

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.

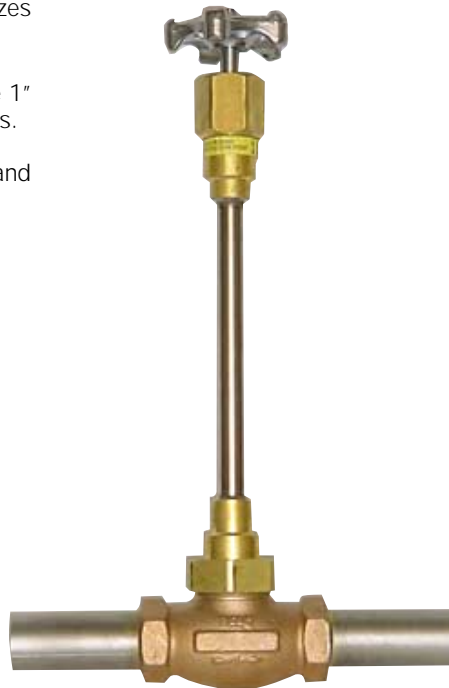
Bolted Bonnet design is used on the BK9410, BK9412, and BK9416 models.



BK 8408T



BK 9412S



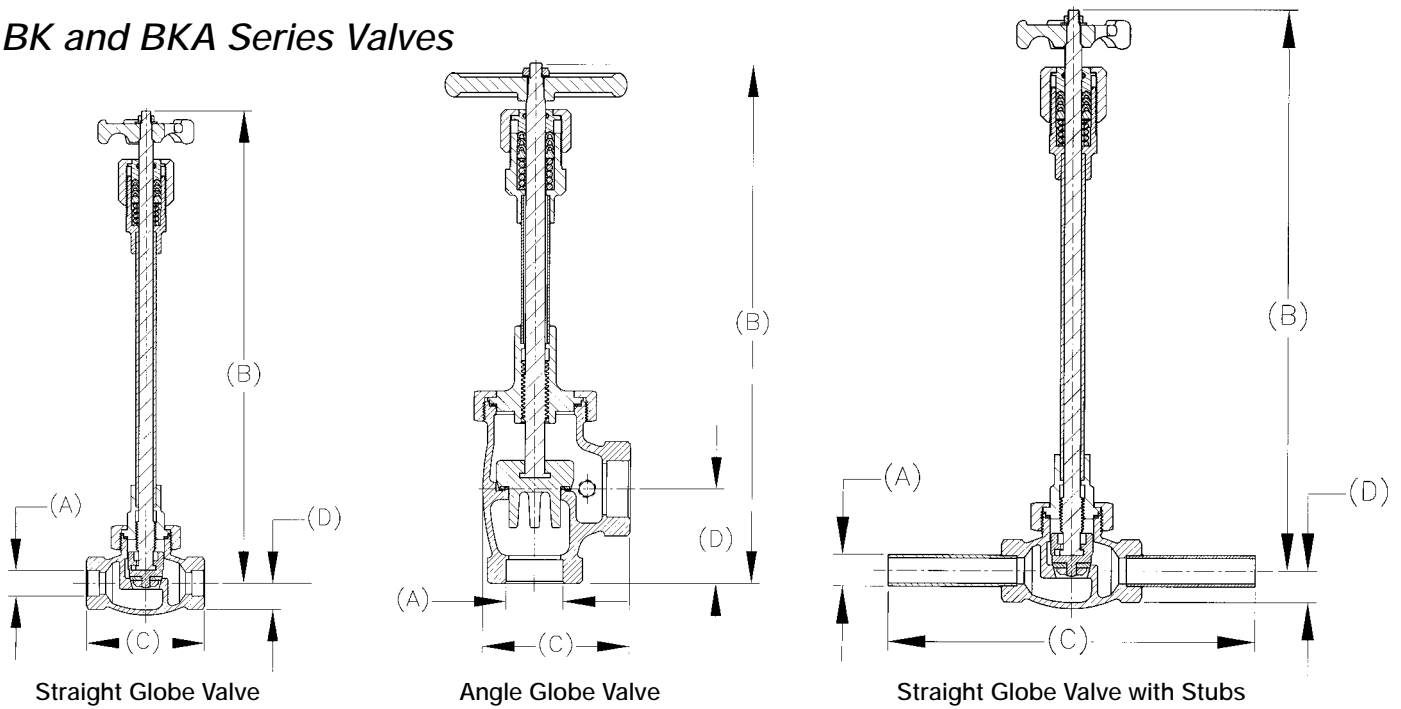
BK 9408AA



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 ⁵ / ₃₂ "	3 ¹ / ₁₆ "	1"	4.7								
BK8404T		1/2" F.NPT												
BK8404ST		.631"-.634" x 1/2" F.NPT	14 1/2"	3 ¹ / ₁₆ "	1"	4.7								
BK9404S		.631"-.634"												
BK9404T		1/2" F.NPT												
BK9404AA		1/2" Sch5 Pipe												
BK9404PT-F30		1/2" Sch5 Pipe x 1/2" F.NPT												
BK9404ST		.631"-.634" x 1/2" F.NPT												
BK8406S		.881"-.884"					9 ⁵ / ₃₂ "	3 ¹ / ₁₆ "	1"	6.7				
BK8406T		3/4" F.NPT												
BK9406S		.881"-.884"					14 1/2"	3 ¹ / ₁₆ "	1"	6.7				
BK9406T		3/4" F.NPT												
BK8408S		1.131"-1.134"	9 1/8"	4 ⁵ / ₁₆ "	1 1/8"	11.2								
BK8408T		1" F.NPT												
BK9408S		1.131"-1.134"	14 1/2"	4 ⁵ / ₁₆ "	1 1/8"									
BK9408T		1" F.NPT												
BK9408AA		1" Sch5 Pipe												
BK9408PT-F30		1" Sch5 Pipe x 1" F.NPT												
BK9410S*		1.378"-1.380"									16 7/16"	5 3/16"	1 1/2"	17.5
BK9412S*		1.631"-1.634"												
BK9412T*	1 1/2" F.NPT	16 7/16"					11 3/16"	1 1/2"	25.1					
BK9412AA	1 1/2" Sch5 Pipe													
BK9412PT-F30	1 1/2" Sch5 Pipe x 1 1/2" F.NPT													
BK9416S*	2.131" - 2.134"													
BK9416T*	2" F.NPT	16"	6"	1 5/8"	41									
BK9416PT-F30	2" Sch5 Pipe x 2" F.NPT													
BKA8408S	Angle	1.131" - 1.134" x 1.631" - 1.634"	11 1/4"	3 3/4"	1 3/4"	14.5								
BKA9408S			14 5/8"											
BKA8412S		1.631"-1.634"	13"	4 1/4"		30.0								

* Valves with bolted bonnet design.

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:

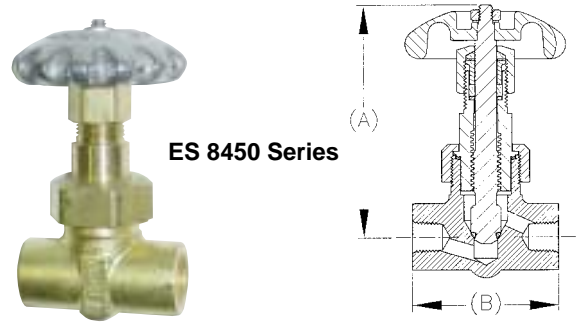
- 304 St. Stl Tube brazed into one or both ends.

Materials

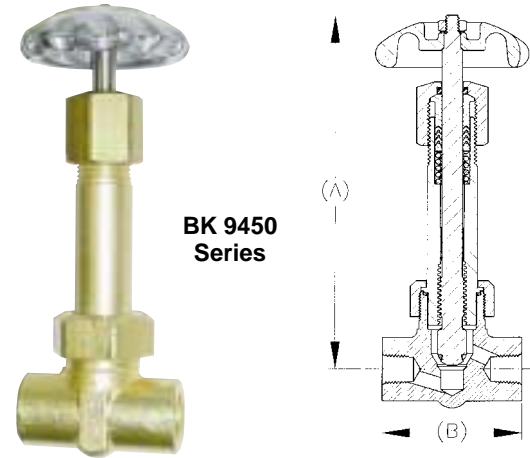
Body and BonnetBrass
StemStainless Steel
Seat discCTFE
HandwheelAluminum
Packing and Bonnet GasketPTFE

Conversion Kit

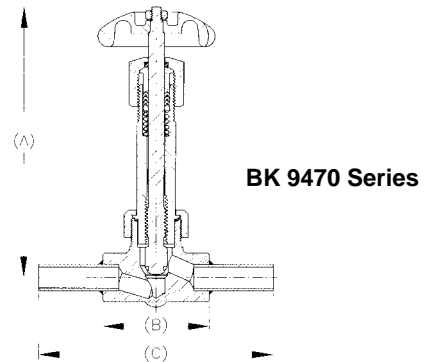
BK 9450-KIT is a bonnet and stem assembly kit to convert ES 8450 Series and previous ES 9450 Series to the BK 9450 style.



ES 8450 Series



BK 9450 Series



BK 9470 Series

Ordering Information

Part Number	Inlet/Outlet Connections	Height "A"	Body Width "B"	Width with Tube "C"	C _v
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.

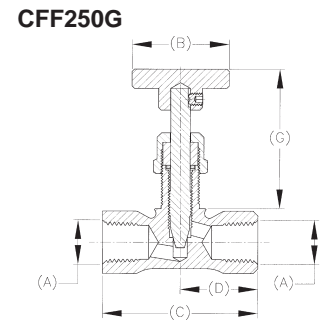
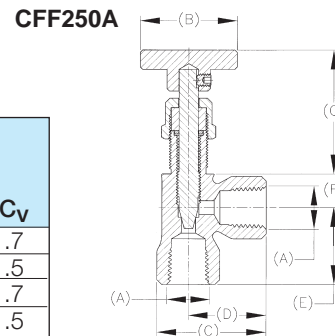
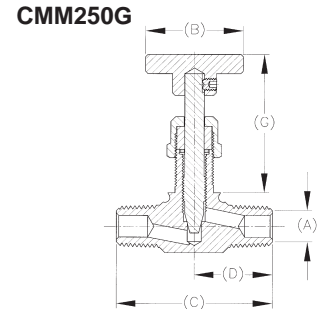
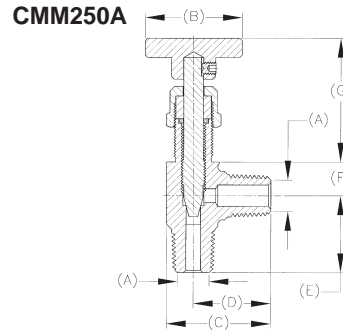
Features

- 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

BodyASTM B283 Brass
 StemBrass
 KnobBrass
 Bonnet NutBrass
 Panel Mount Nut (Optional)Brass
 Set ScrewSteel
 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 _v
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



Angled Extended Bonnet Cryogenic Globe Valve

BKY8408 Series

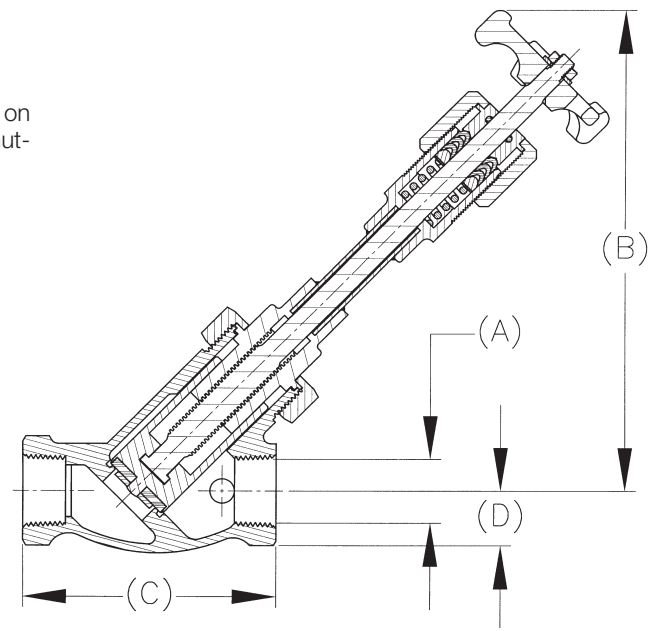
Application

The BKY8408 valve is designed for the handling of cryogenic liquids on bulk storage tanks, transports, and pipelines. It provides positive shut-off, offers a long, low maintenance service life, and gets up to 40% more flow over a standard 1" globe style valve.

Features

- KEL-F seat disc and swivel design offer positive shut-off and a long service life.
- Unique spring loaded upper packing extends service life.
- One piece slip-on seat assembly for easy replacement.
- Each valve is cleaned and packaged for liquid oxygen Service per CGA G-4.1
- Maximum working pressure is 600PSIG CWP
- Working temperature is -320 F to + 165 F.

Part Number	Inlet / Outlet Connections A	Height Open B	Length C	D	Cv Factor
BKY8408S	1.130" - 1.132"	8.4	4.56"	1"	16.2
BKY8408T	1" F.NPT				



Horizontal Check Valves

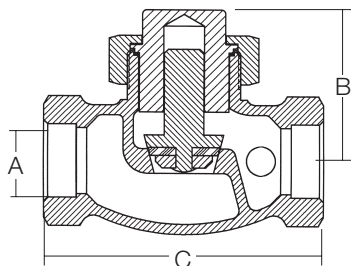
8500 Series



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

BodyBronze
 CapBrass or Bronze
 PlungerBrass
 SeatCTFE

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
 SpringStainless Steel
 Piston.....Stainless Steel
 O-Ring (soft seat option units only).....Viton

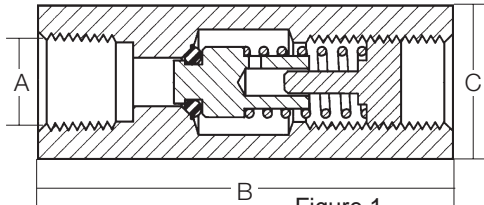
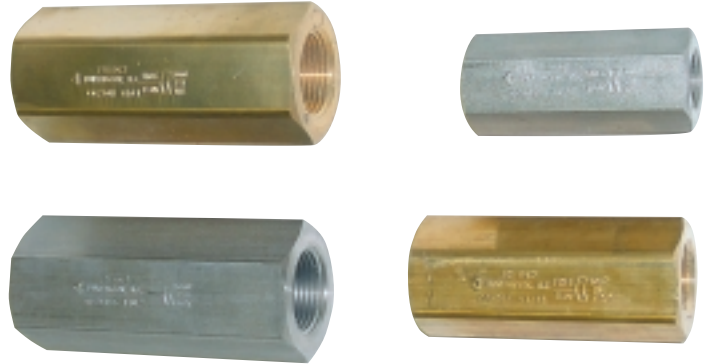


Figure 1
Soft Seat Option

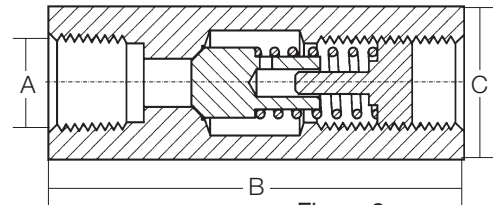
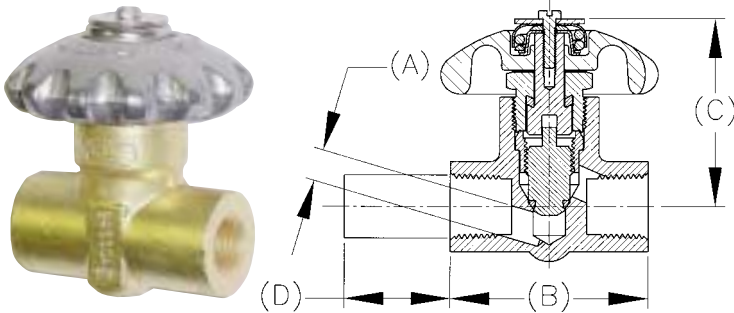


Figure 2

Part Number	Seating Option	Inlet/Outlet Connections FNPT P	Length L	Wrenching Hex Size D	Cv	Maximum Operating Pressure
Stainless Steel Check Valves						
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
Brass Body Check Valves						
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

9450 Series
9460 Series



Application

The 9450 and 9460 series valves are designed for use on portable cryogenic cylinders and other in-line shut-off valve applications.

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.

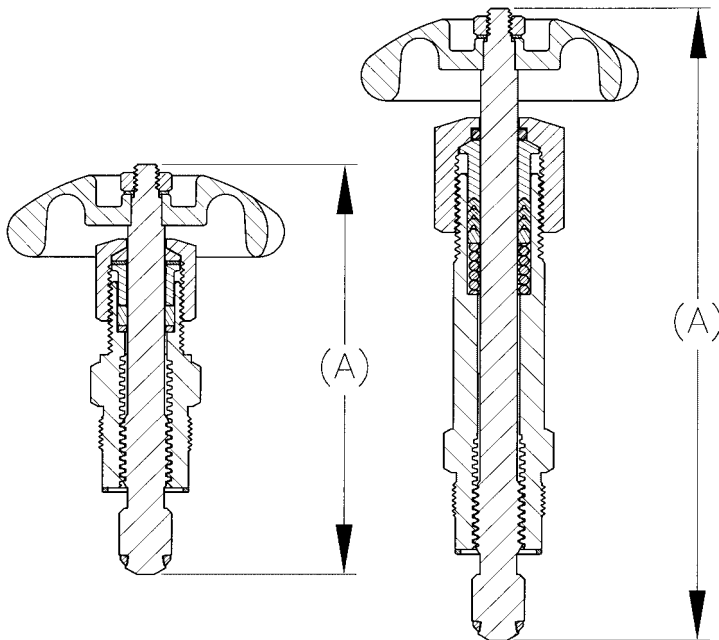
Materials

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

Ordering Information

Part Number	Inlet	Outlet	Orifice A	Length B	Height (Approx.) C	Tube D	Cv Factor
9452DA	1/4" F.NPT	1/4" F.NPT	.250	2 1/2"	2 3/4"	None	.72
9453DA	3/8" F.NPT	3/8" F.NPT	.406				1.08
9454DA	1/2" F.NPT	1/2" F.NPT	.406				1.10
9464CA	.675 Tube	3/8" F.NPT	.406	2 1/2"	2 3/4"	1 1/8"	1.08
9464DA						2 1/8"	
9464ADA						3 3/8"	

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

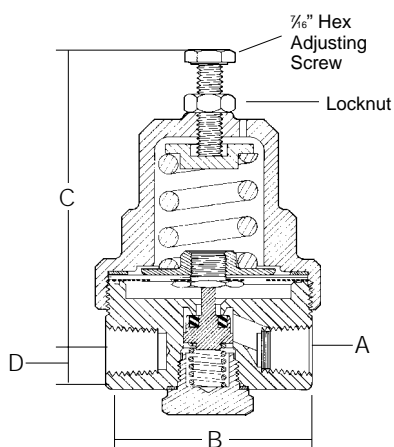
Bonnet.....	Brass
Seat Disc.....	CTFE
Handwheel.....	Aluminum
Packing.....	PTFE
Stem.....	Stainless Steel
Stem Seal Gasket.....	PTFE

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

Cryogenic Regulators

RG Series



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

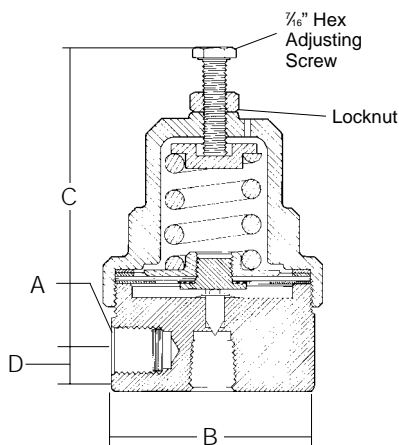
Ordering Information

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.

Cryogenic Economizers

ECL Series



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

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	150-350

*Contact factory for additional settings.

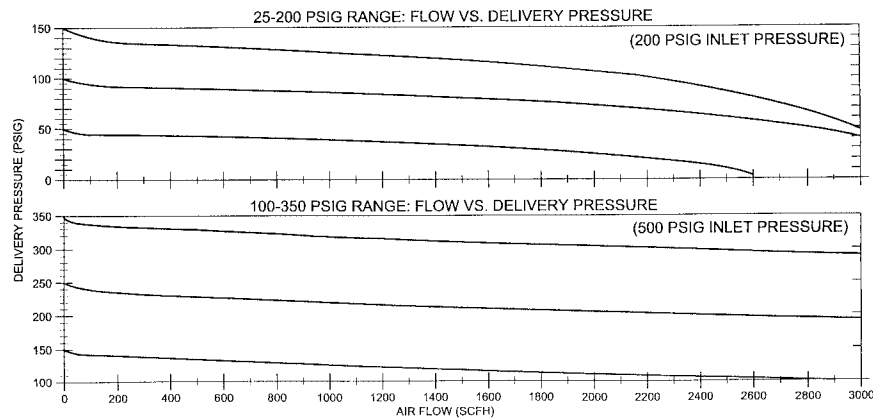
Cryogenic Liquid Cylinder Regulator

Application

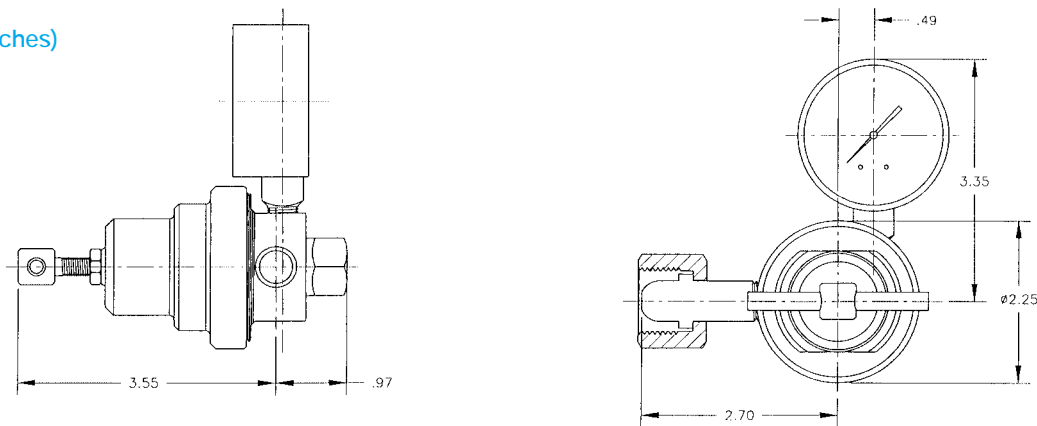
The new REGO LCR Series regulator assembly controls the pressure from the gas use line discharge of any liquid cylinder with a flow capacity at least double the vaporization capacity of the cylinder vaporization coil. For use with oxygen, nitrogen, argon, or carbon dioxide liquid cylinders.

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
- Stainless Steel Inlet Filter
- 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.



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

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	1/4"	Brass	17-600	2.6	7/8"	.062	B-9412-2	3/8"
SS	9432	1/4"	Stainless Steel	17-600	2.6	7/8"	.062	SS-9412-4	1/2"
PRV	9433	3/8"	Brass	17-600	2.6	7/8"	.062	B-9412-2	3/8"
SS	9433	3/8"	Stainless Steel	17-600	2.6	7/8"	.062	SS-9412-4	1/2"
PRV	9434	1/2"	Brass	17-600	2.8	7/8"	.062	B-9412-4	1/2"
SS	9434	1/2"	Stainless Steel	17-600	2.8	7/8"	.062	B-9412-4	1/2"
B-	9425	3/4"	Brass	50-300	3.4	1 3/4"	.43	B-3131-10	1"
B-	9426	1"	Brass	100-300	5.5	2 3/8"	.62	B-3132-10	1 1/4"

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

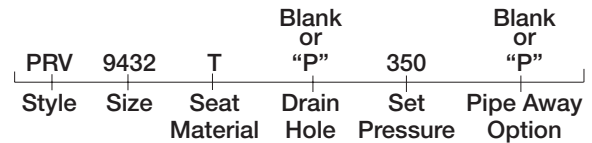
Relief valves without pipeaway typically provided with drain holes, leave blank. **P** - for relief valves without drain hole, for example PRV9432TP350

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.

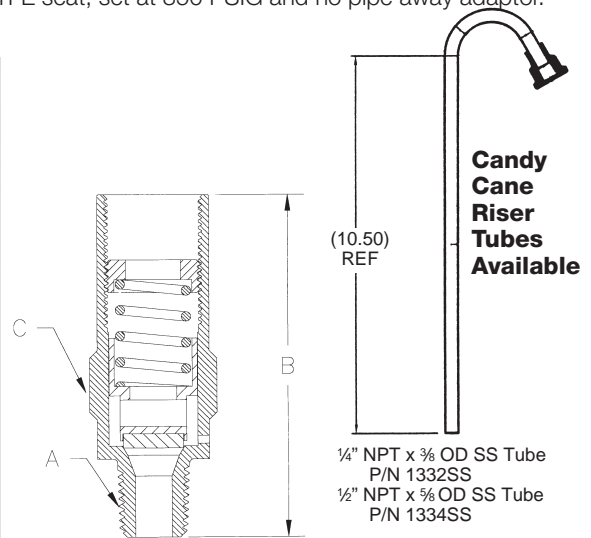
Ordering Information

Fill in the blanks with options below.

Example:



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.



Set Pressure

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

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

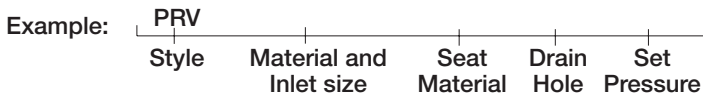
SpringStainless Steel
Body, valve parts, and seat as shown in part number.

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.



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

