LNG
Vehicle Tank Products

REGO™

Foreword

This catalog briefly describes the RegO® LNG Equipment available from RegO® 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 RegO® without notice. Additional product information is available from RegO® or authorized product distributors. Illustrations and drawings of individual products are representative of “product groups” and all products within a product group are similar in construction.

Warning

Never use any product on oxygen service if another gas has been previously used on the product. All RegO® Products are mechanical devices that will eventually become inoperative due to wear, corrosion and aging of components made of materials such as flouropolymers. 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 RegO® products are manufactured for storage, transport, transfer and use of toxic flammable and dangerous liquids and gases. Such substances should be handled by experienced and trained personnel only, using accepted governmental and industrial safety procedures.

Materials

RegO® Products 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.

Notice

Installation, usage and maintenance of all RegO® Products must be in compliance with all RegO® instructions as well as requirements and provisions of NFPA 57, NFPA 30A, NFPA 59A, CGA, ASME, DOT, ANSI and all applicable federal, state, provincial and local standards, codes, regulations and laws.

Inspection and maintenance on a periodic basis is essential and should be performed only by qualified personnel.

Be sure all instructions are read and understood before installation, operation and service.

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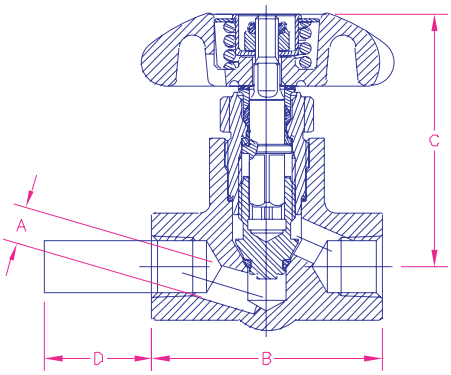
Short Stem Cryogenic Valves T9450 Series & T9460 Series

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. (41.4 Bar)
- Working temperature range is -320°F to +165°F. (-196ºC to +74ºC)
- 100% Factory Tested



Materials

Tube ..... Stainless Steel
Body ..... Brass
Bonnet ..... Brass
Seat Disc ..... CTFE
Stem Seal Gasket ..... PTFE
Handwheel ..... Aluminum
Spring ..... Stainless Steel
Stem ..... Brass

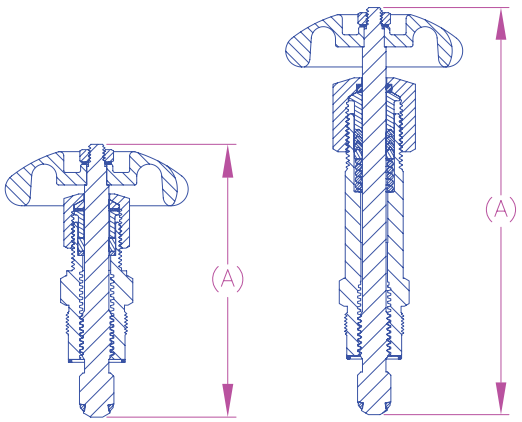
Ordering Information

Part Number	Inlet	Outlet	Orifice A	Length B	Height (Approx.) C	Tube D	C_V Factor For Gaseous Flow	C_V Factor For Liquid Flow
T009452	¼" F.NPT	¼" F.NPT	.250"	2½"	2¾"	None	.72	0.99
T009453	⅜"F.NPT	⅜"F.NPT	.406"				1.08	1.79
T009454	½" F.NPT	½" F.NPT					1.10	
T009464CA	.675 Tube	⅜"F.NPT	.406"	2½"	2¾"	1⅛"	1.08	
T009464DA						2⅛"		
T009464EA						2⅞"		
T009464ADA						3⅜"		

Extended Stem Retrofit Kits

Application

Retrofit kits are 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

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

Ordering Information

Part Number	Stem Length A	Style
ES008450R	4.3"	Extended Stem, Std. Bonnet, Manual Packing
BK009450R	6.5"	Extended Bonnet and Stem, Spring Loaded Packing

Shutoff Valve with Tubing Connections
C9464CCAG

Application

Short stem valves are designed for use on LNG fueling systems to provide reliable performance at cryogenic temperatures.

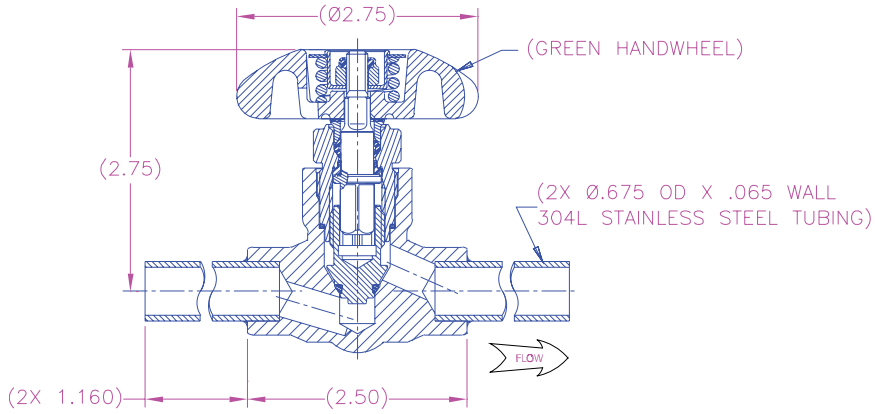
C9464CCAG

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 of LNG fueling systems 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.
- Maximum working pressure is 600 PSIG (41.4 Bar)
- Working temperature range is –320°F to +165°F. (-196°C to +74°C)
- 100% factory tested

Materials

Tube ..... Stainless Steel
Body ..... Brass
Bonnet ..... Brass
Seat ..... CTFE
Gasket ..... PTFE
Handwheel ..... Aluminum
Spring ..... Stainless Steel
Stem ..... Brass



Ordering Information

Part Number	Inlet/Outlet Connections	Handwheel	C_V Factor For Gaseous Flow	C_V Factor For Liquid Flow
C009464CCAG	0.675” OD Tubing	Green	1.08	1.79

Shutoff valve w/ 90° bent tubes
C9464LAS & C9464LCB

Application

Designed to conform to space constraints in LNG fueling systems. Maintains the same flow and outstanding service life of all RegO cryogenic in-line shut-off valves.

Features

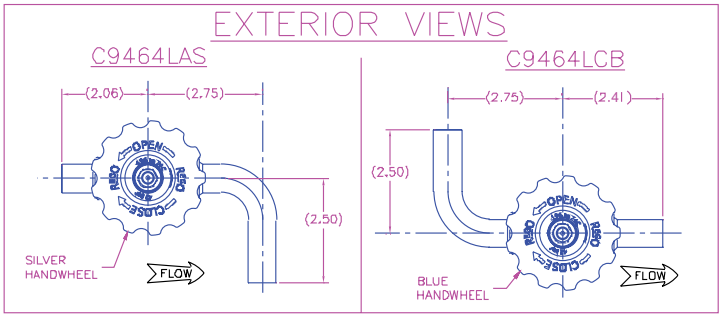
- Spring loaded stem seal automatically adjusts for any gasket wear, eliminating the need to constantly retighten the packing nut.
- Non-rising stem and low profile allow the valve to fit into tight areas of LNG fueling systems and still provide easy access.
- Unique pressure-sealed moisture barrier helps prevent freeze up at cryogenic temperatures.
- Conical swivel seal design helps prevent seat galling from over torquing.
- Maximum working pressure is 600 PSIG (41.4 Bar)
- Working temperature range is –320°F to +165°F. (-196°C to +74°C)
- 100% factory tested

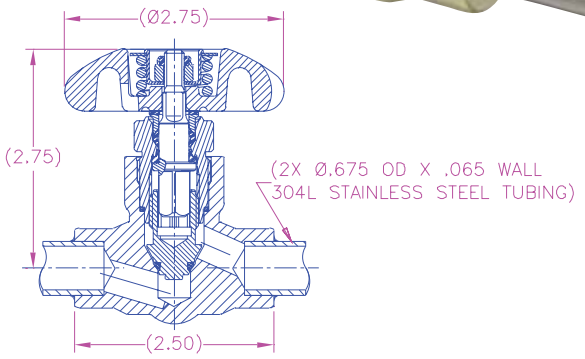
C9464LAS

Materials

Tube	Stainless Steel
Body	Brass
Bonnet	Brass
Seat	CTFE
Gasket	PTFE
Handwheel	Aluminum
Spring	Stainless Steel
Stem	Brass

C9464LCB





Ordering Information

FLOW

Part Number	Tube Diameter	Bent Tube Location	Handwheel	C_V Factor For Gaseous Flow	C_V Factor For Liquid Flow
C009464LAS	.675	Outlet	Silver	1.08	1.79
C009464LCB		Inlet	Blue		

Shutoff valves
C9464LDR & C9464LES

Application

Designed to conform to space constraints in LNG fueling systems. Maintains the same flow and outstanding service life of all RegO cryogenic in-line shut-off valves.

Features

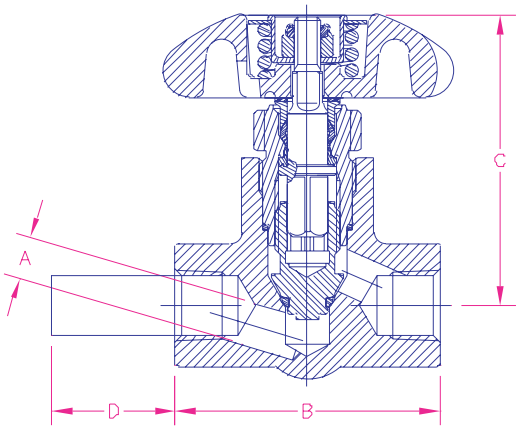
- Spring loaded stem seal automatically adjusts for any gasket wear, eliminating the need to constantly retighten the packing nut.
- Non-rising stem and low profile allow the valve to fit into tight areas of LNG fueling systems and still provide easy access.
- Unique pressure-sealed moisture barrier helps prevent freeze up at cryogenic temperatures.
- Conical swivel seal design helps prevent seat galling from over torquing.
- Maximum working pressure is 600 PSIG (41.3 Bar)
- Working temperature range is –320°F to +165°F. (-196°C to +74°C)
- 100% factory tested

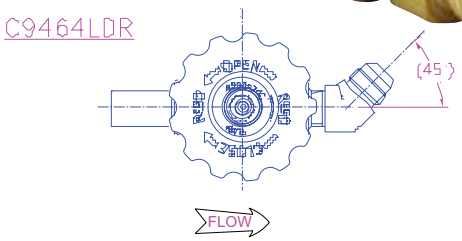
Materials

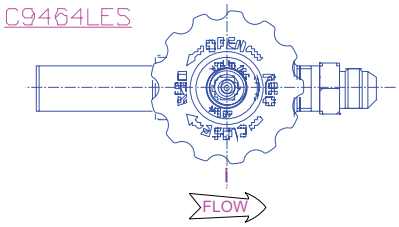
Tube ..... Stainless Steel
Body ..... Brass
Bonnet ..... Brass
Seat ..... CTFE
Gasket ..... PTFE
Handwheel ..... Aluminum
Spring ..... Stainless Steel
Upper stem ..... Brass
Lower stem ..... Magnesium Bronze
Fitting ..... Brass

C9464LDR

C9464LES







Ordering Information

Part Number	Outlet	Inlet	A	B	C	Tube D	C_V Factor For Gaseous Flow	C_V Factor For Liquid Flow
C009464LDR	45° ½" Flared tube fitting elbow	.675 Tube	.406"	2½"	2¾"	1⅛"	1.08"	1.79"
C009464LES	½" Flared tube fitting	.813 Tube				2⅛"		

Relief Valves for Gas & Cryogenic Systems
9400 Series Brass or Stainless Steel, Non-ASME

Application

9400 series relief valves are specifically designed for thermal line 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.
- Tamper resistant
- Adapters provide standard pipe thread connections for venting gas to the outdoors.
- Repeatable performance.
- 100% factory tested.
- Temperatures Range -320° to +165° F. (-196ºC to +74ºC)
- Rated for gas service only

Materials SS Style

Body	Stainless Steel
Spring	Stainless Steel
Seat Retainer	Stainless Steel
Pipe-Away Adapter	Stainless Steel

Materials PRV and B-Style

Body	Brass
Spring	Stainless Steel
Seat Retainer	Brass
Pipe-Away Adapter	Brass

Flow Performance

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

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.

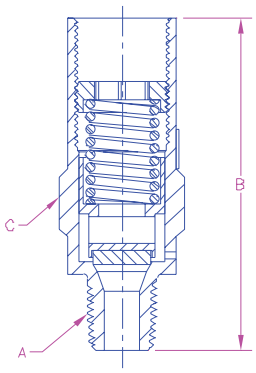
Ordering Information

Fill in the blanks with options below.

Example: PRV9432T350

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 ¼" M.NPT PRV style brass relief valve with PTFE seat, set at 350 PSIG with drain hole and no pipe away adapter.



Set Pressure

Specify set pressure within range specified for style and size. The B-9425 & B-9426N are available in select settings only. Special order.

Pipe Away Option

P Pipeaway included and attached, No drain hole in relief valve.
For example PRV9432TP350**P**
Leave blank for relief valve without pipe-away attached.
For example PRV9432TP350.

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:

Color Identification

22 psig	230 psig
35 psig	350 psig
50 psig	450 psig
100 psig	500 psig
150 psig	

Ordering Information

Style	Size	Inlet M.NPT 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	⅜"
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	⅜"
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	¾"	Brass	50-300	3.4"	1¾"	.43	B-3131-10	1"
B-	9426	1"	Brass	75-300	5.5"	2⅜"	.62	B-3132-10	1¼"

Right Angle Relief Valves With Manual Override
NG-9008M Series

Application

Designed specifically for LNG fuel tank applications and to provide reliable performance at cryogenic temperatures.

Features

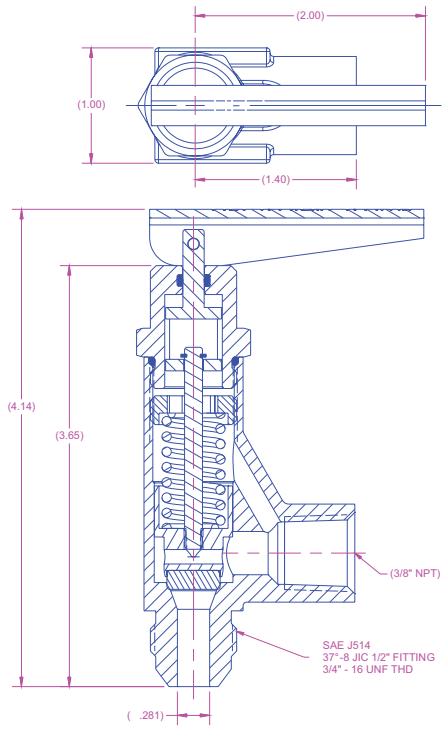
- Pull level for manual override
- Materials selected specifically for compatability with Natural Gas
- Easy to read color coded PSIG/Bar labels (see chart)
- 100% Factory tested
- Temperature range -320ºF to +196ºF (-196ºC to +74ºC)

NG-9008M

Materials

Spring Pin	Stainless Steel
Handle	Stainless Steel
O-Rings	Fluorosilicone
Connector	Brass
Stem	Stainless Steel
Bonnet	Brass
Seat Disc	PTFE
Spring	Stainless Steel
Adjusting Screw	Brass
Body	Brass
Poppet	Brass

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.



Color Identification

230 psig
250 psig
280 psig
350 psig
415 psig

Ordering Information

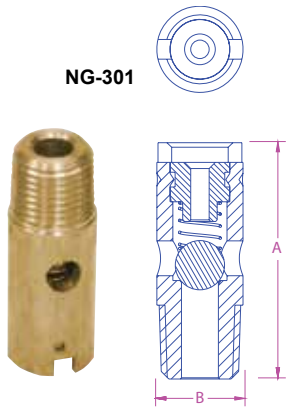
Part Number	Inlet Connection	Outlet Connection	Set Pressure (PSIG)
NG009008M230	½" Tube Fitting	⅜" NPT	230
NG009008M250			250
NG009008M280			280
NG009008M350			350
NG009008M415			415

In-Line ⅛” Ball Check Valve
NG-301

Application

For use with LNG liquid lines as an effective shut off utilizing ball and spring mechanism. ⅛” design fits compact piping systems.

Heavy duty spring and precision ball provide dependable service in LNG fuel applications. Used to equalize pressure between liquid withdrawl line & tank.



Features

- Materials selected specifically for compatibility with LNG
- Quick acting ball and spring mechanism
- Metal to metal seating provides durable service life
- 100% factory tested

Materials

Body ..... Brass
Spring ..... Stainless Steel
Spring retainer ..... Brass
Ball ..... Stainless Steel

Differential Pressure PSI	10	20	30	40
Flow GPM LNG	.975	1.89	2.54	3.06

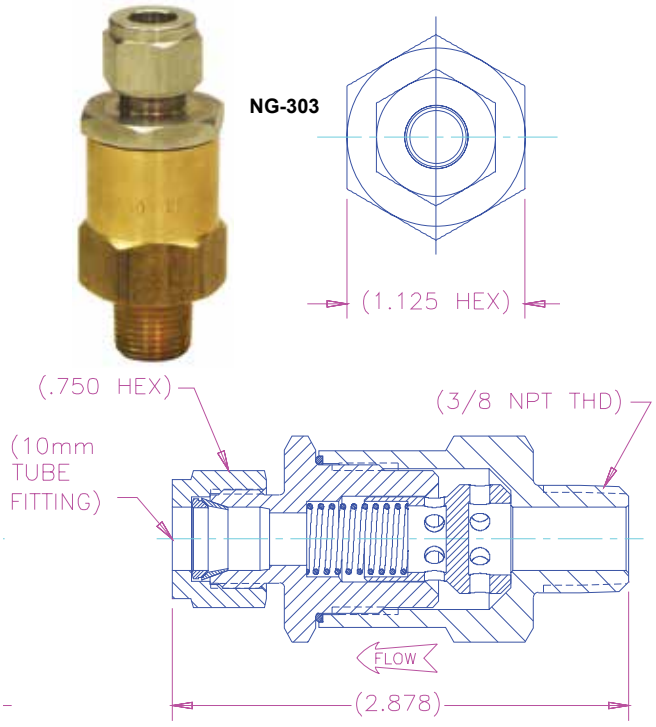
Ordering Information

Part Number	Inlet	A	B Diameter
NG000301	⅛” M.NPT	1.20”	0.44”

Excess Flow Valve
NG-303

Application

For use with LNG liquid lines as an effective shut off when an excess flow condition occurs downstream to prevent uncontrolled release of system media.



Features

- Materials selected specifically for compatibility with LNG
- Poppet design provides high-flow capacity.
- Design allows spring to reset poppet automatically when system pressure equalizes.
- Maximum allowable working pressure 4.0MPa
- 100% factory tested

Materials

Body ..... Brass
Spring ..... Stainless Steel
Poppet ..... Brass
Bonnet ..... Stainless Steel
Oulet connection ..... Stainless Steel
End Piece ..... Brass

Ordering Information

Part Number	Inlet	Outlet	Closing Flow
NG000303	⅜” M. NPT	10mm Tube Fitting	2.3-3.6 GPM

In-Line ½” Fill Check Valve
NG-304

Application

For use with LNG fuel lines as an effective one way shut off utilizing soft seated design for quick acting response to flow.

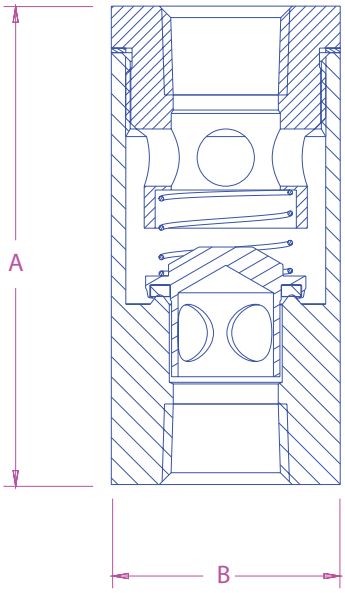
Poppet design is ideal for LNG and resistant to particulates.

Features

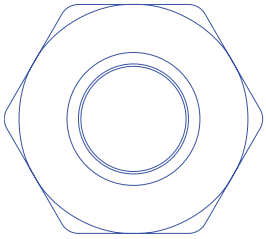
- Materials selected specifically for compatibility with LNG
- Maximum inlet pressure 1000PSI
- PTFE seat provides positive shut off at cryogenic temperatures
- 100% factory tested

Materials

Body ..... Brass
Spring ..... Stainless Steel
Seat Disc ..... Teflon
Seat holder ..... Brass
Gasket ..... Copper



NG-304



Differential Pressure (PSI)	10	20	30	40	50
Flow GPM LNG	27.5	38.6	47.3	55.1	59.5

Ordering Information

Part Number	Inlet/Outlet	A	B
NG000304	½” F.NPT	3.14”	1.50” Hex

Inline Check Valves
CG Series Gas and Cryogenic Check Valves

Application

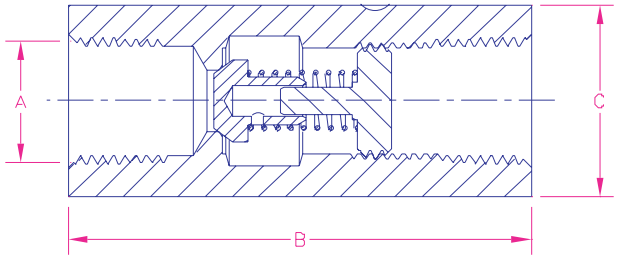
Inline check valves with metal seat option for cryogenic service.

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°
- 1 psig opening pressure.
- Cleaned for use in oxygen service per CGA G-4.1

Materials

Body (B and BL suffix) ..... ASTM B16 Brass
Body (SS and SSL suffix) ..... 203 Stainless Steel
Spring ..... Stainless Steel
Piston ..... Stainless Steel
Metal Seat ..... 303 Stainless Steel



Metal Seat Option

Ordering Information

Part Number	Seating Option	Inlet/Outlet Connections FNPT A	Length B	Wrenching Hex Size C	C_V	Maximum Operating Pressure
Stainless Steel Check Valves						
CG000250SS	Metal	1/4"	2 3/8"	13/16"	.87	5000 PSIG
CG000375SS	Metal	3/8"	2 1/2"	1"	2.3	5000 PSIG
CG000500SS	Metal	1/2"	3"	1 1/8"	3.5	5000 PSIG
CG000750SS	Metal	3/4"	3 5/8"	1 1/2"	5.2	5000 PSIG
Brass Body Check Valves						
CG000250B	Metal	1/4"	2 3/8"	13/16"	.87	3000 PSIG
CG000375B	Metal	3/8"	2 1/2"	1"	2.3	3000 PSIG
CG000500B	Metal	1/2"	3"	1 1/8"	3.5	3000 PSIG
CG000750B	Metal	3/4"	3 5/8"	1 1/2"	5.2	3000 PSIG

Economizers
ECL Series

Application

ECL series cryogenic economizers maintain pressure within LNG fuel tanks. In LNG tank systems, flow through the economizer is not directional. Valve is open whenever the fuel line is above set pressure.

Maintains the same flow and outstanding service life of all RegO cryogenic regulators.

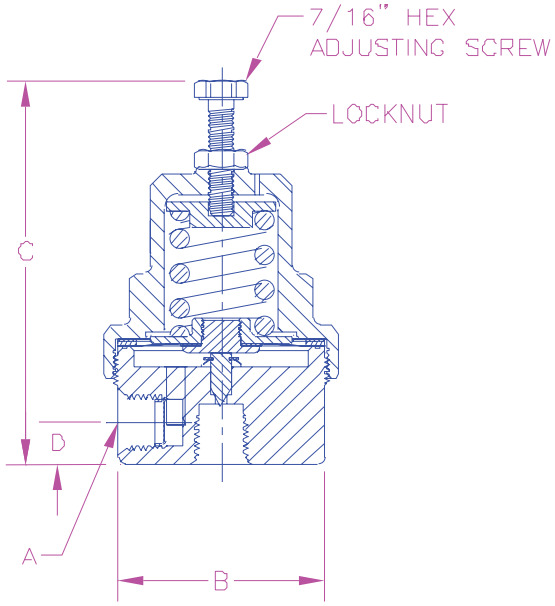
ECL Series

Features

- All parts are copper alloy (brass), PTFE, and stainless steel, materials selected specifically for compatibility with LNG.
- Maximum inlet pressure of 550 PSIG (38 BAR) for operating ranges above 175 psig and 250 psig (17 Bar) for operating ranges below 175 psig.
- PTFE seat provides positive shut off at cryogenic temperatures
- Locknut feature to maintain adjusting screw setting.
- 100% factory tested

Materials

Body ..... Brass
Bonnet ..... Brass
Springs ..... Stainless Steel
Gasket ..... PTFE
Diaphragm Gasket ..... PTFE
Seat ..... Stainless Steel
Diaphragm ..... Phosphor Bronze



Ordering Information

Part Number	Inlet / Outlet Connections (F.NPT) A	Pressure Setting	Operating Range	Width B	C	D
ECL000120	¼" NPT	120 PSIG	10-175 PSIG	2 1/16"	3"	⅜"
ECL000140		140 PSIG				
ECR000140						
ECL000175		170 PSIG				
ECL000325		325 PSIG	150-325 PSIG			

LNG Pressure Builder Regulators
RG Series

Application

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

Features

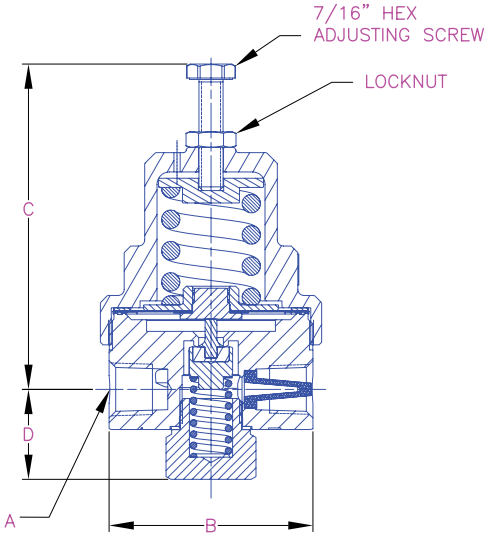
- All parts are copper alloy (brass), PTFE and stainless steel—materials selected specifically for compatibility with LNG temperatures.
- Body and bonnet machined from solid brass.
- PTFE seat helps assure a positive shut-off at LNG temperatures.
- High and low pressure regulators are the same compact size—designed to fit in close quarters.
- Interchangeable with existing LNG 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. (38 Bar)
- 100% Factory Tested

RG300A

RG90AG

Materials

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



Ordering Information

Part Number	Inlet / Outlet Connections (F.NPT) A	Width B	C	D	Pressure Setting (PSIG)	Operating Range (PSIG)
RG000022A	¼"	2 1/16"	3"	1"	22	0-30
RG000125A					125	25-250
RG000125C3	⅜"					
RG000175C3					175	
RG000300A	¼"				300	125-350
RG000090AG					90	30-250

Heavy Duty Natural Gas Line Regulator
1780 Series (Ideal for LNG Engine Fuel Applications)

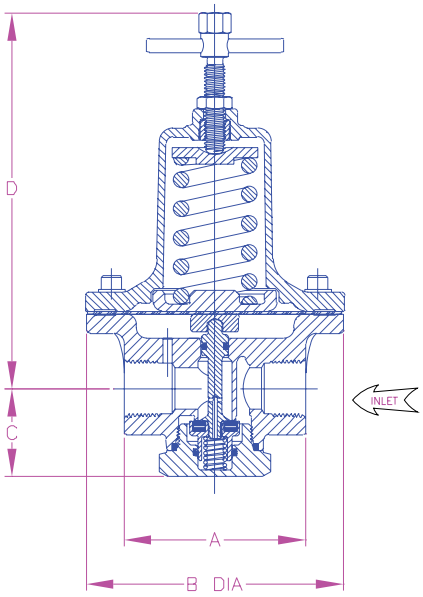
Application

The 1780 Series Regulators are designed for final line pressure regulation on Natural Gas Fuel vehicle distribution systems. The 1780 Series Regulators provide ideal flow performance.

1780 Series

Features

- Maintains a steady downstream gas pressure across a range of inlet pressure commonly provided by a LNG bulk tank or cylinder.
- Large seat and diaphragm areas provide high capacity with sensitive control of delivery pressure with low falloff.
- Two ¼" 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 435 psig. (30 Bar)
- Available in four delivery pressure ranges.
- Temperature range: -40° F to +165 F. (-40ºC to +74ºC)
- 100% Factory Tested



1780 SER

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

Ordering Information

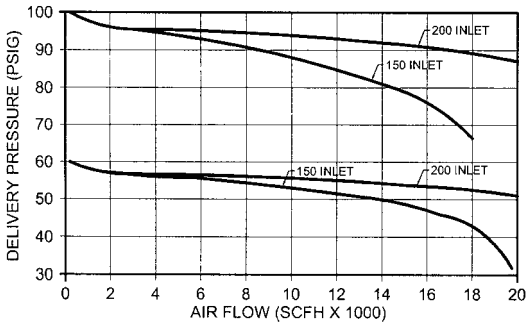
Part Number	Delivery Pressure Range	Pressure Gauge*		Inlet & Outlet (F.N.P.T.)	Dimensions				C_V
		Range (PSI)	P/N		"A"	"B"	"C"	"D"	
1784A	5-55 psig	1-100	1286	½"	2.82"	3.62"	1.38"	5.47"	3.1
1784B	40-110 psig	1-200	S1679						
1784C	100-200 psig	1-400	15578						
1784D	175-300 psig								
1786A	5-55 psig	1-100	1286	¾"	3.31"	4.69"	1.60"	6.84"	4.8
1786B	40-110 psig	1-200	S1679						
1786C	100-200 psig	1-400	15578						
1786D	175-275 psig								
1788A	5-55 psig	1-100	1286	1"					5.5
1788B	40-110 psig	1-200	S1679						
1788C	100-200 psig	1-400	15578						
1788D	175-275 psig								

*Regulator sold without gauge. Order gauge separately.

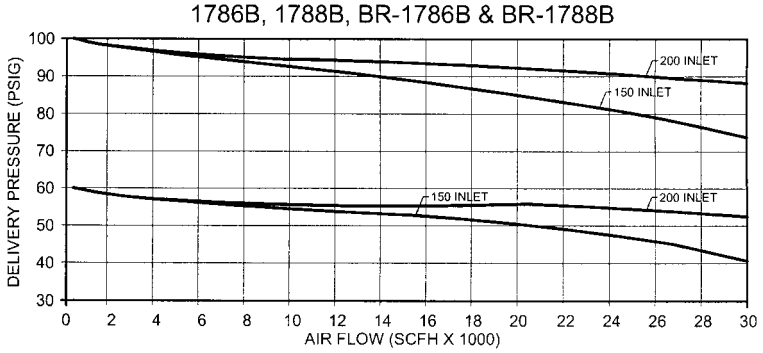
Heavy Duty Natural Gas Line Regulator
1780 Series (Ideal for LNG Engine Fuel Applications)

"B" spring range 40 - 110 psig

1784B & BR-1784B

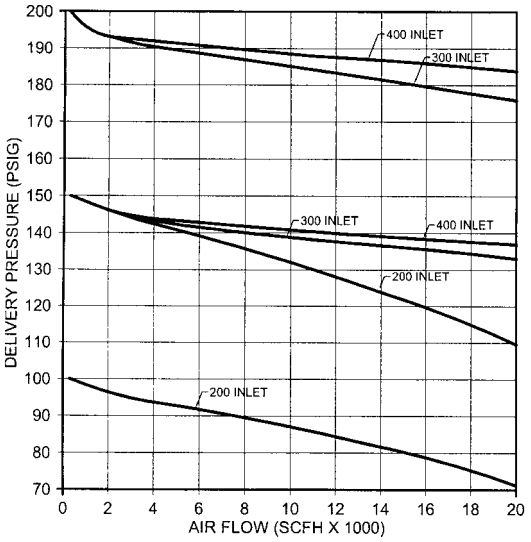


1786B, 1788B, BR-1786B & BR-1788B

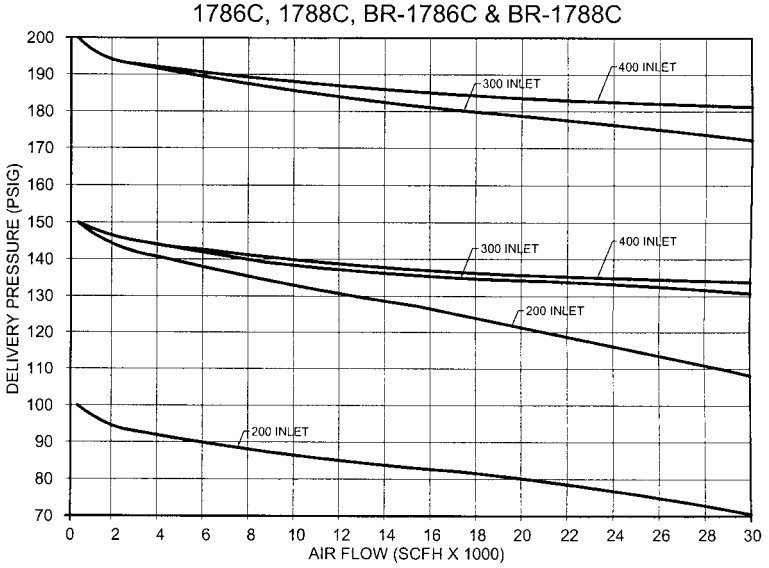


"C" spring range 100 - 200 psig

1784C & BR-1784C



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

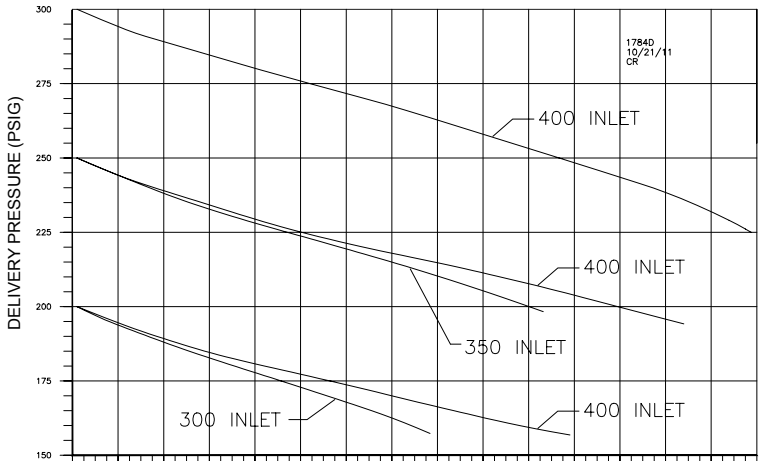


"D" spring range 175 - 275 psig

Gas Conversion Table

Service	Multiply Air Capacity By:
Fuel Gases	0.86
Helium	2.69
Hydrogen	3.79
Nitrogen	1.02
Acetylene (15 psi max.)	1.06
Argon	0.85
Carbon Dioxide	0.81
Nitrous Oxide	0.81
Oxygen	0.95

1784D BR-1784D



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