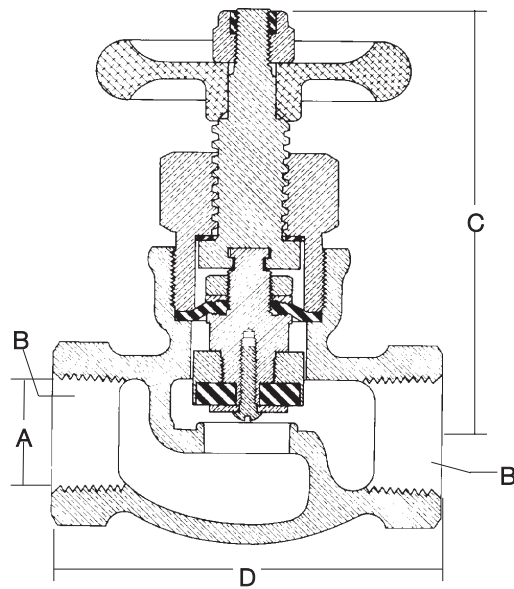
The 2550 series valves are designed for use in hospital and industrial piping systems where gases are supplied from a central source to branch outlets throughout the system.

### Features

- UL listed for use with air, acetylene, hydrogen, LP-Gas, nitrogen, and oxygen service.
- Leakage is prevented by a dependable diaphragm stem seal.
- A resilient seat disc provides positive shut-off.
- Heavy duty ACME stem threads assure easy operation and long working life.
- Maximum working pressure is 250 PSIG.
- Working temperature range is -40°F to +165°F.

### Materials

Body (2553 series) .....Forged Brass  
 (2554 series).....Cast Bronze, Tin Plated  
 Handwheel .....Aluminum  
 Seat Disc .....Filled Teflon  
 Diaphragm.....Neoprene  
 Bonnet.....Brass  
 Stem.....Manganese Bronze



### Ordering Information

Part Number	Inlet / Outlet Thread (Female NPT) A	Port Diameter B	Height C	Length D	Cv Factor
2553AC	1/4"	13/32"	3 5/8"	2 1/2"	1.4
2553AAC	3/8"				1.5
2554AC	1/2"	1 1/16"		3 3/8"	4.3
2554AAC	3/4"				4.3

# Diaphragm Type Globe Valves

## 2500 Series

### Application

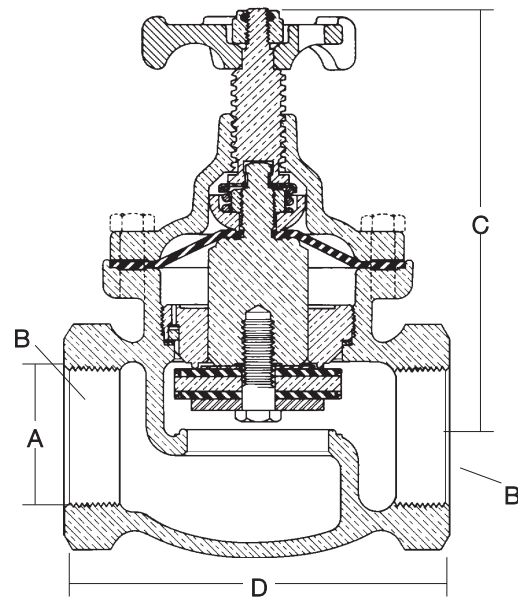
The 2500 series valves are designed for use in hospital and industrial piping systems where gases are supplied from a central source to branch outlets throughout the system.

### Features

- UL listed for use with air, argon, acetylene, helium, hydrogen, LP-Gas, nitrogen, inert gases and oxygen service.
- Leakage is prevented by a dependable diaphragm stem seal.
- A resilient seat disc provides positive shut-off.
- Heavy duty ACME stem threads assure easy operation and long working life.
- Unique back seat design allows the diaphragm assembly to be repaired while the valve remains in service.
- Maximum working pressure is 400 PSIG.
- Working temperature range is -40°F to +165°F.

### Materials

Body .....Cast Bronze, Tin Plated  
 Bonnet .....Brass  
 Stem .....Manganese Bronze  
 Seat Disc .....Neoprene  
 Diaphragm .....Neoprene

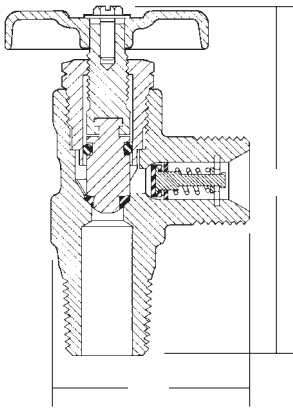


### Ordering Information

Part Number	Inlet / Outlet Thread (Female NPT) A	Port Diameter B	Height C	Length D	Cv Factor
2505AC	3/4"	15/16"	5 1/4"	4"	9.0
2507AC	1"	1 1/8"	5 5/8"	4 3/8"	15.0
2511AC	1 1/2"	1 11/16"	6 3/4"	5 3/8"	33.4
2513AC	2"	2 1/16"	7 1/4"	6 1/4"	51.7

# Line Station Valves

## 7160 Series



### Application

The 7160 series valves are designed for use with oxygen and all fuel gases at station outlets of line distribution systems such as welder's benches, cutting stations, hospital rooms, etc.

### Features

- UL listed. Approved for oxygen and all fuel gas services at 400 PSIG maximum working pressure.
- O-ring stem seal works with the pressure causing a tighter seal as pressure increases.
- A reverse flow check valve installed in the valve outlet connection helps prevent reverse flow.
- Available with brass cap and chain protection.
- Meets the requirements of National Fire Protection Association (NFPA) Pamphlet No. 51.

### Materials

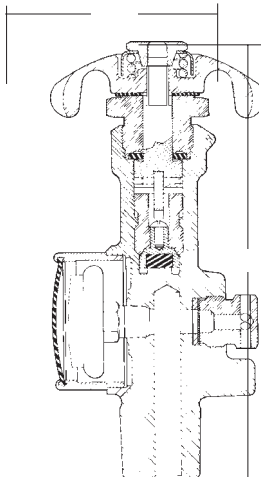
Body .....Brass  
 Stem and Seat Retainer .....Brass  
 O-ring .....Neoprene  
 Seat Disc .....Nylon  
 Reverse Flow Check Seat .....Neoprene

### Ordering Information

Part Number	Gas Service	Inlet Thread	Outlet Thread	CGA Connection	Cv Factor	Outlet Protection*
7160V	Oxygen and Inert Gases	1/2" NGT	7/8"-14 M. R.H.	024	.76	10663 Brass Cap & Chain
7160VL						None
7161V	Fuel Gases	1/2" NGT	7/8"-14 M. L.H.	025		10664 Brass Cap & Chain
7161VL						None

# Nitrogen Cylinder Valves

## CW6900 Series



### Application

The CW6900 series valves incorporate a built-in gauge that tells the user at a glance how much pressure is in the cylinder. This is especially important in the fire protection industry.

### Features

- 0 to 3000 PSIG gauge built into the valve.
- Chrome whitened finish.
- Non-rising stem design provides easy operation and positive shut-off.
- UL listed.

### Materials

Body.....Brass, Chrome Whitened  
 Bonnet.....Brass, Chrome Whitened  
 Seat Disc .....Nylon  
 Stem .....Brass, Chrome Plated  
 Stem Packing.....PTFE

### Ordering Information

Part Number	Gas Service	Inlet Thread (NGT)	Outlet Thread	CGA Connection	Relief Pressure (PSI)
CW6900G580	Nitrogen	3/4"	.965-14 R.H.	580	3360



# Pressure Gauges



Pressure gauges are available in a variety of popular pressure ranges for gas plant applications.

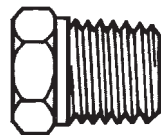
Gauges should be selected so that the maximum working pressure of the particular system represents 66% to 75% of the maximum gauge reading. Greater safety and accuracy may be realized by following these guidelines.

## Ordering Information

Part Number	Maximum Calibration (PSIG)	Size	Increment Division (PSIG)	Case Material
1286	100	2"	2	Steel
2523HP-7	160		5	
S1679	200		10	Brass
15578	400		50	Steel
5562C	4000			

# Brass Plugs

(for pressures to 3000 PSIG)  
Safety factor = 5:1

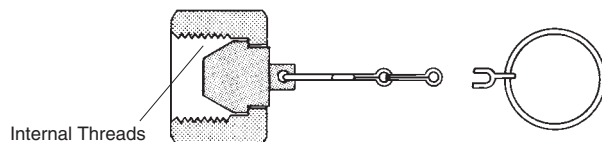


Typical Plug

## Ordering Information

Part Number	Thread Connection	Hex Flats
985B	1/4" NPT	3/16"
985D	1/2" NPT	7/8"
985E	3/4" NPT	1 1/8"
985F	1" NPT	1 3/8"

# Brass Outlet Cap and Chain Assemblies



Cap with Plug

## Ordering Information

Part Number	Thread Connection	End Ring Fits Pipe
10663	7/8"-14NF-RH	1/2"
10664	7/8"-14NF-LH	1/2"

# Extended Bonnet Cryogenic Globe Valves

## BK and BKA Series Valves

### Application

The BK and BKA Series valves are designed exclusively for the handling of cryogenic liquids on bulk storage tanks, transports, and pipelines. These globe valves provide positive shutoff and offer a long, low-maintenance service life. The valves are available with a variety of inlet and outlet connections and stem lengths. Certain BK valves are offered with brazed-in Sch 5 Stainless Steel Pipe Stubs.

### Features

- CTFE seat disc and swivel seat design offer positive shut-off, minimal seat wear, and a long service life.
- Unique spring-loaded upper packing provides extended service life without constant packing adjustment
- One piece slip-on seat assembly for easy replacement.
- Each valve is pressure tested to be leak free.
- Each valve is cleaned and packaged for oxygen service per CGA G-4.1.
- Maximum working pressure is 600 psig CWP.
- Working temperature range is -320 F to +165 F.

### Materials

Body.....	Bronze
Body and Bonnet.....	Brass
Seat Disc.....	CTFE
Seat Retainer Assembly .....	Brass
Stem and Bonnet Extension Tube.....	Stainless Steel
Packing Spring, Washer .....	Stainless Steel
Jam Ring and Pressure Seal Rings .....	PTFE
Upper Bonnet, Packing Gland.....	Brass
Handwheel .....	Aluminum for up to 1" valve size, Coated Malleable Iron for larger sizes

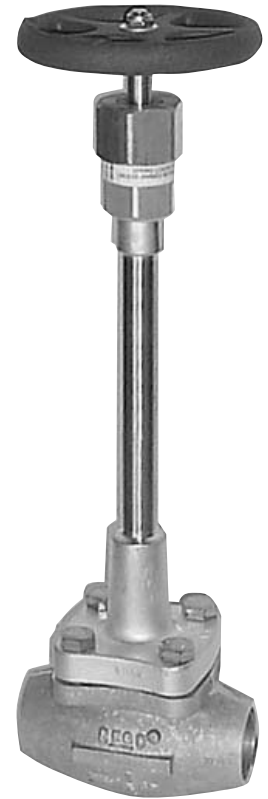
### Bonnet Design

Union Bonnet for 1/2", 3/4", 1" valve sizes and on both the 1" model BKA8408S and 1 1/2" model BKA8412S angle valves.

Bolted Bonnet design is used on the BK9410, BK9412, and BK9416 models.



**BK 8408T**



**BK 9412S**



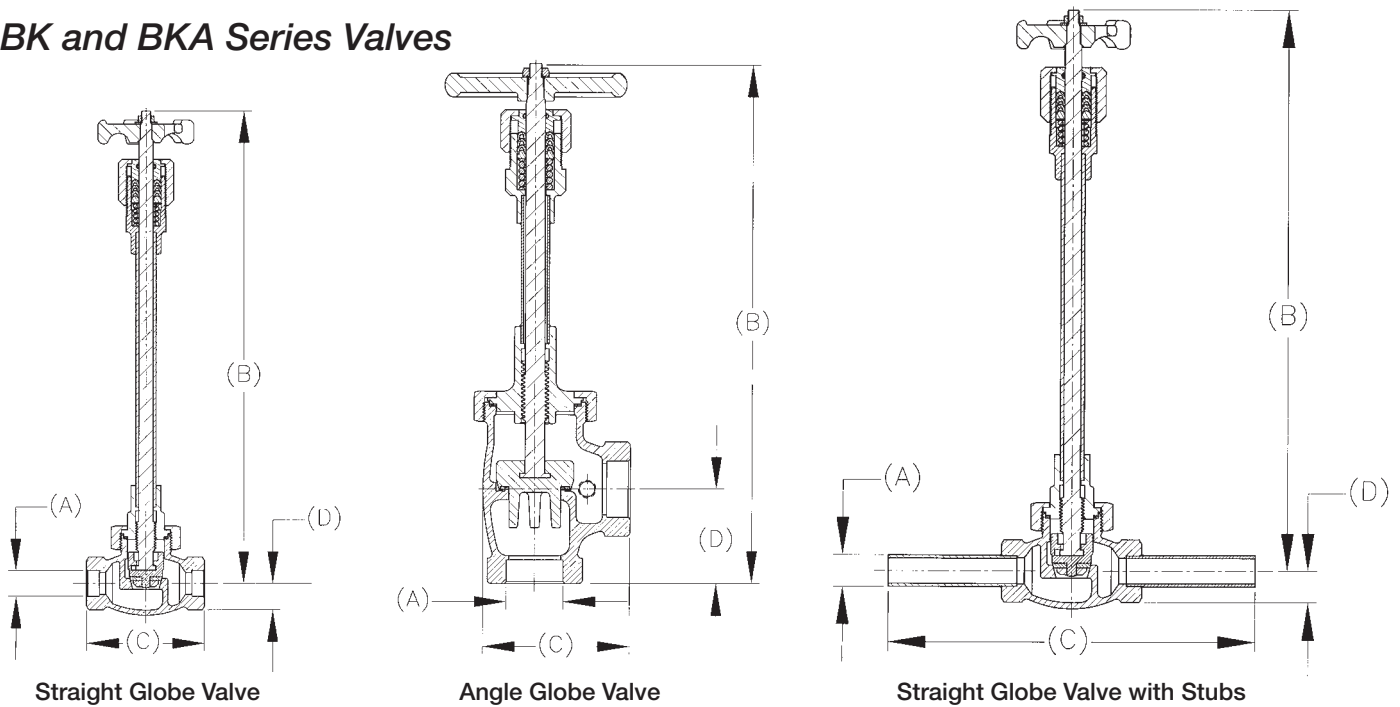
**BK 9408AA**



**BKA 8412S**

# Extended Bonnet Cryogenic Globe Valves

## BK and BKA Series Valves



### Ordering Information and Dimensions

Part Number	Body Style	Inlet / Outlet Connections A	Height Open B (Approx.)	Length C	D	Cv Factor				
BK8404S	Straight	.631"-.634"	9 <sup>5</sup> / <sub>32</sub> "	3 <sup>1</sup> / <sub>16</sub> "	1"	4.7				
BK8404T		1/2" F.NPT								
BK8404ST		.631"-.634"x 1/2" F.NPT								
BK9404S		.631"-.634"	14 <sup>1</sup> / <sub>2</sub> "	3 <sup>1</sup> / <sub>16</sub> "	1"	4.7				
BK9404T		1/2" F.NPT								
BK9404AA		1/2" Sch5 Pipe								
BK9404PT-F30		1/2" Sch5 Pipe x 1/2" F.NPT								
BK9404ST		.631"-.634"x1/2" F.NPT	9 <sup>5</sup> / <sub>32</sub> "	3 <sup>1</sup> / <sub>16</sub> "	1"	6.7				
BK8406S		.881"-.884"								
BK8406T		3/4" F.NPT								
BK9406S		.881"-.884"	14 <sup>1</sup> / <sub>2</sub> "	3 <sup>1</sup> / <sub>16</sub> "	1"	6.7				
BK9406T		3/4" F.NPT								
BK8408S		1.131"-1.134"					9 <sup>1</sup> / <sub>8</sub> "	4 <sup>5</sup> / <sub>16</sub> "	1 <sup>1</sup> / <sub>8</sub> "	11.2
BK8408T		1" F.NPT								
BK9408S		1.131"-1.134"								
BK9408T		1" F.NPT	14 <sup>1</sup> / <sub>2</sub> "	4 <sup>5</sup> / <sub>16</sub> "	1 <sup>1</sup> / <sub>8</sub> "	11.2				
BK9408AA		1" Sch5 Pipe								
BK9408PT-F30		1" Sch5 Pipe x 1" F.NPT								
BK9410S*		1.378"-1.380"					16 <sup>7</sup> / <sub>16</sub> "	5 <sup>3</sup> / <sub>16</sub> "	1 <sup>1</sup> / <sub>2</sub> "	17.5
BK9412S*		1.631"-1.634"	16 <sup>3</sup> / <sub>16</sub> "							
BK9412T*	1 <sup>1</sup> / <sub>2</sub> " F.NPT									
BK9412AA	1 <sup>1</sup> / <sub>2</sub> " Sch5 Pipe	16 <sup>3</sup> / <sub>16</sub> "	11 <sup>3</sup> / <sub>16</sub> "	1 <sup>1</sup> / <sub>2</sub> "	25.1					
BK9412PT-F30	1 <sup>1</sup> / <sub>2</sub> " Sch5 Pipe x 1 <sup>1</sup> / <sub>2</sub> " F.NPT									
BK9416S*	2.131" - 2.134"					16"	6"	1 <sup>5</sup> / <sub>8</sub> "	41	
BK9416T*	2" F.NPT									
BK9416PT-F30	2" Sch5 Pipe x 2" F.NPT									
BKA8408S	Angle	1.131" - 1.134" x 1.631" - 1.634"	11 <sup>1</sup> / <sub>4</sub> "	3 <sup>3</sup> / <sub>4</sub> "	1 <sup>3</sup> / <sub>4</sub> "	14.5				
BKA9408S			14 <sup>5</sup> / <sub>8</sub> "							
BKA8412S		1.631"-1.634"	13"			4 <sup>1</sup> / <sub>4</sub> "	30.0			

\* Valves with bolted bonnet design.

# RegO Cryogenic Fill Manifold CFM Series

## Application

Direct replacement for cryogenic fill modules in bulk vessel applications. Our factory-brazed assembly includes top and bottom fill valves, fill check and hose evacuation valve.

## Features

Precision silver brazed assembly  
 Repeatable performance and geometry  
 100% factory tested  
 Temperature range -320° to +165° F

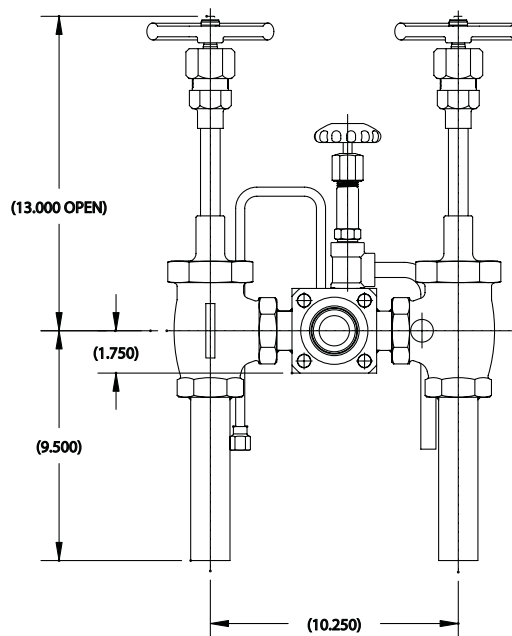
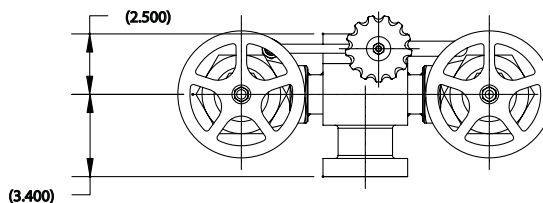
## Materials

Body .....Bronze  
 Bonnet .....Brass  
 Seat Disk .....CTFE  
 Seat Retainer Assembly .....Brass  
 Stem and Bonnet Extension Tube .....Stainless Steel  
 Packing Spring, Washer .....Stainless Steel  
 Jam Ring and Pressure Seal Rings .....PTFE  
 Upper Bonnet and Packing Gland .....Brass  
 Handwheel .....Coated Malleable Iron  
 Tube .....304L Stainless Steel Tube



## Size and Style

Model	Piping Size
CFM000002D	1"
CFM000004D	1½"



# Extended Stem Cryogenic Valves

## ES8450 Series Extended Stem Valves BK9450 & BK9470 Series Extended Bonnet Valves

### Application

These valves are designed for use as a trycock valve or hose drain valve on cryogenic tanks. Another application is as a use, liquid fill, or vent valve on mini-bulk cryogenic tanks. These valves can be used likewise for other cold gas applications requiring extended stem valves.

### Features

- Union bonnet.
- One piece stainless steel stem
- Conical seat design.
- Maximum working pressure is 600 psig.
- Working temperature is -320F to +165F.
- Cleaned for oxygen service per CGA G-4.1.

### ES8450 Series specific feature:

- Manual torque compression packing.

### BK9450 and BK9470 Series specific feature:

- Extended bonnet and spring loaded packing.

### BK9470 Series specific feature:

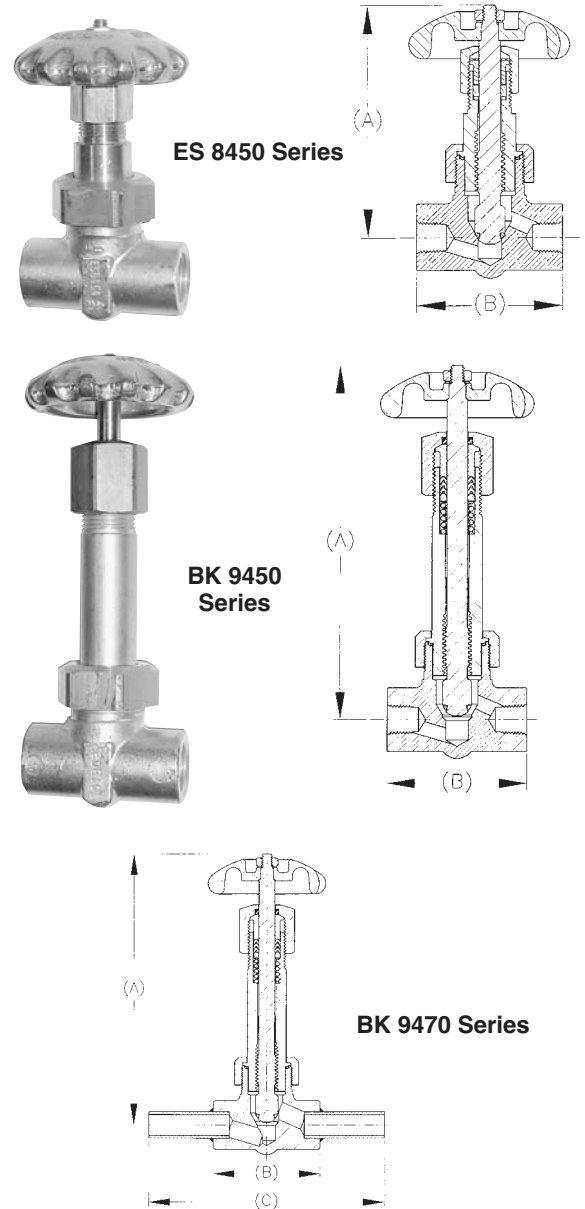
- 304 St. Stl Tube brazed into one or both ends.

### Materials

Body and Bonnet .....Brass  
Stem .....Stainless Steel  
Seat disc .....CTFE  
Handwheel .....Aluminum  
Packing and Bonnet Gasket .....PTFE

### Conversion Kit

BK 9450-KIT is a bonnet and stem assembly kit to convert ES 8450 Series and previous ES 9450 Series to the BK 9450 style.



### Ordering Information

Part Number	Inlet/Outlet Connections	Height "A"	Body Width "B"	Width with Tube "C"	C <sub>v</sub>
ES 8452	1/4" FNPT	4"	2.5"		0.70
ES 8453	3/8" FNPT	4"			1.10
ES 8454	1/2" FNPT	4"			1.10
BK 9452	1/4" FNPT	6.5"			0.70
BK 9453	3/8" FNPT	6.5"			1.10
BK 9454	1/2" FNPT	6.5"			1.10
BK 9453FA	5/8" OD tubing x 3/8" FNPT	6.5"		4.0"	1.10
BK 9475A	5/8" OD tubing both ends	6.5"		5.5"	1.10

# Needle Valves

## CMM250 Series and CFF250 Series

### Application

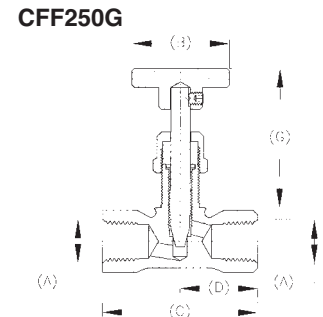
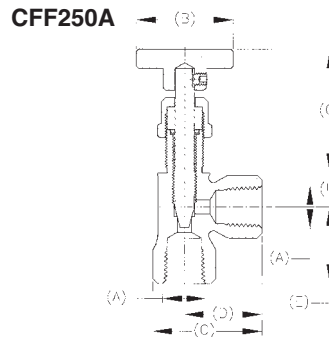
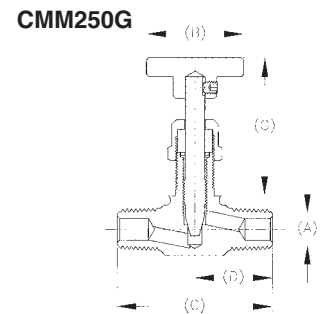
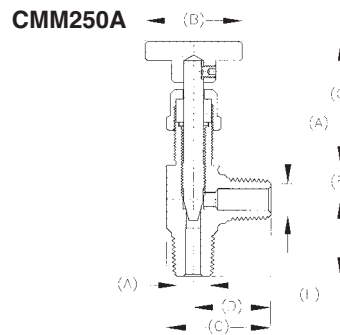
Ideal for use as a gauge isolation valve or applications requiring accurate throttling of pressure.

### Features

- Compact design provides easy installation.
- Fine stem threading and long taper allow precise metering and leak-free shut-off.
- Internal stop prevents the stem from being accidentally unscrewed from the body.
- Rugged forged brass bodies withstand higher pressures.
- Unbreakable brass handwheel.
- Valves come equipped for panel mounting.
- Working temperature range is -40°F to +165°F.
- Maximum operating pressure: 2000 psig air.
- Cleaned for oxygen service per CGA G-4.1.
- Female ports available - consult factory.

### Materials

Body .....ASTM B283 Brass  
 Stem .....Brass  
 Knob .....Brass  
 Bonnet Nut .....Brass  
 Panel Mount Nut (Optional) .....Brass  
 Set Screw .....Steel  
 Stem Packing .....PTFE with Brass Gland



Part Number	A (NPT)	B (In.)	C (In.)	D (In.)	E (In.)	F (In.)	G (In.) Open	G (In.) Closed	C <sub>v</sub>
CMM250A	1/4	1 1/4	1 11/32	1	1	7/16	2 5/32	1 19/32	.7
CMM250G	1/4	1 1/4	2	7/8		7/16	2 5/32	1 19/32	.5
CFF250A	1/4	1 1/4	1 13/32	3/4	1	7/16	2 3/16	1 5/8	.7
CFF250G	1/4	1 1/4	2	1		7/16	2 3/8	1 13/16	.5

# Horizontal Check Valves

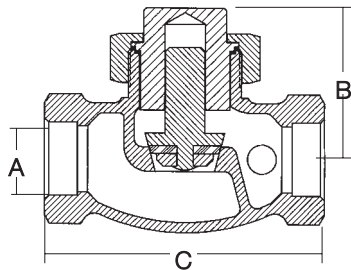
## 8500 Series



**BK8508S**



**BK8512S**



### Application

The 8500 series valves are designed for use as a check valve on large cryogenic bulk stations and cryogenic pipelines.

### Features

- Replaceable Kel-F seat discs.
- Self-centering cap holds plunger in position.
- Each valve is cleaned and packaged for liquid oxygen service per CGA G-4.1.
- Working temperature range is -320°F to +165°F.
- Maximum working pressure is 600 PSIG CWP.
- 2 PSI crack pressure.

### Materials

Body .....Bronze  
 Cap.....Brass or Bronze  
 Plunger .....Brass  
 Seat .....CTFE

### Ordering Information

Part Number	Inlet / Outlet Connection A	B	Length C	Cv Factor
BK8508S	1.128"-1.130"	2¼"	4⅝"	10
BK8508T	1" F.NPT			
BK8512S	1.629"-1.631"	3¼"	5⅝"	27
BK8512T	1½" F.NPT			

# Inline Check Valves

## CG Series Gas and Cryogenic Check Valves

### Application

Inline check valves with metal seat option for cryogenic service or with soft seat option for leak free operation in gas service.

### Features

- One directional flow indicated by arrow on body.
- Large Cv for high flow capability and low pressure drop.
- Working temperature range:
  - 320° F to +165° F for metal seats.
  - 20° F to +165° F for soft seats.
- 1 psig cracking pressure.
- Cleaned for use in oxygen service per CGA G-4.1

### Materials

Body (B and BL suffix).....ASTM B16 Brass  
 (SS and SSL suffix).....203 Stainless Steel  
 Spring .....Stainless Steel  
 Piston.....Stainless Steel  
 O-Ring (soft seat option units only).....Viton

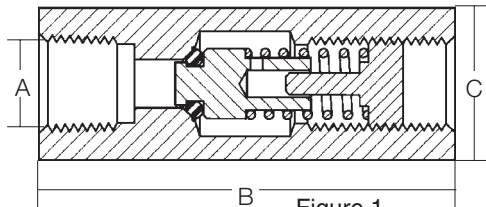
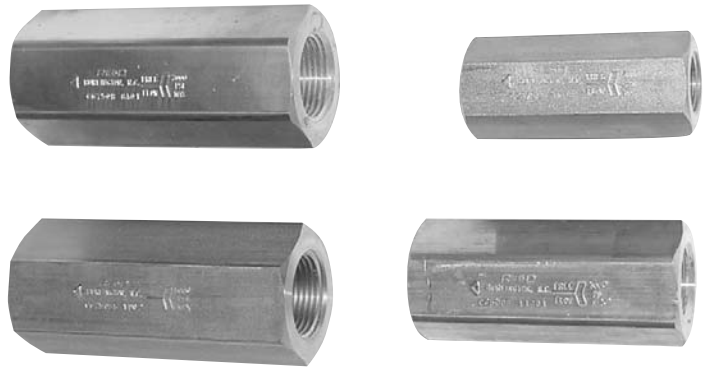


Figure 1  
Soft Seat Option

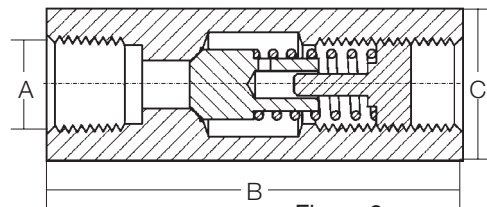


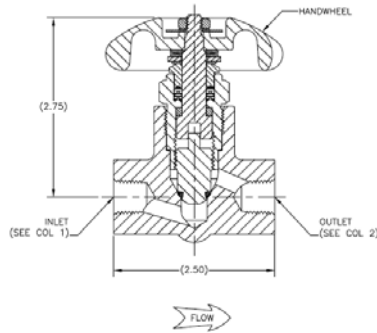
Figure 2

Part Number	Seating Option	Inlet/Outlet Connections FNPT P	Length L	Wrenching Hex Size D	Cv	Maximum Operating Pressure
<b>Stainless Steel Check Valves</b>						
CG250SS	METAL	1/4"	2 3/8"	13/16"	.87	5000 PSIG
CG375SS	METAL	3/8"	2 1/2"	1"	2.3	5000 PSIG
CG500SS	METAL	1/2"	3"	1 1/8"	3.5	5000 PSIG
CG750SS	METAL	3/4"	3 5/8"	1 1/2"	5.2	5000 PSIG
CG250SSL	SOFT	1/4"	2 3/8"	13/16"	.87	250 PSIG
CG375SSL	SOFT	3/8"	2 1/2"	1"	2.3	250 PSIG
CG500SSL	SOFT	1/2"	3"	1 1/8"	3.5	3000 PSIG
CG750SSL	SOFT	3/4"	3 5/8"	1 1/2"	5.2	3000 PSIG
<b>Brass Body Check Valves</b>						
CG250B	METAL	1/4"	2 3/8"	13/16"	.87	3000 PSIG
CG375B	METAL	3/8"	2 1/2"	1"	2.3	3000 PSIG
CG500B	METAL	1/2"	3"	1 1/8"	3.5	3000 PSIG
CG750B	METAL	3/4"	3 5/8"	1 1/2"	5.2	3000 PSIG
CG250BL	SOFT	1/4"	2 3/8"	13/16"	.87	250 PSIG
CG375BL	SOFT	3/8"	2 1/2"	1"	2.3	250 PSIG
CG500BL	SOFT	1/2"	3"	1 1/8"	3.5	3000 PSIG
CG750BL	SOFT	3/4"	3 5/8"	1 1/2"	5.2	3000 PSIG



# Short Stem Cryogenic Valves

## T9450 Series T9460 Series



### Ordering Information

Part Number	Inlet	Outlet	Orifice A	Length B	Height (Approx.) C	Tube D	Cv Factor
T9452	1/4" F.NPT	1/4" F.NPT	.250	2 1/2"	2 3/4"	None	.72
T9453	3/8" F.NPT	3/8" F.NPT	.406				1.08
T9454	1/2" F.NPT	1/2" F.NPT	.406				1.10
T9464CA	.675 Tube	3/8" F.NPT	.406	2 1/2"	2 3/4"	1 1/8"	1.08
T9464DA						2 1/8"	
T9464ADA						3 3/8"	

### Application

The T9450 and T9460 series valves are designed for use on portable cryogenic cylinders and other in-line shut-off valve applications. Approved for TPED in accordance with EN1626.

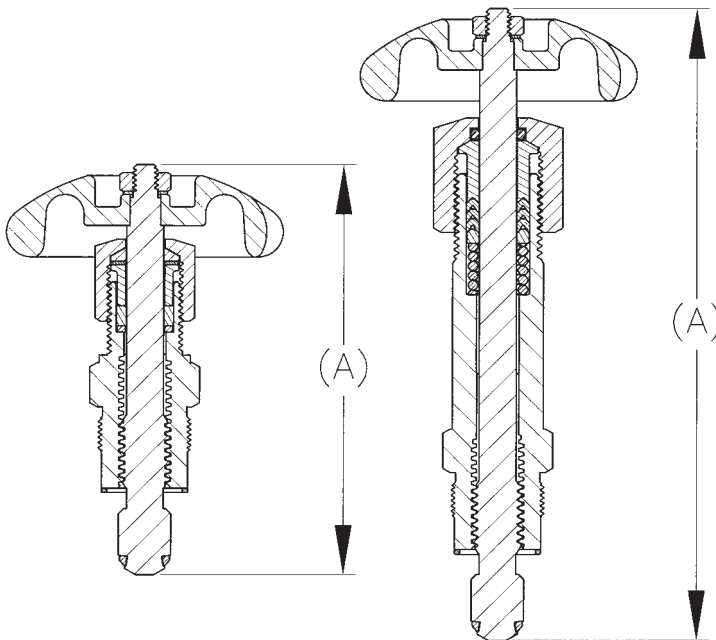
### Features

- Spring loaded stem seal automatically adjusts for any gasket wear, eliminating the need to constantly retighten the packing nut.
- Non-rising stem and low profile allow the valve to fit into tight areas and still provide easy access.
- Unique pressure-sealed moisture barrier helps prevent freeze up at cryogenic temperatures.
- Conical swivel seal design helps prevent seat galling from over torquing.
- Cleaned for liquid oxygen service per CGA G-4.1.
- Maximum working pressure is 600 PSIG.
- Working temperature range is -320°F to +165°F.

### Materials

Body.....	Brass
Bonnet.....	Brass
Seat Disc.....	CTFE
Stem Seal Gasket.....	PTFE
Handwheel.....	Aluminum
Spring.....	Stainless Steel
Upper Stem.....	Brass
Lower Stem.....	Manganese Bronze

# Extended Stem Retrofit Kits



### Application

These retrofit kits can be used to convert the 9450 and 9460 series short stem shut off valves into extended stem style. The conversion can be done without removing the valve from your system. Available in two stem lengths. All kits are oxygen cleaned and packaged per CGA G-4.1.

### Materials

Bonnet.....	Brass
Seat Disc.....	CTFE
Handwheel.....	Aluminum
Packing.....	PTFE
Stem.....	Stainless Steel
Stem Seal Gasket.....	PTFE

### Ordering Information

Part Number	Stem Length A	Style
ES8450R	4"	Extended Stem, Std. Bonnet, Manual Packing
BK9450R	6.5"	Extended Bonnet and Stem, Spring Loaded Packing

# REGO-LOK™ for Securing CGA Fittings on Liquid Cylinders

## Application

The REGO-LOK™ is designed for installation on the Rego T9450 and T9460 Series liquid cylinder valves to deter and prevent the removal of the CGA fitting from the valve. The REGO-LOK™ retains standard CGA outlet connection fittings so unauthorized persons do not remove the fitting. By use of a special one-way bolt, the REGO-LOK™ is secured to the valve. The REGO-LOK™ installs in a few minutes with the use of screwdrivers. REGO-LOK™ installs without valve disassembly, brazing, welding, or drilling. The REGO-LOK™ deters and prevents fitting removal by gas customers, however allows the replacement of fittings by authorized gas supplier plant personnel.

Use REGO-LOK™ for compliance with CGA SB-26 for medical and industrial liquid cylinders.

## Features

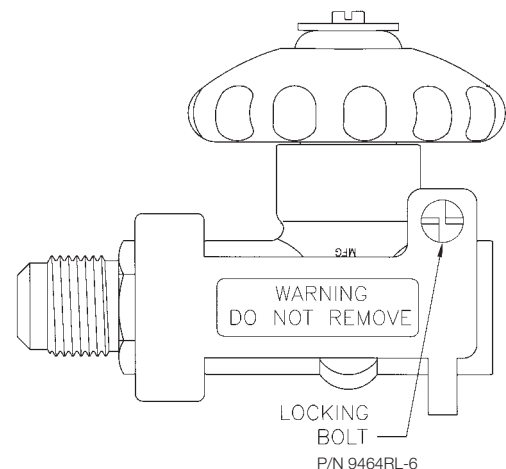
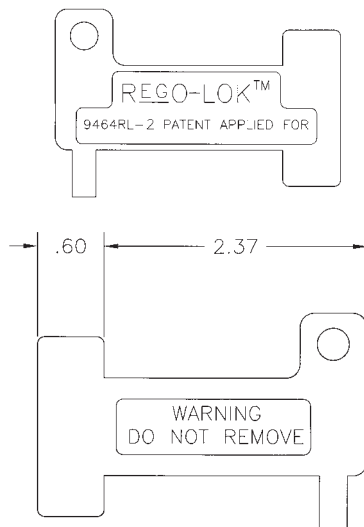
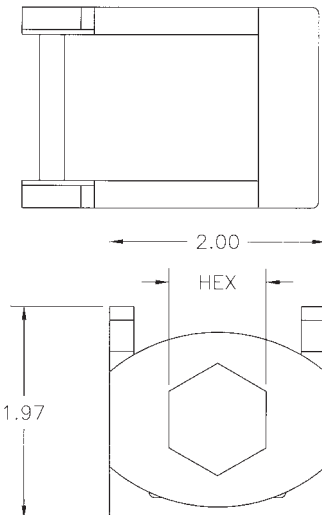
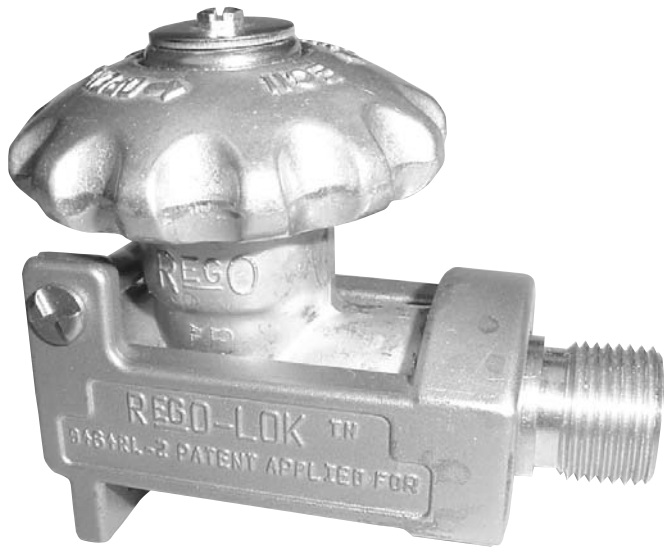
- Stainless Steel REGO-LOK™ with one-way bolt.
- Retrofit all common liquid cylinder valves.
- Can be supplied on new Rego liquid cylinder valves.
- REGO-LOK™ indicates "WARNING: DO NOT REMOVE"
- Worn CGA fittings can be simply replaced by authorized personnel. Requires new 9464RL-6 Bolt
- Can fit over existing fittings for CGA 540, CGA 440, CGA 295, CGA 320, and CGA 326. Check fitting hex size.  
NOTE: Rego supplied fitting P/N CGA580RL is required for REGO-LOK™ use with CGA 580 connection.
- Prevents loosening of CGA fittings on valves.

Satisfies CGA SB-26 and FDA requirements for medical and industrial liquid cylinders.

## Ordering Information

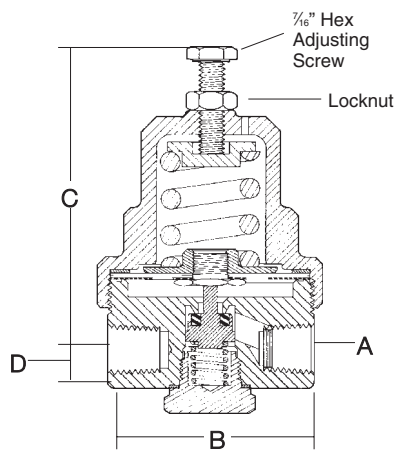
Part Number	Item Description	Typical Service Connection
9464RL-0	REGO-LOK™ for 3/4" hex fittings	CGA 295
9464RL-1	REGO-LOK™ for 7/8" fittings	CGA 440, CGA 320 & CGA 326
9464RL-2	REGO-LOK™ for 1" fittings	CGA 540
9464RL-3	REGO-LOK™ for 1 1/8" hex CGA 580RL fitting by Rego	CGA 580
CGA580RL	3/8" MNPTxCGA for use with 9464RL-3	CGA 580

REGO-LOK™ is a registered trademark of Engineered Controls International, Inc. Patent applied for.



# Cryogenic Regulators

## RG Series



### Ordering Information

Part Number	Inlet / Outlet Connections (F.NPT) A	Width B	C	D	Pressure Setting (PSIG)	Operating Range (PSIG)
RG125	1/4"	2 1/4"	3"	5/8"	125	25-250
RG300					300	125-350

\*Contact factory for additional settings.

### Application

The RG series cryogenic regulators are primarily designed to maintain pressure on cryogenic liquid within cryogenic containers. They may also be used in cryogenic lines, vaporizer and converter applications. They are especially useful in installations where space and cost limitations are important.

### Features

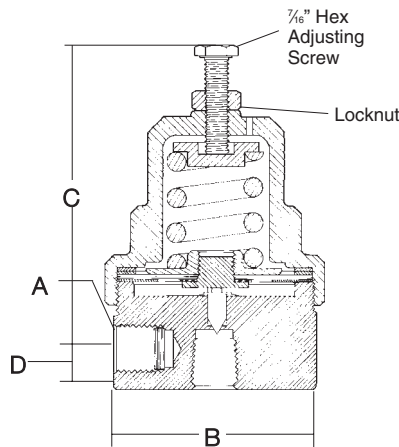
- All parts are copper alloy (brass), PTFE and stainless steel—materials selected specifically for compatibility with cryogenic temperatures down to -320°F.
- Body and bonnet machined from solid brass bar stock.
- PTFE seat helps assure a positive shut-off at cryogenic temperatures down to -320°F.
- High and low pressure regulators are the same compact size—designed to fit in close quarters. The compact high pressure design has no loss of flow capacity.
- Interchangeable with existing cryogenic regulator units.
- Inlet filter helps prevent foreign material from entering the regulator.
- Locknut is provided to maintain adjusting screw setting.
- Maximum inlet pressure of 550 PSIG.
- Cleaned for liquid oxygen service per CGA G-4.1

### Materials

Body.....	Brass
Bonnet.....	Brass
Seat Retainer.....	Brass
Seat.....	PTFE
Springs.....	Stainless Steel
Diaphragm Gasket.....	PTFE
Backcap Gasket.....	Copper

# Cryogenic Economizers

## ECL Series



### Ordering Information

Part Number	Inlet/Outlet Connections (F.NPT) A	Width B	C	D	Factory Pressure Setting (PSIG)	Operating Range (PSIG)
ECL22	1/4"	2 1/4"	3"	3/8"	22	10-150
ECL70					70	
ECL140					140	
ECL325					325	

\*Contact factory for additional settings.

### Application

The ECL series cryogenic economizers are primarily designed to utilize the gas pressure in a liquid cryogenic cylinder that would otherwise be lost to the atmosphere through the pressure relief valve. They may also be used in cryogenic lines, vaporizer and converter applications. They are especially useful in installations where space and cost limitations are important.

### Features

- All parts are copper alloy (brass), PTFE and stainless steel—materials selected specifically for compatibility with cryogenic temperatures down to -320°F.
- Body and bonnet machined from solid brass bar stock.
- The ECL Series utilizes a stainless steel needle seat design that provides a very sensitive flow control at lower pressure settings.
- High and low pressure economizers are the same compact size—designed to fit in close quarters. The compact high pressure design has no loss of capacity.
- Interchangeable with existing cryogenic economizer units.
- Inlet filter helps prevent foreign materials from entering the economizer.
- Locknut is provided to maintain adjusting screw settings.
- Maximum inlet pressure of 550 PSIG.
- Cleaned for liquid oxygen service per CGA G-4.1

### Materials

Body.....	Brass
Bonnet.....	Brass
Seat.....	Stainless Steel
Springs.....	Stainless Steel
Gasket.....	PTFE

# RegO Combination Pressure Build/Economizer Regulator

## Application

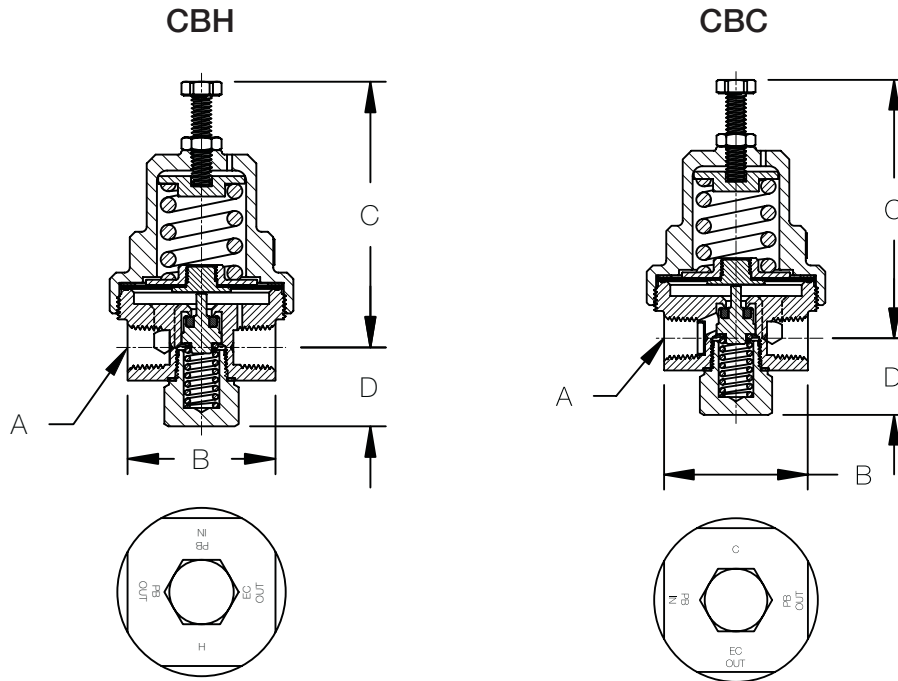
Combines the function of RG and ECL Pressure Building and Economizer functions in one compact unit. Available in Chart and Harsco piping geometries and a variety of pressure ratings.

## Features

- Precision silver brazed assembly
- Repeatable performance and geometry
- 100% factory tested
- Temperature range -320° to +165° F

## Materials

Body .....	Brass
Bonnet .....	Brass
Seat Disk .....	Steel
Spring .....	Steel
Gasket .....	PTFE



Part Number	Inlet/Outlet Connections (F.NPT)	"A"	"B"	"C"	"D"	Factory Pressure Setting (PSIG)	Operating Range (PSIG)
CBH000125	¼"	¼"	1.182"	3.245"	.966"	125	25-250
CBH000300	¼"	¼"	1.182"	3.245"	.966"	300	150-350
CBH000325	¼"	¼"	1.182"	3.245"	.966"	325	150-350
CBC000125	¼"	¼"	1.182"	3.245"	.966"	125	25-250
CBC000300	¼"	¼"	1.182"	3.245"	.966"	300	150-350
CBC000325	¼"	¼"	1.182"	3.245"	.966"	325	150-350

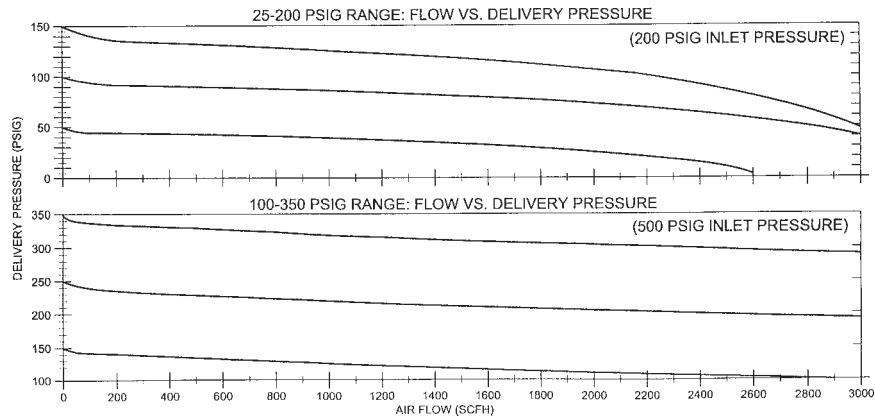
# Cryogenic Liquid Cylinder Regulator

## Application

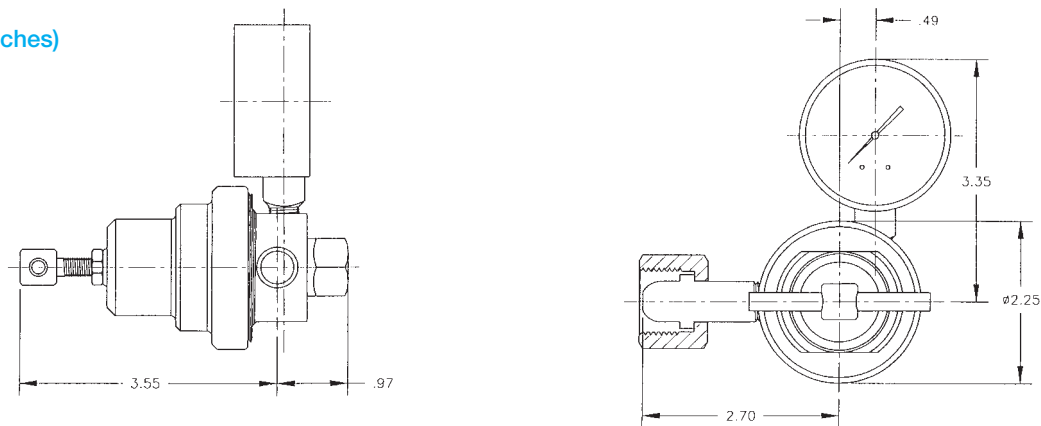
The new REGO LCR Series regulator assembly controls the pressure from the gas use line discharge of any liquid cylinder with a flow capacity at least double the vaporization capacity of the cylinder vaporization coil. For use with oxygen, nitrogen, argon, or carbon dioxide liquid cylinders.

## Features

- Maximum Inlet Pressure: 550 psig
- Temperature Range: -320° F to 165°F
- Brass Body and Diaphragm
- PTFE Seat
- Stainless Steel Springs, Adjusting Screw and Nut
- 1/4" Female NPT Outlet
- CGA fitting inlet connection for ready hook-up.
- Pressure Gauge for delivery pressure reading.
- Two delivery pressure ranges available
- Cleaned for use in oxygen per CGA G-4.1.
- $C_v = 2.1$



## Dimensions (inches)



## Ordering Information

Part Number	Gas	Liquid Cylinder Connection	Delivery Pressure Range
LCR-B580	Nitrogen/Argon	CGA 580	25 to 250 psig
LCR-B540	Oxygen	CGA 540	25 to 250 psig
LCR-B320	Carbon Dioxide	CGA 320	25 to 250 psig
LCR-C580	Nitrogen/Argon	CGA 580	100 to 350 psig
LCR-C540	Oxygen	CGA 540	100 to 350 psig
LCR-C320	Carbon Dioxide	CGA 320	100 to 350 psig

# RegO "NR" Series Noise Reduction Relief Valve

## Application

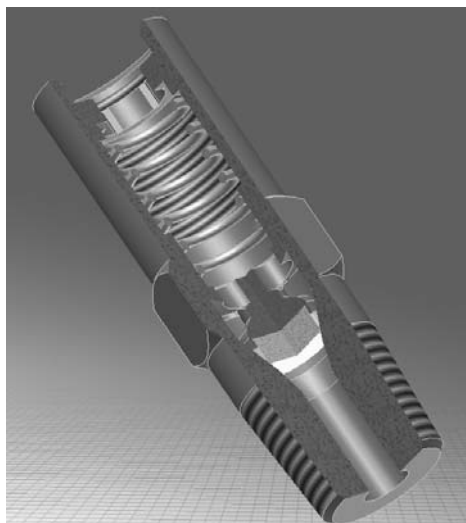
Designed especially for indoor applications such as laboratories where relief valve discharge noise is an issue. RegO's NR series PRV provides excellent flow characteristics with a 50% reduction in outlet noise related to valve relief.

## Features

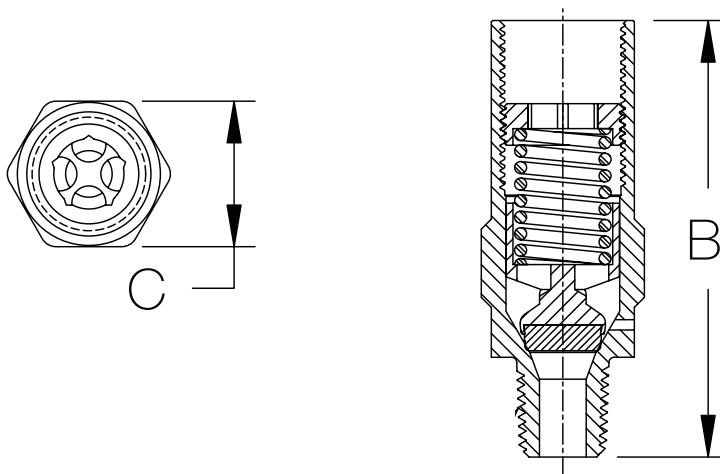
- Packaged and cleaned for oxygen service per CGA G-4.1
- Bubble tight at 95% of set pressure
- 100% factory tested
- Repeatable performance
- Temperature range -320° to +165° F

## Materials

Spring .....Steel  
 Gasket.....PTFE  
 Body .....Brass



Part Number	Seat Material	Inlet/Outlet Connections (F.NPT)	"B"	"C"	Orifice Size In*	Factory Pressure Setting (PSIG)
NR009432F022	Fluorosilicone	¼"	2.60"	7/8"	.062	22
NR009432F050	Fluorosilicone	¼"	2.60"	7/8"	.062	50
NR009432F100	Fluorosilicone	¼"	2.60"	7/8"	.062	100
NR009432T230	PTFE	¼"	2.60"	7/8"	.062	230
NR009432T250	PTFE	¼"	2.60"	7/8"	.062	250
NR009432T300	PTFE	¼"	2.60"	7/8"	.062	300
NR009432T350	PTFE	¼"	2.60"	7/8"	.062	350
NR009432T360	PTFE	¼"	2.60"	7/8"	.062	360



# Relief Valves for Gas & Cryogenic Systems

## 9400 Series Brass or Stainless Steel, Non-ASME

### Application

These relief valves are specifically designed for thermal safety relief applications and cryogenic liquid containers.

### Features

- All valves are cleaned and packaged for oxygen service per CGA G-4.1.
- Bubble tight at 95% of set pressure.
- Easy to read color coded psig / bar labels.
- Unique tamper resistant adjusting screw.
- Adapters provide standard pipe thread connections for venting gas to the outdoors.
- Repeatable performance.
- 100% factory tested.
- Temperatures Range -320° to +165° F.

### Materials

	SS Style	PRV and B-Style
Body	Stainless Steel	Brass
Spring	Stainless Steel	Stainless Steel
Seat Retainer	Stainless Steel	Brass
Adjusting Screw	Stainless Steel	Brass
Pipe-Away Adapter	Stainless Steel	Brass

### Flow Performance

- PRV and SS style flow at 0.783 SCFM Air/PSIA at 110% of set pressure.
- B-9425N has a flow of 6.7 SCFM Air/PSIA at 120% of set pressure.
- B-9426N has a flow of 11.0 SCFM Air/PSIA at 120% of set pressure

### Style and Size

Style	Size	Inlet A	Body and Valve Material	Pressure Setting Range PSIG	Height B	Wrenching Hex C	Orifice Size Sq. Inch	Pipe-Away Adapter P/N	Pipe-Away Outlet F.N.P.T.
PRV	9432	¼"	Brass	17-600	2.6	⅞"	.062	B-9412-2	¾"
SS	9432	¼"	Stainless Steel	17-600	2.6	⅞"	.062	SS-9412-4	½"
PRV	9433	⅜"	Brass	17-600	2.6	⅞"	.062	B-9412-2	¾"
SS	9433	⅜"	Stainless Steel	17-600	2.6	⅞"	.062	SS-9412-4	½"
PRV	9434	½"	Brass	17-600	2.8	⅞"	.062	B-9412-4	½"
SS	9434	½"	Stainless Steel	17-600	2.8	⅞"	.062	SS-9412-4	½"
B-	9425	⅜"	Brass	50-300	3.4	1½"	.43	B-3131-10	1"
B-	9426	1"	Brass	100-300	5.5	2⅝"	.62	B-3132-10	1½"

### Seat Material Option

**F** for Fluorosilicone for PRV and SS styles for 15-139psi.

**T** for PTFE for PRV and SS styles for 140-600psi

**N** for B-9425 and B-9426, Fluorosilicone seat, all set pressures.

### Drain Hole Option

Relief valves without pipeaway typically provided with drain holes, leave blank. **P** - for relief valves without drain hole, for example RPV9432TP350

WARNING: Inspection and maintenance of pressure relief valves is very important. Failure to properly inspect and maintain pressure relief valves could result in personal injuries or property damage. The useful safe service life of a pressure relief valve may be significantly affected by the service environment.

### Set Pressure

Specify set pressure within range specified for style and size. The B-9426N is available in select settings only. Special order.

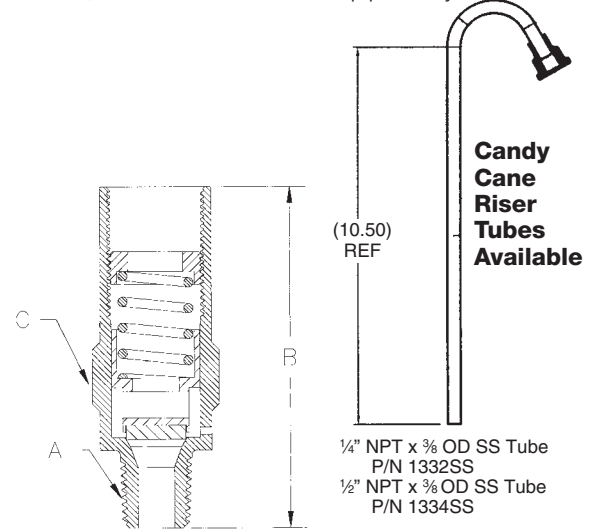
### Ordering Information

Fill in the blanks with options below.

Example:

PRV	9432	T	Blank or "P"	350	Blank or "P"
Style	Size	Seat Material	Drain Hole	Set Pressure	Pipe Away Option

This example part number indicates a 1/4" PRV style brass relief valve with PTFE seat, set at 350 PSIG and no pipe away adaptor.



### Pipe Away Option

**P**- Pipeaway included and attached, No drain hole in relief valve. For example PRV9432TP350P

Leave blank for relief valve without pipe-away attached. For example PRV9432T 350.

For easy identification, the following standard settings have color coded labels for all PRV and SS Style sizes and settings marked in PSIG and bar:

22 psig	yellow	230 psig	blue
35 psig	purple	350 psig	orange
50 psig	white	500 psig	light blue
100 psig	gray	450 psig	pink
150 psig	red		

# ASME Relief Valves for Gas & Cryogenic Systems

## PRV 19430 Series Brass Relief Valves PRV 29430 Series Stainless Steel Relief Valves

### Application

These relief valves are designed for oxygen and other industrial gases and for cryogenic service. Apply on piping systems, liquid cylinders or mini-bulk cryogenic containers where an ASME relief valve is desired.

### Features

- A.S.M.E. rated, National Board Certified.
- Bubble tight at 95% of set pressure.
- Full flow at 110% at set pressure.
- Repeatable performance.
- Unique tamper-resistant adjusting screw.
- 100% factory tested.
- Temperatures Range -320° F to 165° F.
- Cleaned and packaged for oxygen service per CGA G-4.1.

### Materials

Spring.....Stainless Steel  
Body, valve parts, and seat as shown in part number.

### Flow Performance

PRV19430 and PRV29430 Series: 0.783 SCFM of air per psia of flow pressure. Flow pressure per ASME is 10% above set pressure.

### Ordering Information

Fill in the blanks with options listed below.

Example: **PRV**  

Style	Material and Inlet size	Seat Material	Drain Hole	Set Pressure
-------	-------------------------	---------------	------------	--------------

### Material and Inlet Part Number Options

**19432** for Brass 1/4", **19433** for Brass 3/8", **19434** for Brass 1/2",  
**29432** for SS 1/4", **29433** for SS 3/8", **29434** for SS 1/2".

### Seat Material

**F** for Fluorosilicone for 90 to 139 psig set.  
**T** for PTFE for 140-600 psig

### Drain Hole

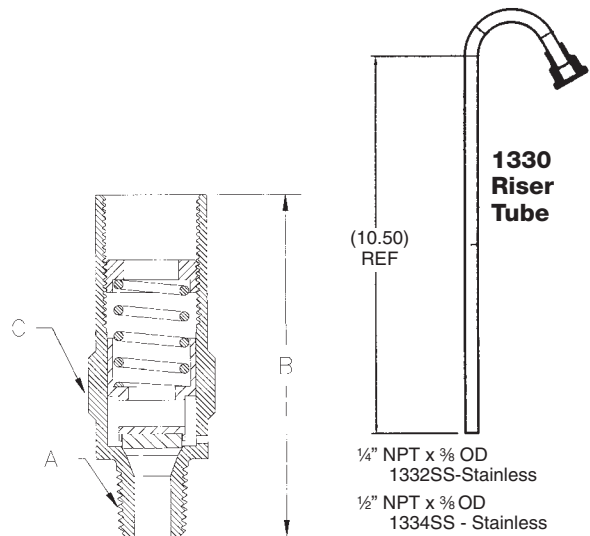
Leave blank for relief with drain hole. Insert **P** if no drain hole.

### Set Pressure

Enter number for set pressure in PSIG from 90 to 600.

### Ordering Information

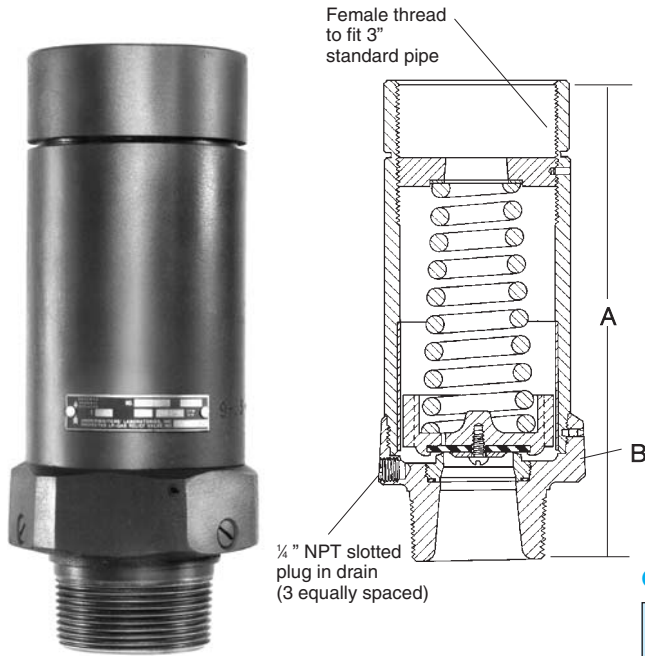
Models	Inlet	Height	Wrenching Hex	Orifice
	A	B	C	Size
PRV 19432 and PRV29432	1/4"	2.6"	7/8"	.062 sq. inch
PRV 19433 and PRV29433	3/8"	2.6"	7/8"	.062 sq. inch
PRV 19434 and PRV29434	1/2"	2.8"	7/8"	.062 sq. inch





# ASME Carbon Dioxide Relief Valves

## UA3149A Series



\*Capacity certified by National Board of Boiler and Pressure Vessel Inspectors at 10% above set pressure.

### Application

The UA3149A series "pop-type" relief valves are especially designed for use as a secondary relief valve in carbon dioxide transports and stationary storage tanks. The relief valve is designed to protect the tank from excessive over pressure in the event of fire or other emergencies. A small throttling-type primary relief valve must also be provided to control boil-off and maintain tank pressure. Provisions must be made to prevent the accumulation and build-up of water and foreign material in the valve.

### Features

- "Pop-type" design permits the relief valve to open slightly to relieve moderately excessive pressures.
- Relief valve "pops" open to full discharge capacity when pressure exceeds a predetermined point.

### Materials

Body.....Steel and Ductile Iron  
 Liner.....Stainless Steel  
 Seat Insert.....Stainless Steel  
 Spring Guide.....Brass  
 Adjusting Screw.....Ductile Iron  
 Seat Disc.....Urethane Compound  
 Spring.....Corrosion Resistant Steel

### Ordering Information

Part Number	Pressure Setting (PSI)	Flow Capacity (SCFM/Air)	Inlet Connection (M.NPT)	Height A	Wrenching Hex B
UA3149A303	303	9,805*	2 1/2"	10 1/2"	4 1/8"
UA3149A330	330	10,188*			
UA3149A358	358	11,601*			

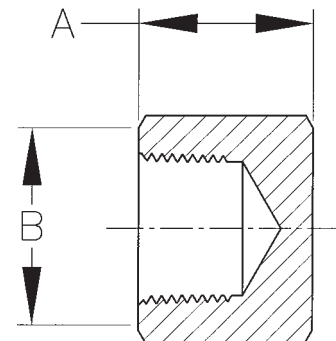
# Brass Pipe Caps

### Application

For capping cryogenic tank piping or gas pipelines.

### Features

- Machined from brass.
- For 600 psig maximum working pressure service.
- Part number stamped on cap.
- Cleaned for oxygen per CGA G-4.1.



### Ordering Information

Part Number	Thread Connections	Dim. A	Dim. B	Dim. C
CAP750	3/4" Female NPT	1.250"	1.313"	1.313"
CAP1000	1" Female NPT	1.500"	1.750"	1.750"
CAP1500	1 1/2" Female NPT	1.750"	2.375"	2.375"
CAP2000	2" Female NPT	2.000"	3.250"	3.250"

# ASME Relief Valves for Gases & Cryogenic Systems

## B-19434B Series

## C-19434B Series

### Application

The B-19434B Series relief valves are suitable for use with oxygen and non corrosive gases.

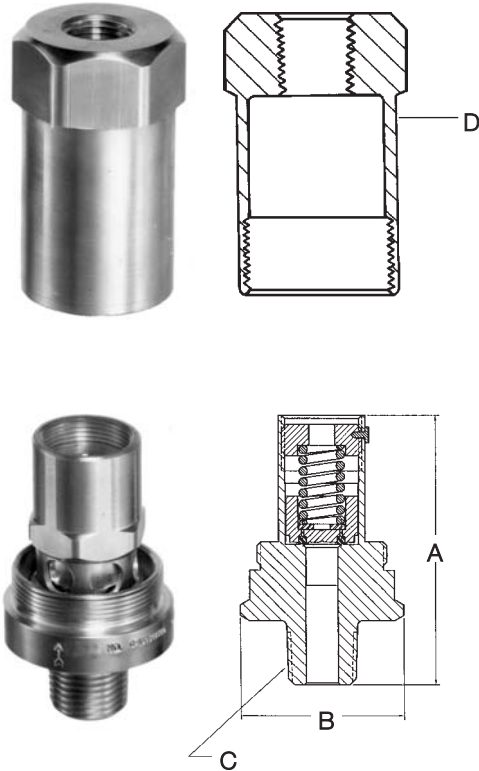
The C-19434B series relief valves are designed for use in carbon dioxide service.

### Features

- Both designs permit the valve to open slightly to relieve moderately excessive pressure.
- When the pressure increases beyond a predetermined point, the valve opens to its full discharge capacity in order to quickly reduce excess pressure.
- Pipe-away adapter for venting gas to the outdoors is available.
- A.S.M.E. rated. NB Certified.
- B-19434-B Series are cleaned for use in oxygen per CGA G-4.1.

### Materials

Body.....	Brass
Spring .....	Stainless Steel
Seat Retainer.....	Brass
Seat Disc (B-19434B Series) .....	Fluorosilicone
(C-19434B Series).....	EPDM Synthetic Rubber
Pipe-Away Adapter.....	Brass



### Ordering Information

Part Number	Pressure Setting (PSIG)	ASME Relief Capacity (CFM/Air)	Height A	Width B	Inlet Connection (M.NPT) C	Pipe-Away Adapter Part Number D
B-19434B235	235	476	2 <sup>15</sup> / <sub>16</sub> "	1 <sup>1</sup> / <sub>4</sub> "	1/2"	*B-19434-5 1/2" F.NPT Outlet
B-19434B250	250	505				
B-19434B300	300	601				
B-19434B350	350	691				
B-19434B375	375	736				
C-19434B235	235	476				
C-19434B250	250	505				
C-19434B280	280	555				
C-19434B300	300	601				
C-19434B350	350	691				
C-19434B375	375	736				

\* Pipe Away Adapter is sold separately.

\*\* Contact factory for additional settings.

# 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 O-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

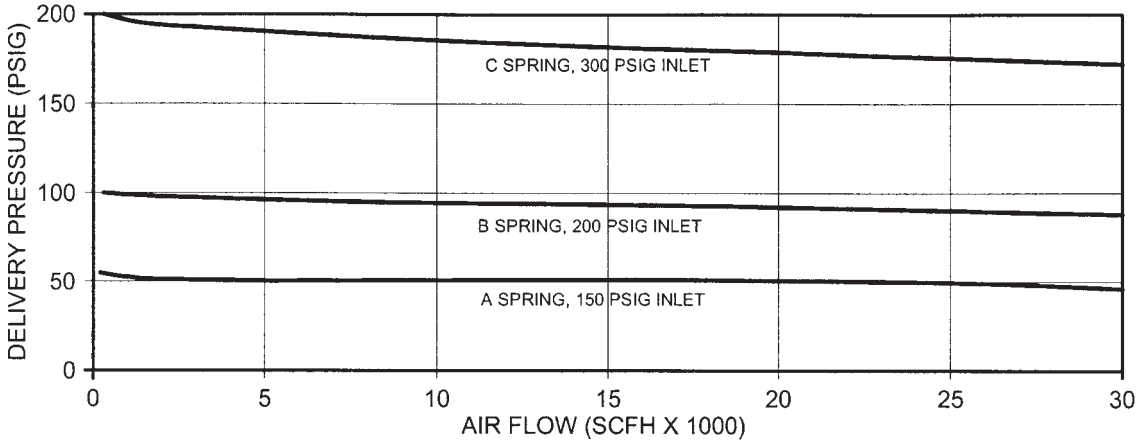
# Heavy Duty Brass Final Line Pressure Regulator

## BR-1780 Series

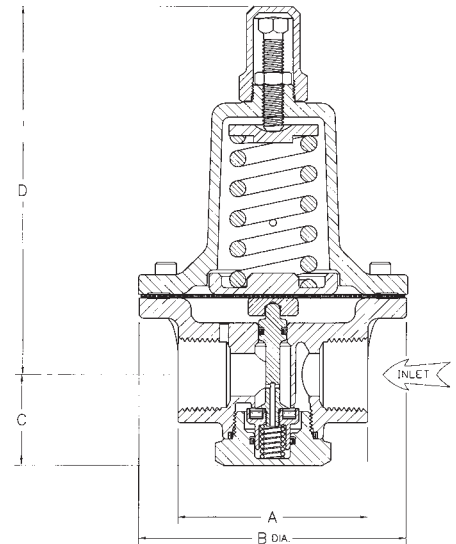
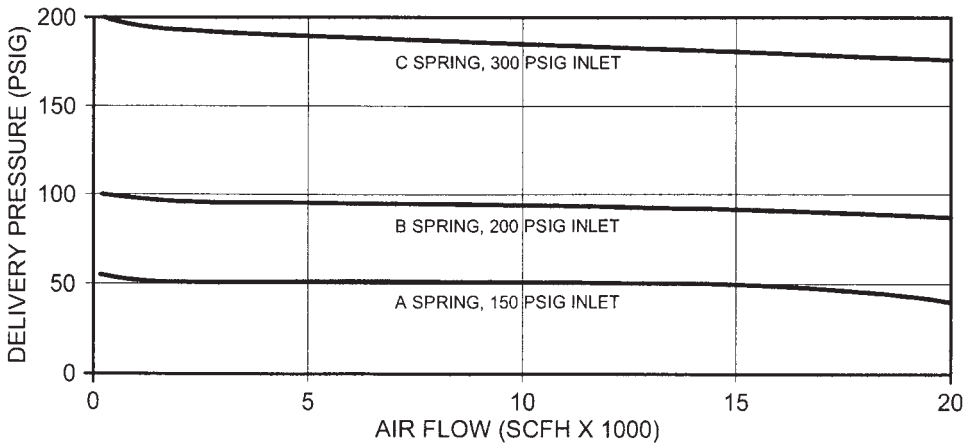
### Flow Performance

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

### BR-1786 & BR-1788



### BR-1784



### 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 <sub>v</sub>
		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.**

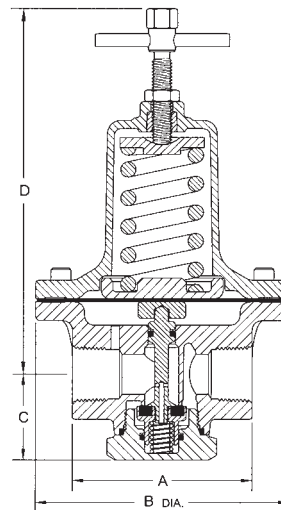
### Dimensions

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

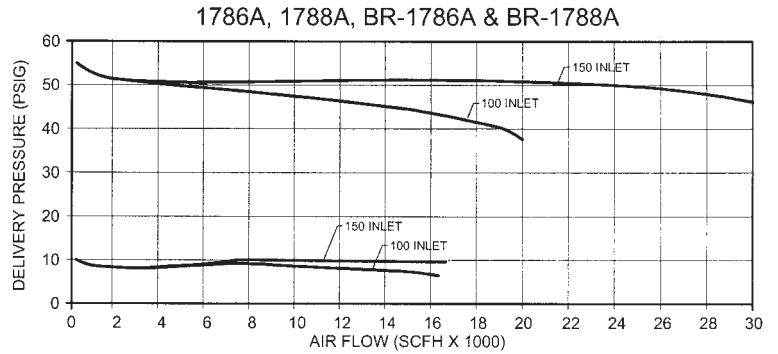
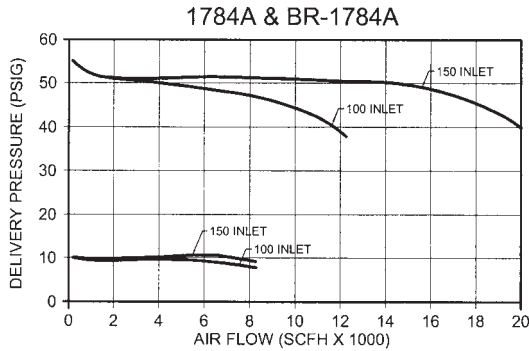
\* Regulator sold without gauge. Order gauge separately.



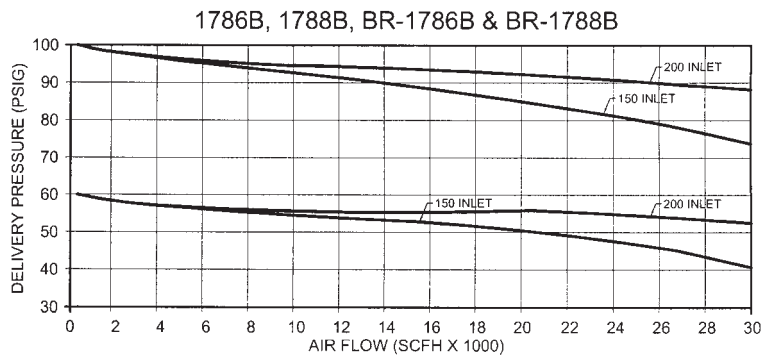
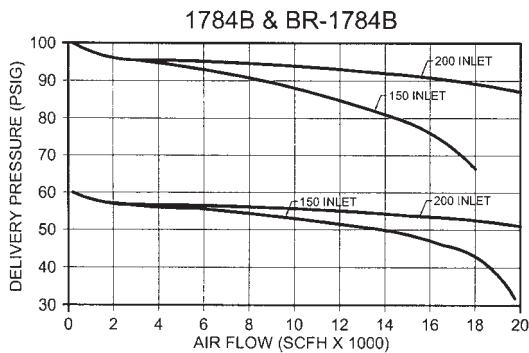
# Heavy Duty Line Regulators Performance Curves

## 1780 Series BR-1780 Series

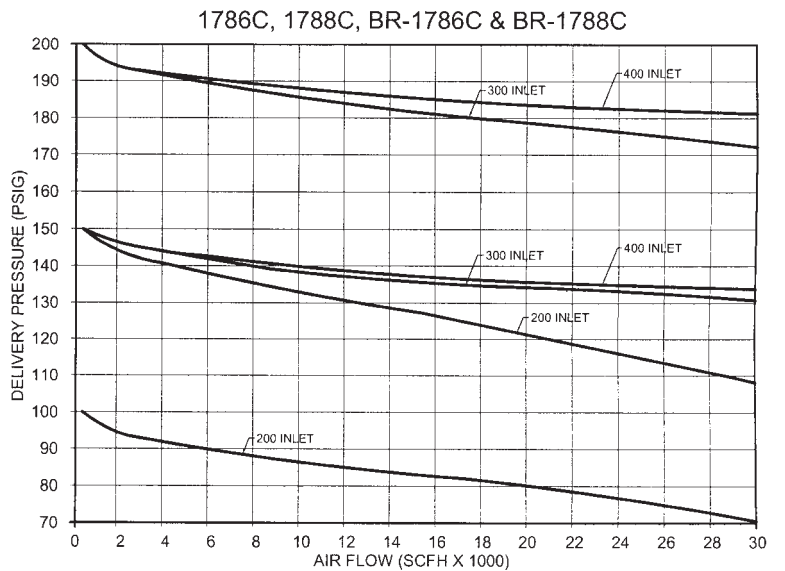
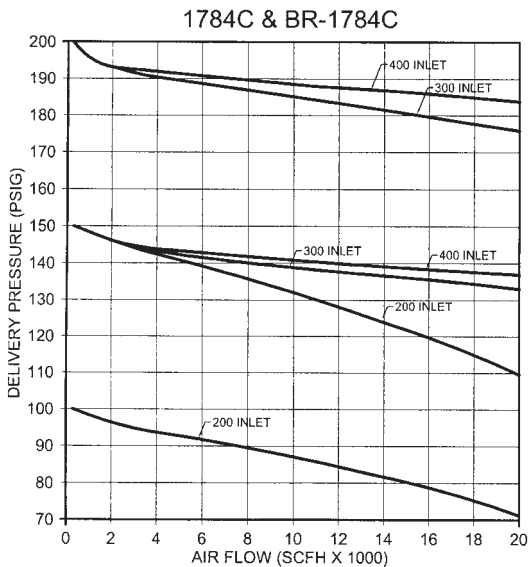
“A” spring range 5 - 55 psig



“B” spring range 40 - 110 psig



“C” spring range 100 - 200 psig



### 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

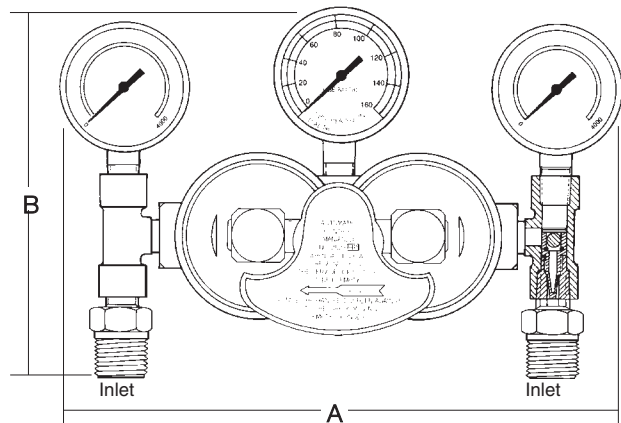
The M2523HP series automatic changeover regulators are designed especially for use in systems where a reserve cylinder is used to provide a continuous, uninterrupted supply of gas. These regulators are suitable for use with carbon dioxide, hydrogen, oxygen, industrial air, nitrous oxide, nitrogen, helium 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. CO<sub>2</sub> and N<sub>2</sub>O regulators are factory set at 100 PSIG on service side.

### Materials

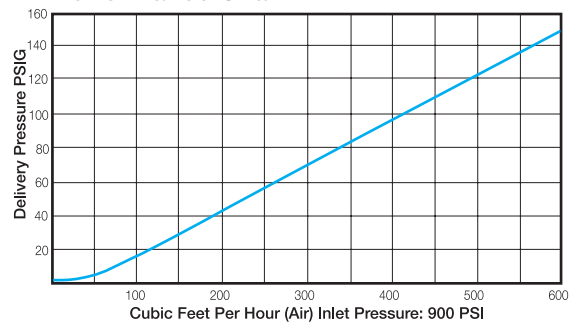
Body.....	Brass
Bonnet.....	Brass
Seat Disc (all gases except CO <sub>2</sub> ).....	Viton
(CO <sub>2</sub> only).....	Butyl Rubber
Diaphragm (all gases except CO <sub>2</sub> ).....	Neoprene
(CO <sub>2</sub> only).....	Buna N
Handle.....	Aluminum
Bonnet Spring.....	Steel
Backcap Spring.....	Stainless 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	1/4" F.NPT	7 1/4"	5 1/2"	1800	30-130	BR-1784E, 1784E C-1682 M Series
M2523HP326	Nitrous Oxide	326						
M2523HP350	Hydrogen	350						
M2523HP540	Oxygen	540						
M2523HP580	Nitrogen, Argon, Helium	580				1784 Series 1682 M Series BR 1784 Series		

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

# 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

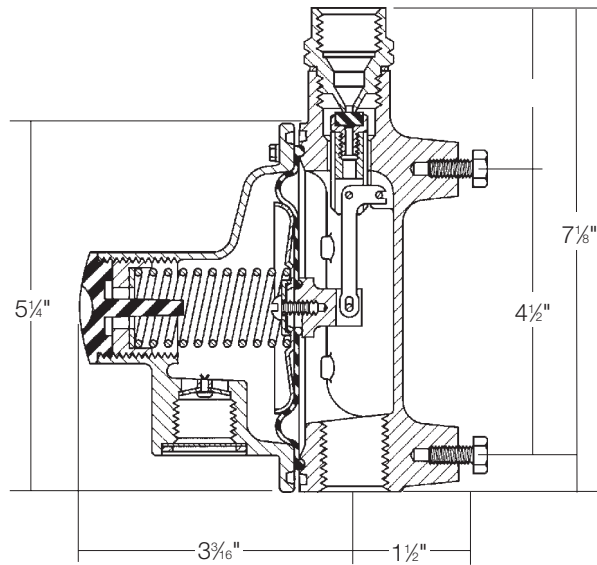
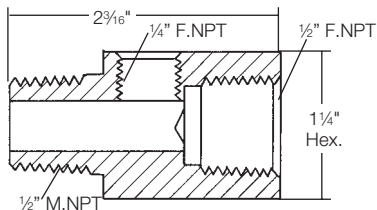
- Large molded diaphragm provides highly sensitive and accurate low pressure control.
- Zinc body and bonnet resist corrosion and provide for longer life.
- Teflon seat disc, teflon faced diaphragms, and stainless steel nozzles make the T4403J regulators compatible with a variety of gases.
- LV4403C2H42 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	1/2" F. NPT	1/2" 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	1/4" F. NPT	1/2" 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 1/4" 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

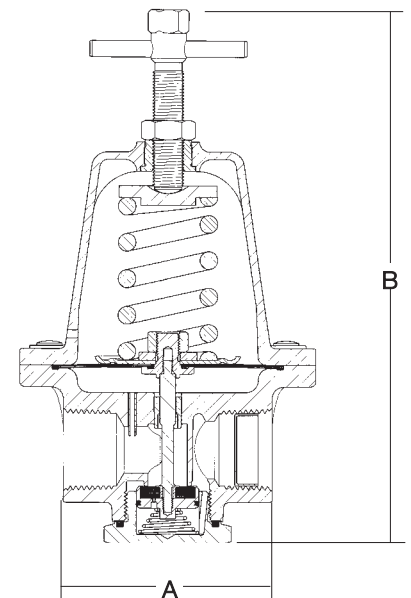
Body.....Forged Aluminum  
 Bonnet.....Cast Aluminum  
 Seat Disc (1682M).....Neoprene  
 (C-1682M).....EPDM  
 Diaphragm (1682M).....Neoprene  
 (C-1682M).....EPDM



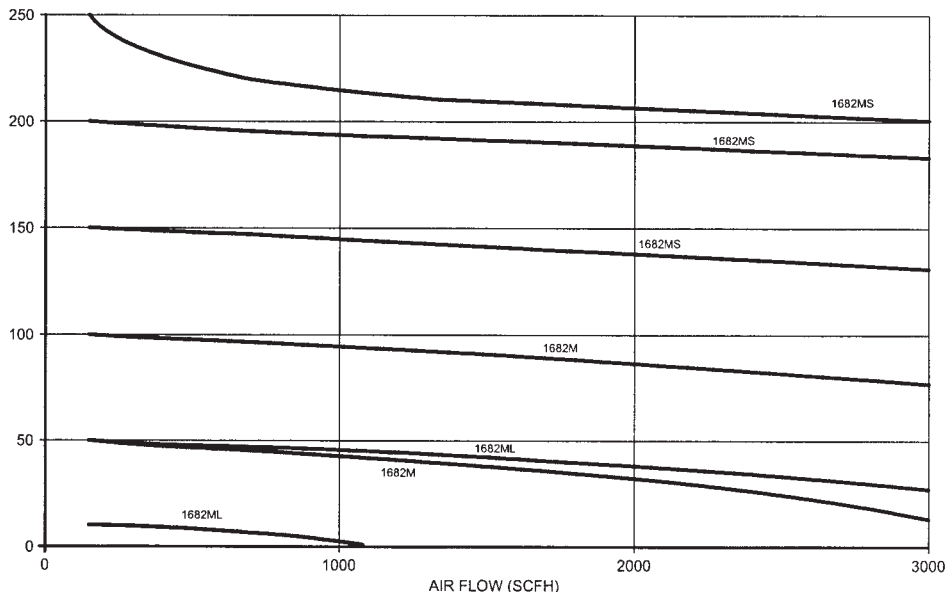
### Ordering Information

Part Number		Delivery Pressure Range (PSI)	Pressure Gauge Range (PSI) Part Number		Inlet & Outlet Conn. (F.NPT)	Width A	Maximum Height B
1682ML	C-1682ML	5-50	*	*	1/4"	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



# Inertrol Outfits

## 4286 Series 4289 Series 4291 Series

### Application

The 4286, 4289, and 4291 series inertrol outfits are three-stage nitrogen regulators especially designed to maintain oil-filled transformer atmospheres at 0.5 PSIG. Each inertrol outfit consists of a two-stage regulator connected in series to a highly sensitive single-stage regulator which maintains the 0.5 PSIG pressure. A built-in pressure relief valve in the third-stage regulator helps protect against over-pressurization of the system.

These inertrol units are designed for oil-filled transformers manufactured by ABB, Inc., General Electric, and Cooper Power. Some outfits are equipped with an alarm switch that activates a customer equipped warning device should the cylinder pressure drop below 3000 PSIG.

### Features

- Heavy duty brass and aluminum construction resists corrosion and provides for longer life.
- The 4289 series incorporates a special by-pass valve to allow for quick filling of the transformer.
- Hidden pressure adjusting screw helps protect against tampering by unauthorized personnel.
- Large diameter diaphragm in the third-stage regulator provides for sensitive and precise control of the gas flow.
- Maximum inlet pressure - 3000 PSIG.

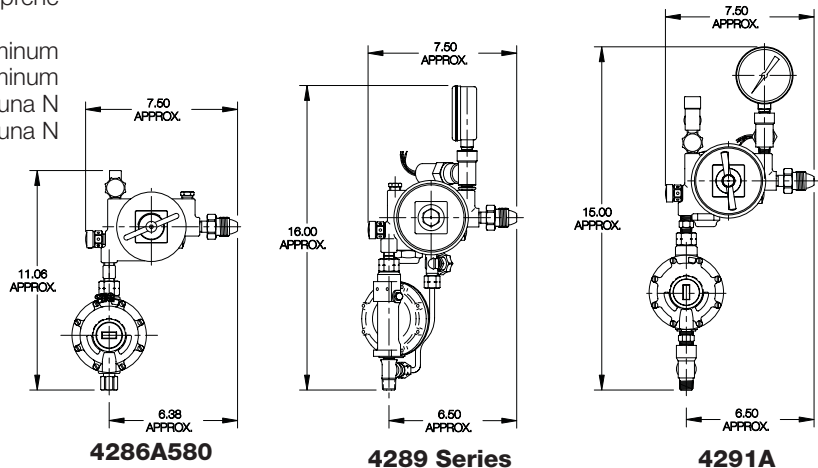
### Materials

#### Two-Stage Regulator:

Body .....Brass  
Bonnet .....Brass  
Diaphragms.....Synthetic Rubber  
1st Stage Seat Disc.....Nylon  
2nd Stage Seat Disc .....Neoprene

#### Third-Stage Regulator:

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



### Ordering Information

Part Number	Gas Service	Inlet	Outlet	Two Stage Regulator Part Number	Third Stage Regulator Part Number	Alarm Gauge	Transformer Manufacturer
4286A580	Nitrogen	CGA580	1/8" NPT	4286A-2NW	4286-10-8	None	ABB, Inc.
4289AG			3/16" -18 L.H.	4289A-2G	4289-10	4285-9B	General Electric
4289G						None	
4291A			3/8" NPT	4291B-2	4286-10-8	4285-9B	Cooper Power

# 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.

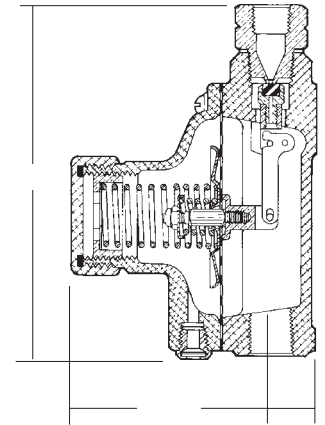
These regulators are factory preset at 14" to 15" water column delivery pressure with an inlet pressure of 5 to 10 PSIG.

### 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	1/4"	3/8"	14"-15" w. c.	5 PSIG
4286-10-8				8 PSIG
4289-10				None

# Alarm Gauges

## 4285-9B

### Application

The 4285-9B 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 switch will close and set off a user-furnished alarm system.

### Features

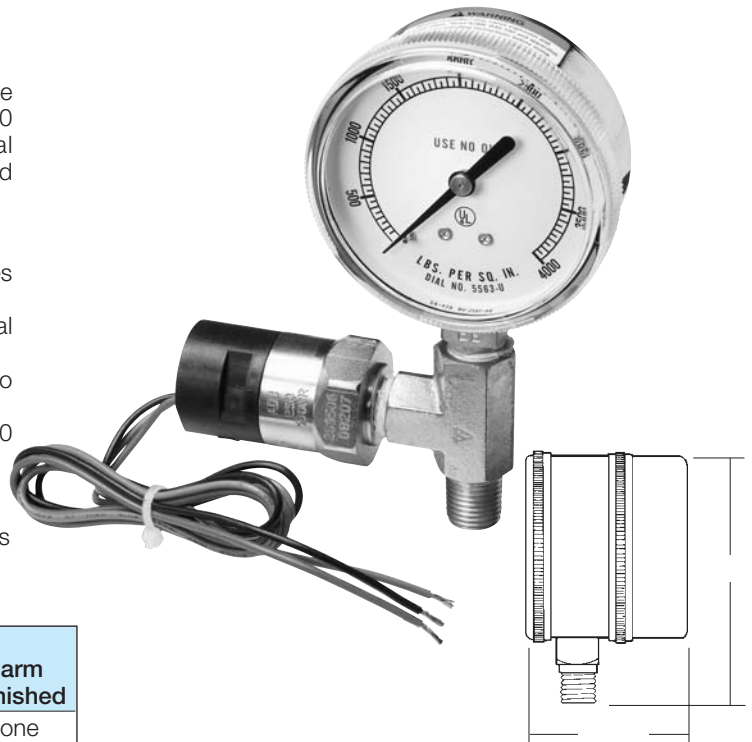
- Solid brass gauge casing resists corrosion and provides for longer life.
- Equipped with a heavy-duty, 36" long, 3-wire electrical cable.
- Each gauge is factory pre-set at 300 PSIG, then sealed to help prevent against tampering once in service.
- Electrical circuit is rated for a maximum of 3 AMPS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

### Materials

Gauge Casing .....Brass

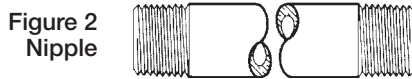
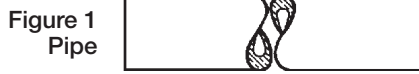
### Ordering Information

Part Number	Inlet M.NPT	Diameter	Pressure Range (PSIG)	Adjustable	Alarm Furnished
4285-9B	1/4"	2 1/2"	0-4000	No	None



# Brass Pipe & Pipe Nipples

Heavy-duty, yellow brass pipe and pipe nipples are designed with a high quality, seamless thick wall construction. They are suitable for use in most industrial piping applications.



## Ordering Information

Part Number	Figure	Inside Diameter	Inlet / Outlet Connections (F.NPT)	Length	Maximum Operating Pressure (PSIG)*
TNE1050-14400	1	1/2"	Not Available	12 Feet	3600
TNE1075-14400		3/4"			
1050-15	2	1/2"	1/2"	1 1/2"	
1050-20				2"	
1050-40				4"	
1050-60				6"	
1050-80				8"	
1075-20				3/4"	
1075-30	3"				
1075-40	4"				
1075-50	5"				
1075-60	6"				

For the 1/2" I.D. pipe, the O.D. is 0.840".  
For the 3/4" I.D. pipe, the O.D. is 1.050".

# Brass Elbows

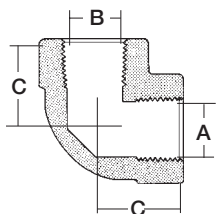


Fig. 1

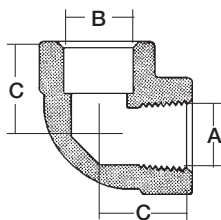


Fig. 2

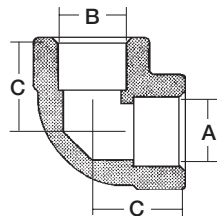


Fig. 3

## Ordering Information

Part Number	Figure	A (Female)	B (Female)	C (Ref.)	Working Pressure PSIG*
1228-1	1	1/2" NPT	1/2" NPT	1 1/8"	3750
HP1228-1				1 1/2"	4500
1043		3/4" NPT	3/4" NPT	1 1/2"	4500
1228-2	2	1/2" NPT	.843-.847	1 1/8"	3750
HP1228-2				1 1/2"	4500
2223-2		3/4" NPT	1.053-1.057	1 1/2"	4500
1228-4	3	.843-.847	.843-.847	1 1/8"	3750
HP1228-4				1 1/2"	6000
2233-6		1.053-1.057	1.053-1.057	1 1/2"	4500

\*Safety factor = 4:1

# Brass Tees

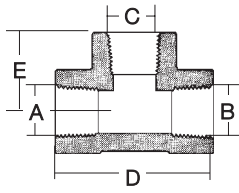


Fig. 1

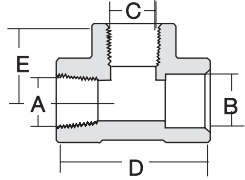


Fig. 2

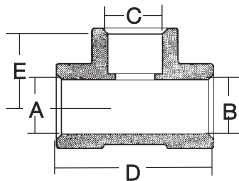


Fig. 3

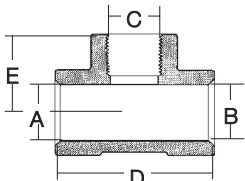


Fig. 4

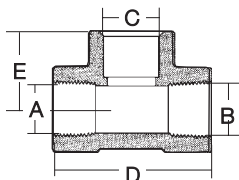


Fig. 5

## Ordering Information

Part Number	Figure	A (Female)	B (Female)	C (Female)	D (Ref.)	E (Ref.)	Working Pressure PSIG*
1227-1	1	½" NPT	½" NPT	½" NPT	2¼"	1½"	3750
HP1227-1					3"	1½"	4500
1042-20		¾" NPT	¾" NPT	½" NPT	3"	1½"	4500
1042							
1227-3	2	½" NPT	.843-.847	½" NPT	2¼"	1½"	3750
HP1227-3					3"	1½"	4500
4608-5		¾" NPT	1.053-1.057	¾" NPT	3"	1½"	4500
1227-28	3	.843-.847	.843-.847	.843-.847	2¼"	1½"	3750
HP1227-28					3"	1½"	6000
2118-2		1.053-1.057	1.053-1.057	1.053-1.057	3"	1½"	4500
1227-9	4	.843-.847	.843-.847	½" NPT	2¼"	1½"	3750
HP1227-9					3"	1½"	4500
2223-3		1.053-1.057	1.053-1.057	¾" NPT	3"	1½"	4500
HP1227-5	5	½" NPT	½" NPT	.843-.847	3"	1½"	4500
2222-1							

# Brass Crosses

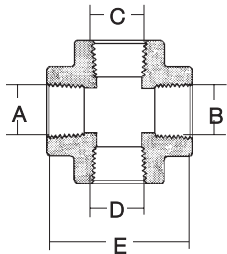


Fig. 1

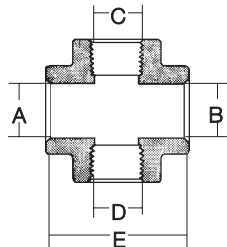


Fig. 2

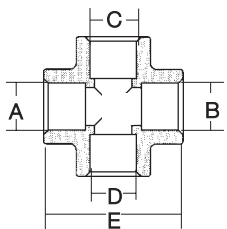


Fig. 3

## Ordering Information

Part Number	Figure	A (Female)	B (Female)	C (Female)	D (Female)	E (Ref.)	Working Pressure PSIG*
1225-1	1	½" NPT	½" NPT	½" NPT	½" NPT	2¼"	3750
HP1225-1						3"	4500
1045						¾" NPT	¾" NPT
1225-3	2	.843-.847	.843-.847	½" NPT	½" NPT	2¼"	3750
HP1225-3						3"	4500
2222-2	3	1.053-1.057	1.053-1.057	¾" NPT	¾" NPT	3"	4500
HP1225-4		.843-.847	.843-.847	.843-.847	.843-.847	3"	6000
2222-4		1.053-1.057	1.053-1.057	1.053-1.057	1.053-1.057	3"	4500

# Repair Kits

Valves		
Kit Number	Part Number	Kit Contents
2505AC-80	2505AC	Seat disc, diaphragm, washers, gaskets.
2507AC-80	2507AC	
2511AC-80	2511AC	
2513AC-80	2513AC	
2553AC-80	2553AC 2553AAC	Diaphragm and seat disc assembly stem washer.
2554AC-80	2554AC 2554AAC	
CW6600G-80	CW6600G580 CW6600G581	Gasket, spring, spring retainer, washer.
7160-80B	7160V 7161V	Complete valve trim assembly.
9500-80K	UL9500 series NUL9500 Series**	Seat disc and retainer assembly, seal washer, packing ring set, washer.
9550-80	9550 Series	Seat disc, retainer assembly, seal washer, packing nut set, washer.
9550-3-80	9550 Series	Sleeve.
9550-4-80	9550 Series	Stem, back-up ring, o'ring, washer.
9560-80	9560 Series	CTFE Seat Disc & Retainer Assembly, Seal
9560C-80	9560C Series	Copper Seat Disc & Retainer Assembly, Seal Monel Body Seat Insert
BK8400-80J	BK8404 Series BK8406 Series BK8408 Series BKY8408 Series BK9404 Series BK9406 Series BK9408 Series	Jam ring, o-ring, pressure seal rings (3), spring, tape, washer.
BK8400-80AJ	BK8404 Series BK8406 Series BK9404 Series BK9406 Series	Seat disc assembly, teflon o-ring.
BK8400-80BJ	BK8408 Series BK9408 Series	Seat disc assembly, teflon o-ring.
BKA8412-80J	BKA8412S	Jam ring, o-ring, pressure seal rings (3), spring, tape, washer.
BKA8412-80JA		O-ring seal, seat disc retainer assembly.
BK9400-80J	BK9410 Series BK9412 Series	Jam ring, o-ring, pressure seal rings (3), spring, tape, washer.
BK9400-80AJ		Seat disc assembly, teflon o-ring.
BKY8408-80AJ	BKY8408 Series	Seat disc assembly and gasket.

Retrofit Kits		
Kit Number	Part Number	Kit Contents
ES8450R	T9450 Series T9460 Series	Stem assembly (4"), packing, bonnet, handwheel
BK9450R	9460 Series 9450 Series	Extended Bonnet Assembly Kit, Spring load packing for conversion of extended stem valves and topworks replacement
BKA8400R	BKA8412SE	Stem assembly, handwheel, seat assembly Converts SE Series to New Style S Series
T9464-80	T9450 Series T9460 Series	Complete valve trim assembly including handwheel
	9450 Series 9460 Series	
BK-9450-KIT	ES8450 Series ES9450 Series BK9450 Series	Extended Bonnet Assembly Kit, Spring load packing for conversion of extended stem valves and topworks replacement

# Repair Kits

		<b>Regulators</b>
Kit Number	Part Number	Kit Contents (Qty)
1682Y-80	1682Y Series	Diaphragm assembly, stem and seat assembly tetraseal.
1682M-80	1682M Series	Molded diaphragm assembly, stem and seat assembly tetraseal.
1684Y-80	1684Y Series	Diaphragm assembly, stem and seat assembly tetraseal, guide.
1684M-80	1684M Series	Molded diaphragm assembly, stem and seat assembly tetraseal, guide.
1686Y-80	1686Y, 1688Y Series	Diaphragm assembly, stem and seat assembly tetraseal.
1686M-80	1686M, 1688M Series	Moulded diaphragm assembly, stem and seat assembly tetraseal.
1686MHP-80	1686MHP, 1688MHP	Diaphragm assembly, stem and seat assembly, seal
1684MHP-80	1684MHP	
BR-1684M-80	BR-1684M Series	Diaphragm assembly, stem and seat assembly, tetraseal.
BR-1686M-80	BR-1686M Series	
BR-1784-80	BR-1784 Series 1784 Series	Diaphragm assembly, stem and seat assembly, seal, Viton seat
BR-1784-80E	BR-1784 E Series 1784 E Series	Diaphragm assembly, stem and seat assembly, seal, EPDM seat for CO2 Service
BR-1784ST	BR-1784 Series	T-Handle adjusting screw kit
BR-1784-7SKA BR-1784-7SKB BR-1784-7SKC	BR-1784 Series	Spring kit for BR-1784, "A" spring range, 5 to 55 psig delivery pressure
BR-1786-80		BR-1786 Series BR-1788 Series 1786 Series 1788 Series
BR-1786-80E	BR-1786 E Series BR-1788 E Series 1786 E Series 1788 E Series	Diaphragm assembly, stem and seat assembly, seal, EPDM seat for CO2 service
BR-1786ST	BR-1786 Series BR-1788 Series	T-handle adjusting screw kit
BR-1786-7SKA BR-1786-7SKB BR-1786-7SKC	BR-1786 Series	Spring kit for BR-1786, "A" spring range, 5 to 55 psig delivery pressure
BR-1788-7SKA BR-1788-7SKB BR-1786-7SKC		BR-1788 Series
BR-1780SC	BR-1780 Series	Brass Bonnet Cap
2523HP-80A	M2523HP350 M2523HP540 M2523HP580 M2523HP590 M2523HP1320	Seat and centerpiece assembly, diaphragm assembly, nozzle, spring, washer, gaskets.
2523HP-80B	M2523HP320	
ECL-80	ECL22 ECL70 ECL100 ECL140	Diaphragm assembly, diaphragm gasket, poppet, retaining ring, spring washer.
ECL-80A	ECL325	
RG-80	RG75 RG125	Backcap gasket, diaphragm assembly, diaphragm gasket, seat assembly.
RG-80A	RG300	
B-9472-80	B-9472	Diaphragm assembly, gasket, stem, and seat assembly.
B-9473-80	B-9473 B-9474	
B-9472M-80	B-9472M BR-9472	Diaphragm assembly, gasket, stem, and seat assembly.
B-9473M-80	B-9473M B-9474M BR-9473	

# Limited Warranty and Limitation of Liability

## LIMITED WARRANTY

Engineered Controls International, Inc. warrants products and repair kits manufactured by it to be free from defects in materials and workmanship under normal use and service for a period of 12 months from the date of installation or operation or 18 months from the date of shipment from the factory, whichever is earlier. If within thirty days after buyer's discovery of what buer believes is a defect, buyer notifies Engineered Controls International, Inc. thereof in writing, Engineered Controls International, Inc., at its option, and within forty-five days, will repair, replace F.O.B. point of manufacture, or refund the purchase price of that part or product found by it to be defective. Failure of buyer to give such written notice within thirty days shall be deemed an absolute and unconditional waiver of any and all claims of buyer arising out of such defect.

This warranty does not extend to any product or part that is not installed and used in accordance with Engineered Controls International, Inc.'s printed instructions, all applicable state and local regulations, and all applicable national standards, such as those promulgated by NFPA, DOT and ANSI. This warranty does not extend to any product or part that has been damaged by accident, misuse, abuse or neglect, nor does it extend to any product or part which has been modified, altered, or repaired in the field.

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All Engineered Controls International, Inc. products are mechanical devices that will eventually become inoperative due to wear, corrosion and aging of components made of materials such as rubber, etc. The environment and conditions of use will determine the safe service life of these products. Periodic inspection and maintenance are essential to avoid serious injury and property damage.

Many Engineered Controls International, Inc. products are manufactured components which are incorporated by others on or in other products or systems used for storage, transport, transfer and otherwise for use of toxic, flammable and dangerous liquids and gases. Such substances must be handled by experienced and trained personnel only, using accepted governmental and industrial safety procedures.

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The Limited Warranty stated above is a factory warranty to the first purchasers of Engineered Controls International, Inc. products. Since most users have purchased these products from Engineered Controls International, Inc. distributors, the user must within thirty (30) days after the user's discovery of what user believes is a defect, notify in writing the distributor from whom he purchased the product/parts. The distributor may or may not at the distributor's option, choose to submit the product/parts to Engineered Controls International, Inc. pursuant to its Limited Warranty. Failure by buyer to give such written notice within thirty (30) days shall be deemed an absolute and unconditional waiver of buyer's claim for such defects. Acceptance of any alleged defective product/parts by Engineered Controls International, Inc.'s distributor for replacement or repairs under the terms of Engineered Controls International, Inc.'s Limited Warranty in no way obligates Engineered Controls International, Inc. to the terms of the above warranty.

Because of a policy of continuous product improvement, Engineered Controls International, Inc. reserves the right to change designs, materials or specifications without notice.

## Canadian Registration Numbers

The majority of products in this catalog are registered with the Canadian Department of Labor under the following reference Number: 0\* 7770.5\*\*

\* Represents Fitting Categories: A, C, G, H

\*\* Represents Province code number

July 2003

## EUROPEAN PED CERTIFICATION

July 2003

The following product categories have received PED certification by the notified body Lloyd's Registry of Shipping #0038

Category IV items are certified with the notified body Lloyd's Registry of Shipping #0038

Valve number	maximum connection size	DN	PED Category
9560 series	1"	25	SEP
9500 series	1"	25	SEP
BK8400 series	2"	50	II
BK9400 series	2"	50	II
T9450 series	1/2"	15	TPED
T9460 series	1/2"	15	TPED
1682 series	1/4"	8	SEP
BR-&1780 series	1"	25	SEP
RG series	1/4"	8	SEP
ECL series	1/4"	8	SEP
PRV9430 & PRV19430 series	1/2"	15	IV
SS9430 & PRV29430 series	1/2"	15	IV



# Notes

# Notes



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 PRODUCTS

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