GENERANT
Valves & Bl-Lok Fittings

GAS DELIVERY REGULATOR
1/4" - 1" NPT, BSPT
Spring Reference & Pilot Operated

GDR SERIES

Description

The GDR Series Regulator provides reliable and precise pressure control in the most demanding applications. Optimized spring design with unique venturi design assures high flow with extremely low droop characteristics. Solid, non-tied diaphragm and all brass construction will provide leak-free and long-lasting performance. Regulator is fully balanced to virtually eliminate outlet pressure fluctuations due to inlet pressure variations. All GDR Series regulators are 100% factory tested.

Features

- **FULLY BALANCED DESIGN**: Maintains a constant delivery pressure regardless of inlet pressure fluctuations.
- **OPTIMIZED FOR HIGH FLOW**: Unique Venturi Tube and Optimized Spring Design allows for high flow rates.
- **WIDE PRESSURE RANGE**: Inlet Pressures up to 550 PSI, Outlet Pressures up to 450 PSI.
- **SOLID, NON-TIED, DIAPHRAGM**: Solid diaphragm eliminates potential leak path and increases sensitivity.
- **CONFIGURABLE**: Order Regulators with Various Porting Options, Panel-Mounted, with Chamber Pipe-A-Way, or Pilot Operated.
- **OXYGEN SERVICE COMPATIBLE**: Designed for use in Oxygen Service and Cleaned for use in O2 Service standard.

Technical Data

GDR-500

Max Inlet Pressure: 550 PSIG (37.9 bar)

Outlet Pressure Ranges:

Spring	Outlet Pressure Range
A	0-55 PSIG (0-3.8 bar)
B	50-135 PSIG (3.5-9.3 bar)
C	125-225 PSIG (8.6-15.5 bar)
D	225-450* PSIG (15.5-31 bar)

*rated at 450 PSIG @ 100°F
A, B, and C Range Springs are interchangeable.
D Range Spring requires dedicated Chamber.

Fail Open Flow Coefficients:

Port Configuration	Fail Open Cv
1/4" NPT and BSPT	1.6
3/8" NPT	2.4
1/2" NPT and BSPT	2.9

GDR-1000

Max Inlet Pressure: 400 PSIG (27.6 bar)

Outlet Pressure Ranges:

Spring	Outlet Pressure Range
A	0-55 PSIG (0-3.8 bar)
B	50-135 PSIG (3.5-9.3 bar)
C	125-225 PSIG (8.6-15.5 bar)

A, B, and C Range Springs are interchangeable.

Fail Open Flow Coefficients:

Port Configuration	Fail Open Cv
3/4" and 1" NPT	5.8
3/4" and 1" BSPT	5.8

GDR-500 Pilot Operated

Max. Pilot: 450 PSIG (31.0 bar) @ 100°F
Max. Usable Cv: 1.5
Pilot Pressure to Outlet Pressure: 1/.95
(100 PSI Pilot = 95 PSI Outlet)

GDR-1000 Pilot Operated

Max. Pilot: 250 PSIG (17.2 bar) @ 140°F
Max. Usable Cv: 2.7
Pilot Pressure to Outlet Pressure: 1/.90
(100 PSI Pilot = 90 PSI Outlet)

Effect of Inlet Pressure Variation on Set (Regulator Balance): < 0.25 PSI per 100 PSI

Materials of Construction

Component	Material
Body	CW617N Forged Brass, EN 12420
Adjustment Screw, Valve, Valve Stem, Spring Button, Spring Retainer, Venturi Tube	CDA 360 Brass, ASTM B16
Chamber Insert	303 SS, ASTM A276
Adjustment Springs	GDR-500: Music Wire, ASTM A228 GDR-1000: Chrome Silicon, ASTM A401
Valve Spring	302 SS, ASTM A313
Diaphragm	FKM, EPDM, or Nitrile on Nylon Backing
Soft Seals (Valve and O'Rings)	FKM, EPDM, or Nitrile
Trim (Flange Screws and Locknut)	18-8 Stainless Steel

NOTES: Regulators are assembled with Dupont Krytox® lubricant.

STANDARD

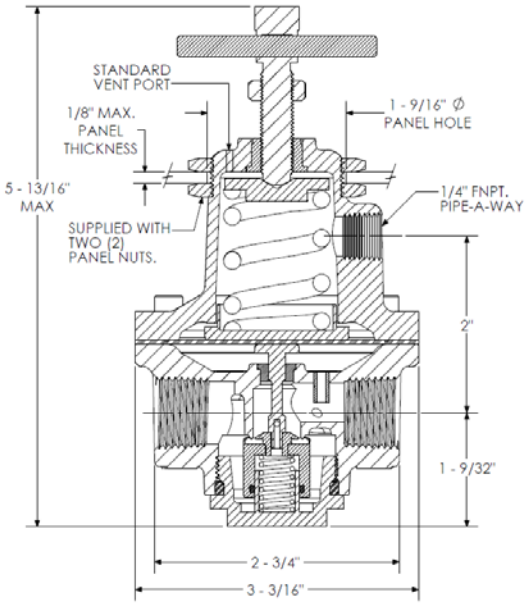
PILOT OPERATED

PANEL MOUNT

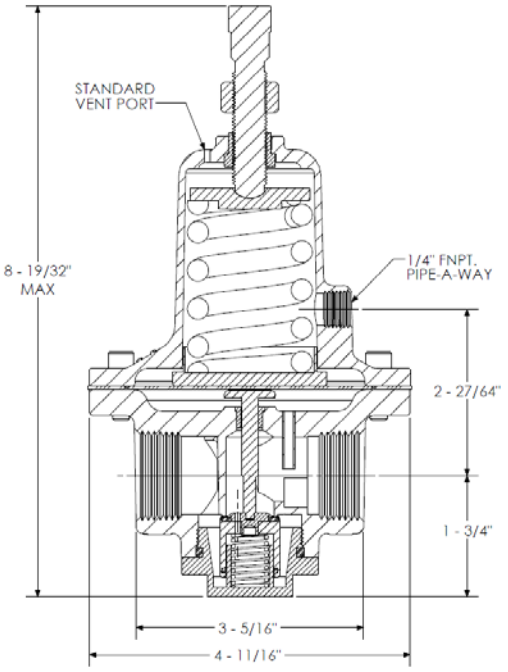
PIPE-A-WAY OPTION

GAS DELIVERY REGULATOR

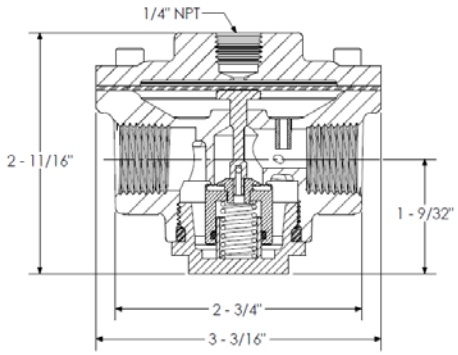
Dimensional Data



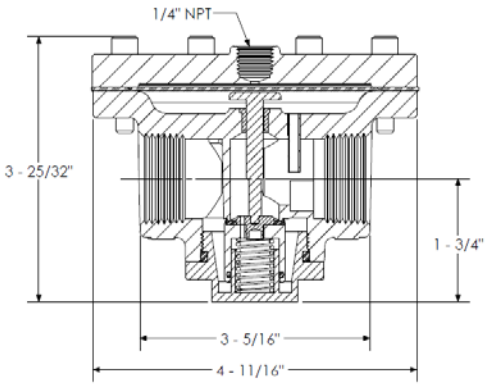
GDR-500
(shown with Panel Mount and Pipe-A-Way Options)



GDR-1000
(shown with Pipe-A-Way Option)



GDR-500 Pilot Operated

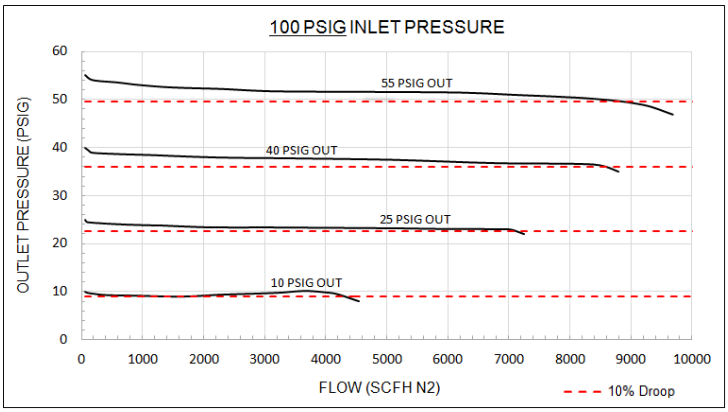


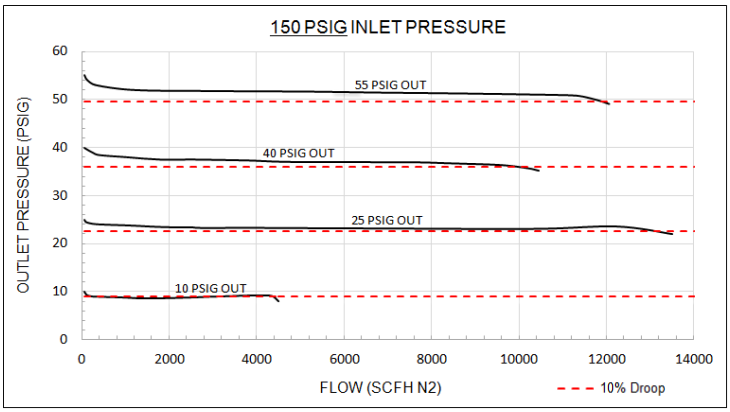
GDR-1000 Pilot Operated

Flow Performance

Each chart provides a variety of regulator setpoints and its respective flow performance with a constant inlet pressure condition. Flow Testing was performed using Nitrogen gas at ambient conditions. Use gas conversion factors listed on the next page to convert flow rates to a different gas service. Regulators were set in a dynamic condition at 60 SCFH N2 flow.

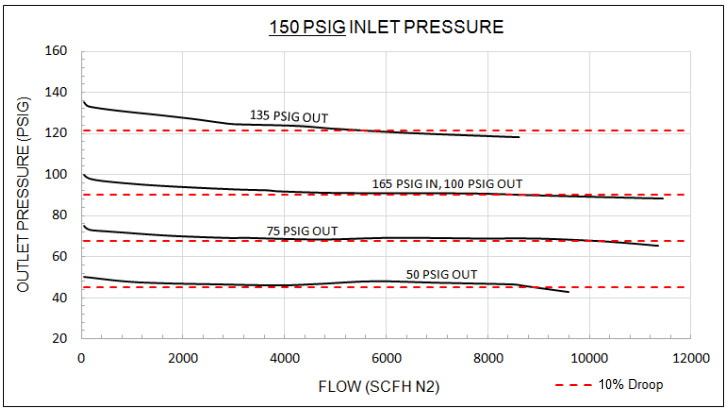
GDR-500: A Spring

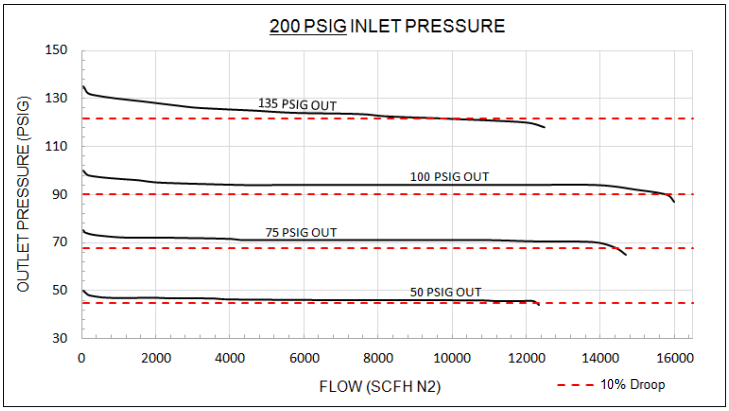




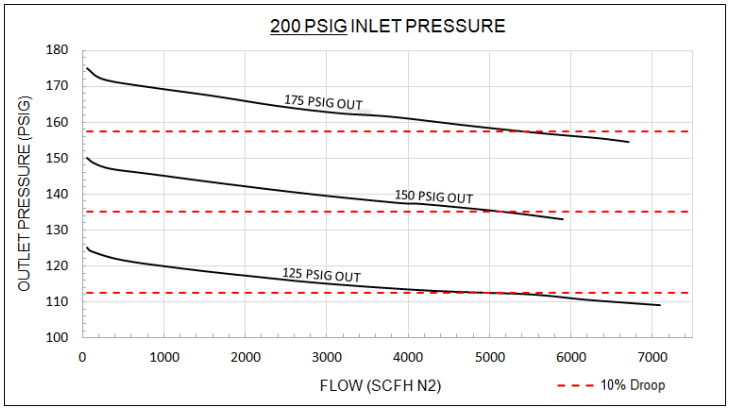
Flow Performance (continued)

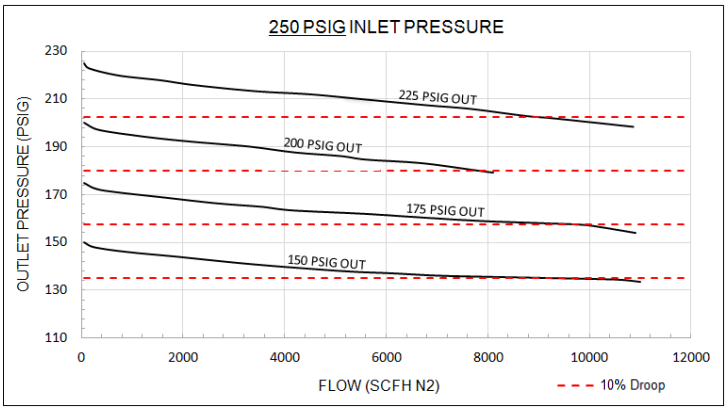
GDR-500: B Spring



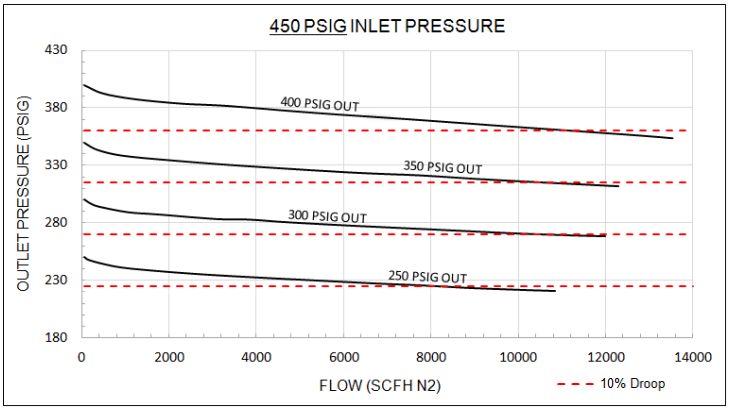


GDR-500: C Spring





GDR-500: D Spring

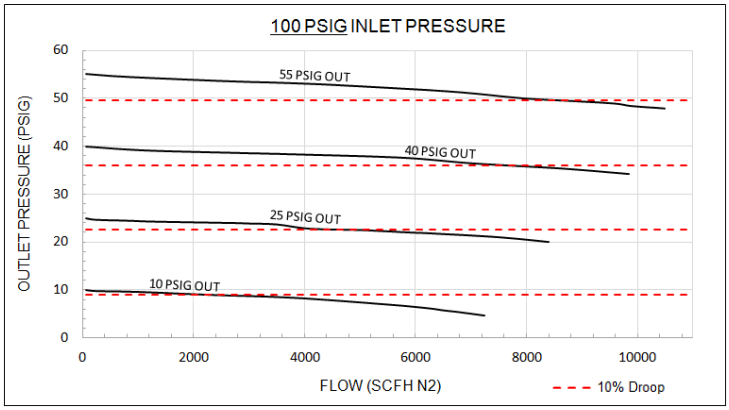


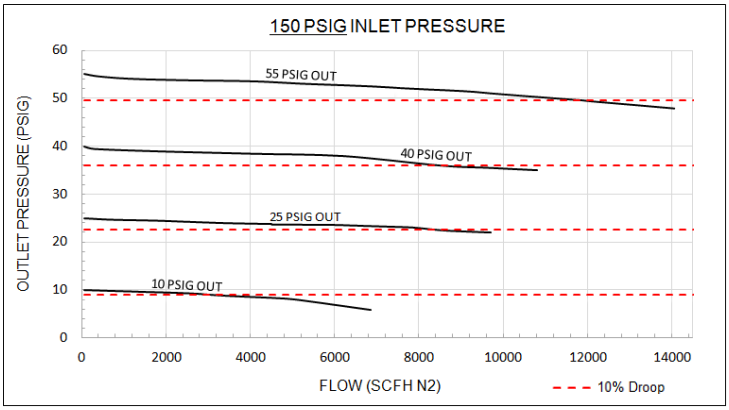
GAS CONVERSION FACTORS

Multiply Nitrogen Flow Rate by Conversion Factor to find equivalent gas flow rate.

Gas	Conversion Factor
Air	0.985
Argon	0.837
Carbon Dioxide	0.795
Helium	2.645
Hydrogen	3.603
Nitrogen	1.0
Nitrous Oxide	0.799
Natural Gas	1.285
Oxygen	0.935
Methane	1.320

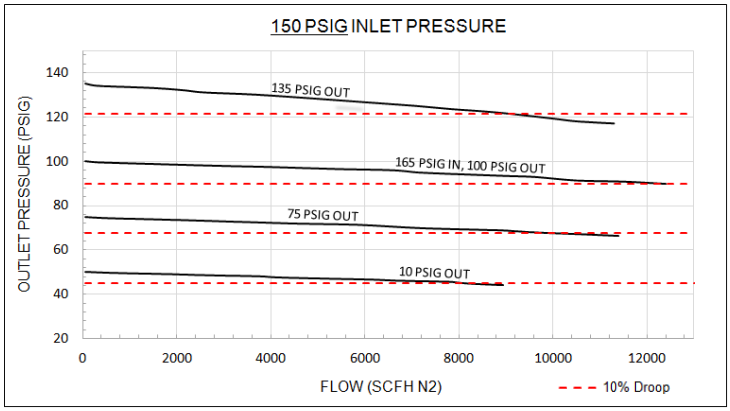
GDR-1000: A Spring

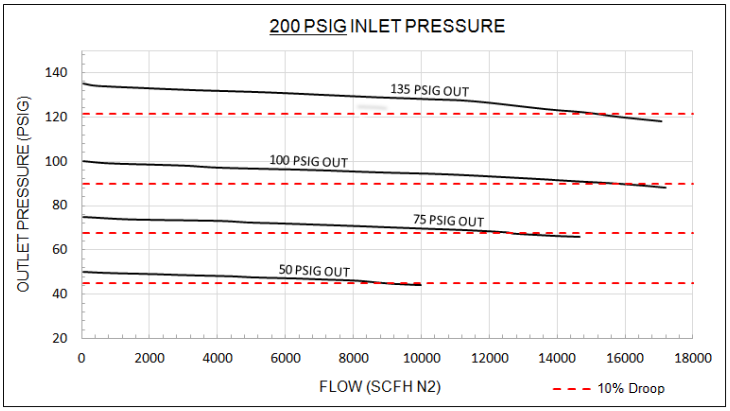




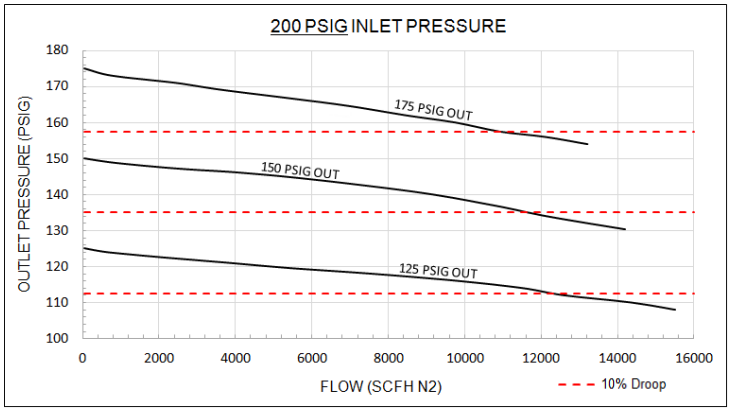
Flow Performance (continued)

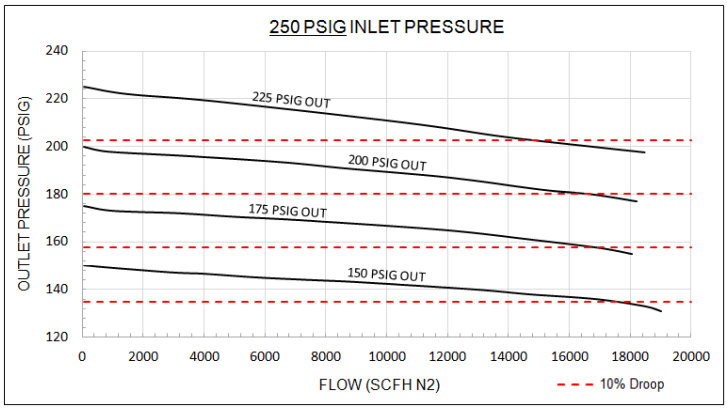
GDR-1000: B Spring





GDR-1000: C Spring





How To Order

4GDR - 750B - V - A - S

SERIES
4GDR - 4 Port Gas Delivery Regulator
5GDR - 4 Port Gas Delivery Regulator with Pipe-A-Way Chamber (1/4" NPT)

PORT SIZE
250B - 1/4" NPT
375B - 3/8" NPT
500B - 1/2" NPT
2BSPT - 1/4" BSPT
4BSPT - 1/2" BSPT
750B - 3/4" NPT
1000B - 1" NPT
6BSPT - 3/4" BSPT
8BSPT - 1" BSPT

GDR-500 ONLY

OPTION
S - Side Vent
W - Hex Adjustment Screw
P - Panel Mount

OUTLET PRESSURE RANGE
A - 0 to 55 PSIG
B - 50 to 135 PSIG
C - 125-225 PSIG
D - 225 to 450 PSIG
PO - Pilot Operated

SEALS / DIAPHRAGM MATERIAL
V - GLT Fluoroelastomer (-20°F to 225°F)
EP - EPDM - CO2 Service (-60°F to 225°F)
B - Nitrile - NG Service (-40°F to 225°F)

Seals/Diaphragm Material Compatibility Notes:
EP – EPDM: Recommended for CO2 Service
B – Nitrile: Recommended for NG Service, NOT recommended for O2 Service

Repair Kits

Includes: Valve Stem, Diaphragm, Valve Assembly, Valve Spring and Bottom Plug O-Ring

Model Size	Seal Material	Specify
1/4", 3/8" & 1/2"	FKM	GDR-RK-1V
	EPDM	GDR-RK-1EP
	Nitrile	GDR-RK-1B
3/4" & 1"	FKM	GDR-RK-2V
	EPDM	GDR-RK-2EP
	Nitrile	GDR-RK-2B

NOTE: FKM and EDPM Kits are cleaned for Oxygen Service.

Replacement Spring Kits

Includes: Spring (3/4" & 1" kit includes corresponding spring retainer)

Model Size	Specify
1/4", 3/8" & 1/2"	GDR-SK-1-*
3/4" & 1"	GDR-SK-2-*

***Specify Spring Model Code: A, B, C, or D**

Note: All Regulators are supplied with 2 (two) ¼" NPT Pipe Plugs. Pipe plugs are supplied finger tight. Final installation is the responsibility of the end user.

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Valves & BI-LOK Fittings

SERIES SDC
Self-Locking Liquid Cylinder Connectors

SERIES SDC

Description
The Series SDC connection system is supplied for installation into the outlet ports of most gas use, vent and fill valves on a cryogenic liquid cylinder. The system is a one-piece assembly consisting of a CGA fitting/clutch mechanism permanently mounted in a stainless steel locking bracket. Once installed, this system cannot be removed without rendering the CGA outlet connection unusable.

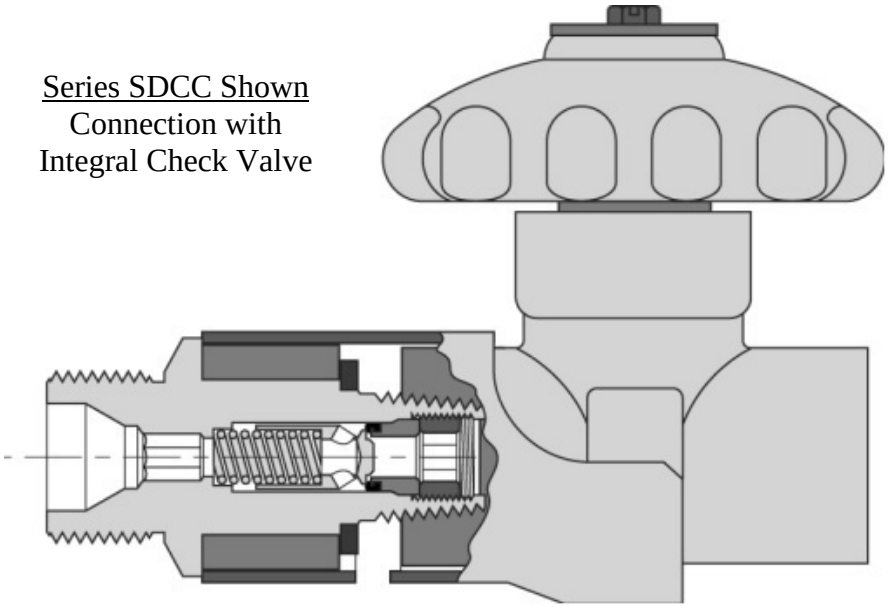
Features and Benefits
- Easily installs on most existing threaded cylinder valves using standard hex wrench.
- NPT Male connection supplied with factory applied PTFE thread sealant tape
- Suitable for both Industrial and Medical Applications
- CGA connections manufactured to industry standards
- Zero external leakage
- Cleaned and Packaged for Oxygen Service
- Optional Integral Anti-Back-Flow Check Valve
- OEM Endorsed

Materials of Construction

Component	Material
Fitting Body, Clutch Housing	Brass, ASTM B16
Spherical Locking Pawls	440 SS, ANSI 440C
Springs, Stop Washer	302 SS, ASTM A313
Locking Sleeve, Retaining Pins	304 SS, ASTM A240
Warning Label	4 Mil Laminated Vinyl

SERIES SDC
Self-Locking Liquid Cylinder Connectors

Series SDCC Shown
Connection with
Integral Check Valve



Ordering Information

SDCC - 3 540 - V

SERIES
SDC - Self Locking CGA Connection
SDCC - Self Locking CGA Connection with
Integral Check Valve (3320, 3326, 3540, & 3580 only)
Nominal 1 psi crack pressure.

INLET
3 - 3/8" NPT Male
375 - 3/8" NPT Male Plug (3000 psi) omit outlet designation
(specify SDC-375)

OUTLET (MAWP*)
540 - CGA-540 (3000 psi)
320 - CGA-320 (3000 psi)
326 - CGA-326 (3000 psi)
580 - CGA-580 (3000 psi)
440 - CGA-440 (500 psi)
295 - CGA-295 (500 psi)
622 - CGA-622 (500 psi)
624 - CGA-624 (500 psi)

* as defined in CGA V-1 Standard for Compressed Gas Cylinder Valve Outlet and Inlet Connections

SEAL MATERIAL
V - Viton™, -10°F to 375°F (-23°C to 190°C)
B - Buna-N, -40°F to 250°F (-40°C to 121°C)
N - Neoprene, -40°F to 300°F (-40°C to 148°C)
EP - Ethylene Propylene, -65°F to 300°F (-54°C to 148°C)
FS - Fluorosilicone, -80°F to 350°F (-62°C to 176°C)

Note: Viton™ is a trademark of DuPont.

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GENERANT
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CRYOGENIC RELIEF VALVE (BRASS)
1/4", 3/8" and 1/2" NPT
10 - 750 Psig (0.7 - 51.7 Bar)

SERIES CRV BRASS

Description

The Generant Series Brass CRV, Cryogenic Relief Valve is a spring reference over pressure protection device. The CRV incorporates Generant's exclusive "Dirt Guard" feature which increases the valves ability to tolerate particulate contamination. This device is ideally suited for use as a "Blocked Line Safety" in cryogenic systems. The CRV is supplied cleaned and packaged for oxygen service. The valve can be ordered with set pressures ranging from 10 to 750 Psig (0.7 to 51.7 Bar) and come factory preset and permanently locked. Relief pressure can not be altered or adjusted in the field. Seat and poppet geometry combined with optimized spring ranges provide high flow rates with minimum pressure accumulation. Compact design and availability of a variety of inlet and outlet configurations reduces size and piping requirements. Relief pressure can be discharged to atmosphere or to a downstream connection. The CRV is supplied with Flourosilicone seals for set pressures from 10 – 49 Psig (0.7 – 3.4 Bar) and PCTFE seals for set pressures 50 – 750 Psig (3.5 – 51.7 Bar).

Features

- Available **CE** marked in accordance to the requirements of the PED
- Exclusive "Dirt Guard" poppet incorporates screen to extend valve life and ensure reliability
- High Flow Capacity and Excellent Reseal Performance
- Supplied Factory Preset and Permanently Locked for Tamper Proof Service
- Discharge to Atmosphere or a Wide Variety of Inline Piping Configurations
- Optional Deflector Cap available for diverting exhausted gas
- 100% Factory Tested for Leakage, Crack and Reseal
- Cleaned and Packaged for Oxygen Service

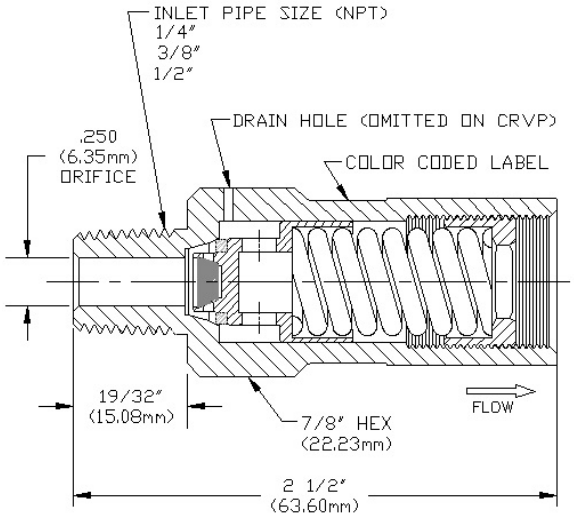
Technical Data

Nominal Set Pressure Range: 10 – 750 Psig (0.7 to 51.7 Bar)
Factory Set Tolerance*: Set Pressure ≤ 28.90 PSI, ± 5%
Set Pressure 29.00 – 48.30 PSI, ± 1.45 PSI
Set Pressure ≥ 48.40 PSI, ± 3%
*tolerance specifications per *EN ISO 4126-1*.
Zero Leakage to 95% of Set Pressure
Full Rated Flow @ 110% of Set Pressure
Unaffected by up to 10% Back Pressure
Reseat: 90% of set pressure
85% for PCTFE seals set below 100 Psig (6.9 Bar)
Temperature Rating: -320º to 350º F (-196º C to 176º C)
based on seal material (see How To Order)
Lubricant: Krytox®

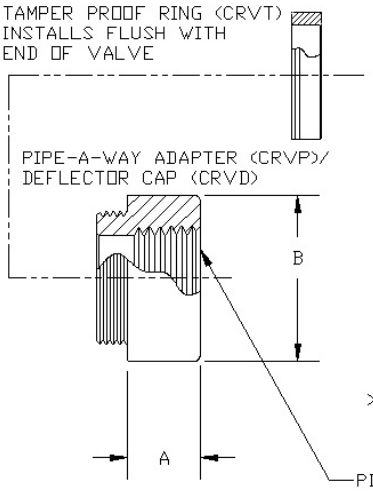
Materials of Construction

Component	Material
Body, Poppet, Adjusting Spring Retainer, Pipe-Away Adapters, Deflector Cap, Tamper Proof Ring	Brass, ASTM B16
Spring	302 (ASTM A313) or 17-4PH (ASTM A564)
Seal	PCTFE (ASTM D1430), or Fluorosilicone
Color Coded Identification Label	Mylar

CRYOGENIC RELIEF VALVE (BRASS)



CRV SHOWN WITH "DIRT GUARD" POPPET



PIPE SIZE	A	B
1/4" NPT	11/32" (8.73mm)	7/8" (22.23mm)
3/8" NPT	11/16" (17.46mm)	7/8" (22.23mm)
1/2" NPT	3/4" (19.05mm)	1" (25.40mm)
1/2" BSPT	3/4" (19.05mm)	1" (25.40mm)
DEFLECTOR CAP *	3/4" (19.05mm)	7/8" HEX (22.23mm)

* DEFLECTOR CAP DIVERTS FLOW TO SIDES THROUGH SIX (6) 1/4"(6.35mm) HOLES. (NOT SHOWN)

OPTIONAL CONFIGURATIONS (SEE HOW TO ORDER)

Flow Data

Set Pressure Range (Psig)		Discharge Coefficient Kd*
From	To	
10.0	17.0	0.62
17.1	29.0	0.62
29.1	40.0	0.53
40.1	60.0	0.53
60.1	90.0	0.61
90.1	125.0	0.76
125.1	190.0	0.76
190.1	275.0	0.67
275.1	375.0	0.61
375.1	600.0	0.48
600.1	750.0	0.40

Valve Orifice .250" (6.35mm) Diameter (same for 1/4", 3/8" and 1/2" NPT)

*Flow Coefficient Kd is stated at 110% accumulation

Relief Valve Flow Capacity can be calculated using **Generant's Online Flow Calculator** at www.generant.com or contact Customer Service at 973-838-6500.

How To Order

CRV - 250B - K - 350

SERIES
CRV -Cryogenic Relief Valve
CRVP2 -Cryogenic Relief Valve with 1/4" Female Pipe-A-Way Adapter Installed
CRVP3 -Cryogenic Relief Valve with 3/8" Female Pipe-A-Way Adapter Installed
CRVP4 -Cryogenic Relief Valve with 1/2" Female Pipe-A-Way Adapter Installed
CRVT -Cryogenic Relief Valve with Tamper Proof Ring Installed
CRVD -Cryogenic Relief Valve with Deflector Adapter Installed
CRVB4 -Cryogenic Relief Valve with 1/2" BSPT Female Pipe-A-Way Adapter Installed

INLET PIPE SIZE (NPT)
250B - 1/4" Male
375B - 3/8" Male
500B - 1/2" Male

SEAL MATERIAL
FS - Fluorosilicone for 10-49 Psig (-85° to 350° F (-65° to 176°C))
K - PCTFE for Above 50 Psig (-320° to 165° F (-196° to 74° C))

NOMINAL SET PRESSURE
10-750 Psig (0.7 - 51.7 Bar)

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GENERANT
Valves & Bi-Lok Fittings

CRYOGENIC RELIEF VALVE (STAINLESS)
1/4" and 1/2" NPT
-4 and -8 Metal To Metal Face Seal
1/4" and 1/2" Bi-Lok Dual Ferrule Tube
10 - 750 Psig (0.69 - 51.7 Bar)

SERIES STAINLESS CRV

Description

The Generant Series Stainless Steel CRV, Cryogenic Relief Valve is a spring reference over pressure protection device. The Stainless CRV is supplied cleaned and packaged for oxygen service making it an ideal choice for most cryogenic relief valve applications. The valve can be ordered with set pressures ranging from 10 to 750 Psig (0.69 to 51.7 Bar) and come factory preset and permanently locked. Relief pressure can not be altered or adjusted in the field. Seat and poppet geometry combined with optimized spring ranges provide high flow rates with minimum pressure accumulation. Compact design and availability of a variety of inlet and outlet configurations reduces size and piping requirements. Relief pressure can be discharged to atmosphere or to a downstream connection. The CRV can be specified with PCTFE (set pressures above 50 Psig (3.54 Bar)), Viton®, and Fluorsilicone seals.

Features

- Available in NPT, Metal to Metal Face Seal and Bi-Lok Dual Ferrule Tube Connections
- High Flow Capacity and Excellent Reseal Performance
- Discharge to Atmosphere or a Wide Varity of Inline Piping Configurations
- Supplied Factory Preset Set and Permanently Locked for Tamper Proof Service
- 100% Factory Tested for Leakage, Crack and Reseal Performance
- Optional Deflector Cap available for diverting exhausted gas
- Cleaned and Packaged for Oxygen Service

Technical Data

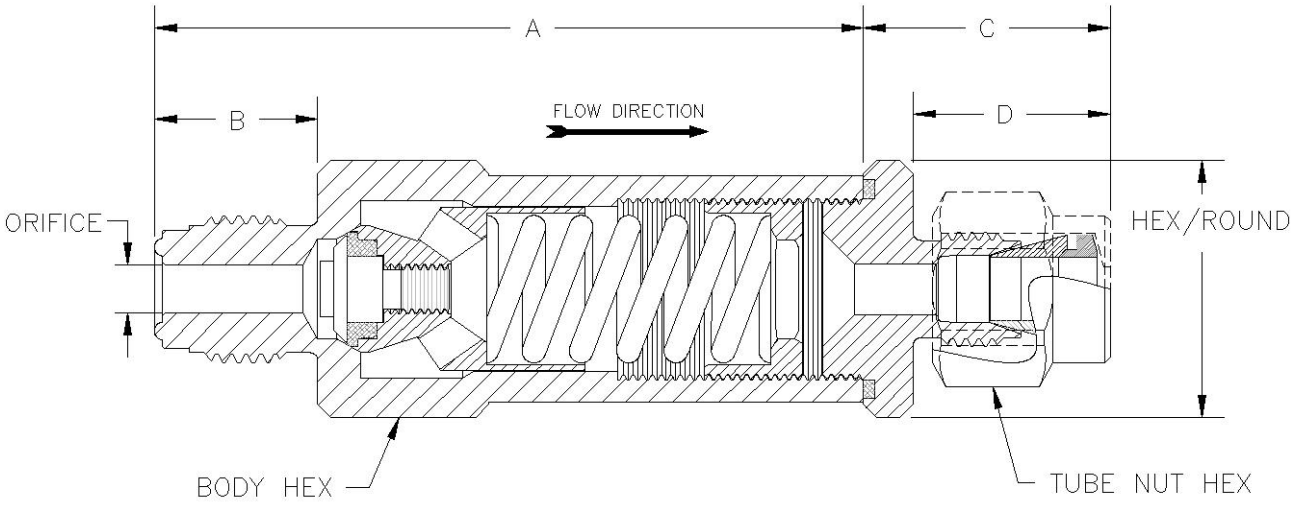
Nominal Set Pressure Range: 10 – 750 Psig (0.69 to 51.7 Bar)
Factory Set Tolerance: +/- 5% of Specified Pressure
Zero Leakage to 95% of Set Pressure
Full Rated Flow @ 110% of Set Pressure
Reseal: 90% (80% for PCTFE seals set below 100 psig (6.9 Bar))
Unaffected by up to 10% Back Pressure
Temperature Rating: -320º to 392º F (-196º C to 200º C)
based on seal material (see How To Order)
Lubricant: Krytox®

Materials of Construction

Component	Material
Body, Poppet, Seat Screw, Spring Retainer, In-Line Adapter[1], Nuts and Ferrules	316 Stainless Steel (ASTM A479)[2]
Spring	302 or 17-7 PH Stainless Steel (ASTM A313)
Seals	PCTFE (ASTM D1430), Viton® or Teflon®

[1] Inline Adapters utilize Viton® o-ring seals. Metal to Metal Face Seal Inline Adapters are Electro Polished to 10 Ra Max.
[2] Valves supplied with Metal to Metal Face Seal connections have Electro Polished Inlet, Poppet and Seat Screw to 10 Ra Max.

CRYOGENIC RELIEF VALVE (STAINLESS)



Configuration Shown CRV4T-4V

Dimensional Data

Inlet Size	Designation	Orifice	A	B	Body Hex	Tube Nut Hex
1/4" NPT	4	.312 (7.93)	2.65 (65.02)	0.59 (14.99)	7/8"	N/A
1/2" NPT	8	.400 (10.16)				
-4 Face Seal	4V	.180 (4.57)	2.68 (68.07)	0.62 (15.75)		
1/4" Bi-Lok	4T	.180 (4.57)	3.35 (85.09)	0.70 (17.78)		9/16"
1/2" Bi-Lok	8T	.400 (10.16)	3.51 (89.15)	0.86 (21.84)		7/8"
-8 Face Seal	8V	.400 (10.16)	2.82 (71.63)	0.75 (19.05)	1"	N/A

Configuration	Outlet	C	D	Hex/Round	Tube Nut Hex
CRV	Vent to Atmosphere	N/A			
CRVD	Deflector Cap	0.75 (19.05)	N/A	7/8" Hex	N/A
CRV4	1/4" FNPT	0.37 (9.40)		1" Rd	
CRV6	3/8" FNPT	0.67 (17.02)			
CRV8	1/2" FNPT	0.74 (18.80)			
CRV4V	-4 Face Seal	0.80 (20.32)	0.62 (15.75)	7/8" Hex	
CRV4T	1/4" Bi-Lok	0.89 (22.61)	0.70 (17.78)		9/16"
CRV8T	1/2" Bi-Lok	1.05 (26.67)	0.86 (21.84)		7/8"
CRV8V	-8 Face Seal	0.94 (23.88)	0.75 (19.05)	1" Hex	N/A

Note: Dimensions shown with Bi-Lok nuts finger-tight. Dimensions are in inches (millimeters), for reference only and subject to change.
NPT Threads per ASME B1.20.1

Flow Data

Set Pressure Range (Psig)		Discharge Coefficient, Kd		
From	To	.180 Orifice (4.57mm)	.312 Orifice (7.92mm)	.400 Orifice (10.16mm)
8	19	0.05	0.44	0.25
20	28	0.30	0.57	0.30
29	45	0.30	0.57	0.34
46	62	0.34	0.57	0.34
63	89	0.60	0.57	0.34
90	130	0.60	0.57	0.34
131	180	0.60	0.55	0.28
181	275	0.57	0.55	0.28
275	400	0.37	0.43	0.28
401	615	0.37	0.28	0.25
616	750	0.37	0.17	0.12

Viton® and Krytox® are registered trademarks of DuPont.

How To Order

CRV4 - 4 - K - 350

Configuration
- CRV Vent to Atmosphere
- CRVD Deflector Cap
- CRV4 1/4" FNPT Inline Adapter
- CRV6 3/8" FNPT Inline Adapter
- CRV8 1/2" FNPT Inline Adapter
- CRV4V -4 Face Seal Inline Adapter
- CRV4T 1/4" Bi-Lok Inline Adapter
- CRV8T 1/2" Bi-Lok Inline Adapter
- CRV8V -8 Face Seal Inline Adapter

Inlet Size Designation
- 4 1/4" NPT Male Inlet
- 8 1/2" NPT Male Inlet
- 4V -4 Metal to Metal Face Seal
- 4T 1/4" Bi-Lok Dual Ferrule Tube
- 8T 1/2" Bi-Lok Dual Ferrule Tube
- 8V -8 Metal to Metal Face Seal

Seals
- K - PCTFE above 50 Psig (-320° to 165° F (-196° to 74° C))
- V - Viton® (-20° to 375° F (-29° to 190° C))
- FS - Fluorsilicone (-85° to 392° F (-65° to 200° C))

Specify Set Pressure
10-750 Psig

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LIQUID CYLINDER VALVE
1/4" NPT
22 - 500 Psig (1.5 – 34.5 Bar)

LCV SERIES

Description

The Series LCV Liquid Cylinder Pressure Control/Relief Valve is designed exclusively for use on DOT 4L Cryogenic Liquid Cylinders. The LCV dramatically reduces the noise associated with traditional cylinder relief device discharge. Under normal operating conditions, the LCV optimizes cylinder performance by venting only what is required to maintain cylinder pressure in a tight band. In the event that circumstances demand, the LCV has adequate flow capacity to ensure safety, meeting all industry and regulatory requirements.

Features

- Designed exclusively for use on DOT 4L Liquid Cylinders
- Eliminates disruptive “pop” historically associated with traditional cylinder relief devices
- Incorporates the customer proven “Dirt Guard” poppet
- Accurately maintains and controls cylinder pressure minimizing product loss
- Exceeds industry and regulatory flow capacity requirements
- Complies with OSHA sound level regulations
- Extensively field qualified
- OEM approved and endorsed
- Cleaned and Packaged for Oxygen Service

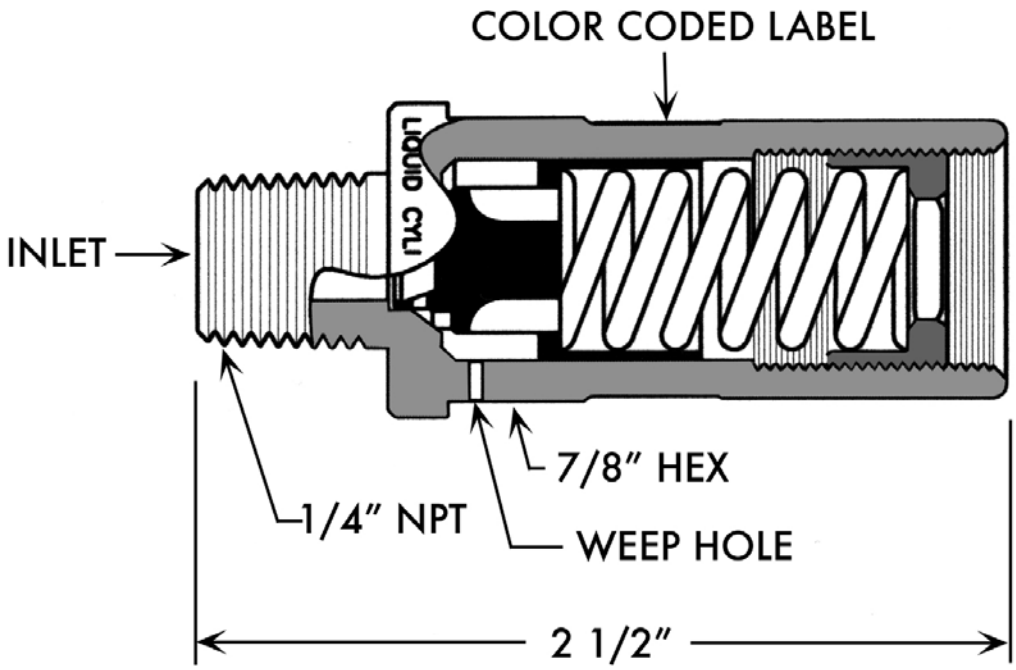
Technical Data

Nominal Set Pressure Range: 22 - 500 Psig (1.5 to 34.5 Bar)
Factory Set Tolerance*: Set Pressure ≥ 72.5 PSI, ± 3%
Set Pressure < 72.5 PSI, ± 2.175 PSI
*tolerance specifications per *EN ISO 4126-1*.
Zero Leakage to 95% of Set Pressure
Reseat: 90% of set pressure
Temperature Rating: -320º to 350º F (-196º C to 176º C)
based on seal material (see How To Order)
Lubricant: Krytox®

Materials of Construction

Component	Material	
Valve, Body, Poppet, Spring Retainer, and Screen	Brass, ASTM B16	
Spring	302 (ASTM A313) or 17-4PH (ASTM A564)	
Seal	Flourosilicone 22 to 49 Psig (1.5 to 3.4 Bar)	PCTFE 50 to 500 Psig (3.5 to 34.5 Bar)
Label	.004 Thick Mylar	

LIQUID CYLINDER VALVE



Flow Data

	Flow Rate (SCFM N2)	
Set Pressure (PSIG)	110% Set Pressure	120% Set Pressure
22	11.8	12.4
100	21.8	31.0
230	43.9	64.7
350	61.2	85.3
500	77.1	111.4

How To Order

LCV - 250B - K - 230

SERIES
LCV - Vent to Atmosphere

PIPE SIZE
250B - 1/4" Male NPT (Brass)

NOMINAL SET PRESSURE
22-500 Psig (1.5 - 34.5 Bar)

SEAL MATERIAL
FS - Fluorosilicone for 22-49 Psig (-85° to 350° F (-65° to 176°C))
K - PCTFE for Above 50 Psig (-320° to 165° F (-196° to 74° C))

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BACK PRESSURE REGULATOR
1/4" NPT
15 - 525 PSI

BPR SERIES

Description

BPR Series back pressure regulators are designed for use as both economizers or diaphragm type pressure limiting devices on cryogenic liquid cylinders and systems. Optimized diaphragm and adjustment spring designs provide high flow above the desired setpoint. Robust metal-metal seal and seat design ensures low leakage rates below setpoint. The BPR Series is constructed of primarily brass and stainless steel for long-lasting performance. All BPR Series regulators are supplied factory pre-set and cleaned for oxygen service.

BPR-250

Features

- **OPTIMIZED FOR HIGH FLOW**: Optimized Diaphragm and Spring Design allows for high flow rates at pressures beyond setpoint.
- **QUICK SHUT-OFF**: Regulators transition from the flowing condition to shut in a tight pressure band.
- **INLET FILTER SCREEN:** Protects against system debris and particulate.
- **DESIGNED FOR CRYOGENICS**: All materials were selected specifically for use in cryogenic environments.
- **FIELD ADJUSTABLE**: Regulators can be adjusted to any desired setpoint within the spring's pressure range.
- **CLEANED FOR OXYGEN SERVICE**: Regulators are cleaned for use in Oxygen service standard.

Technical Data

Max Inlet Pressure: 600 PSIG (41.4 bar)

Pressure Ranges:

Spring	Pressure Range
A	15 to 65 PSIG (1.0 to 4.5 bar)
B	50 to 175 PSIG (3.4 to 12.1 bar)
C	150 to 350 PSIG (10.3 to 24.1 bar)
D	300 to 525 PSIG (20.7 to 36.2 bar)

A, B, and C Range Springs are interchangeable.
D Range Spring requires Chamber Ring.

Temperature Range: -320° to 200°F (-196° to 93°C)

BPR-250I

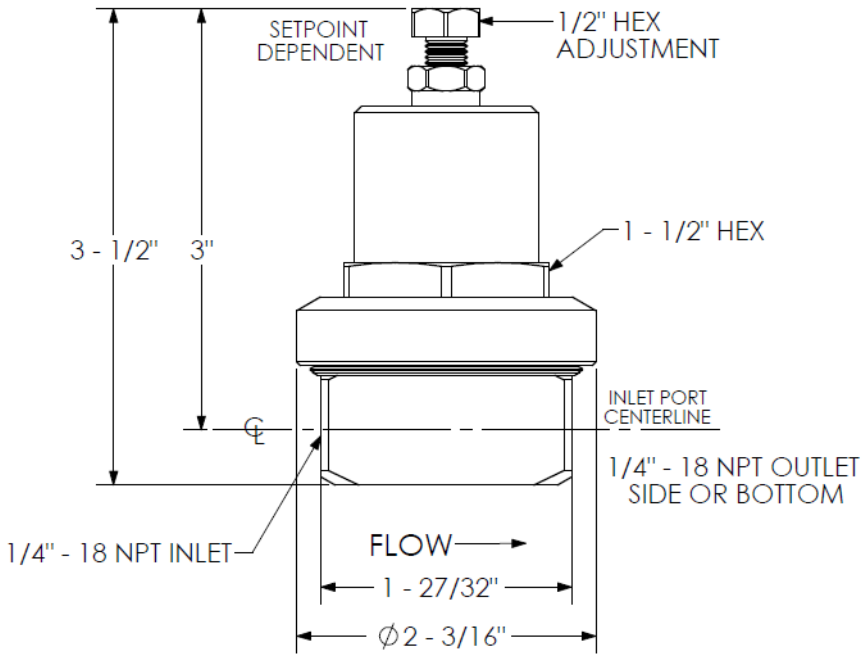
Materials of Construction

Component	Material
Body, Chamber, Spring Button, Spring Retainer, Chamber Ring	CDA 360 Brass, ASTM B16
Adjustment Springs	Chrome Silicon, ASTM A401
Adjustment Screw, Locknut, Diaphragm Assembly Screw, Lock Washer	18-8 Stainless Steel
Poppet, Seat	303 SS, ASTM A313
Diaphragms	Phosphor Bronze
Inlet Filter Screen	Brass Wire Mesh, ASTM E437
Diaphragm Gasket	Vulcanex ®
Chamber and Diaphragm Assembly Seal	Gylon ®

NOTE: Regulators are assembled with Dupont Krytox® lubricant.

BACK PRESSURE REGULATOR

Dimensional Data



How To Order

BPR - 250 - B - 140

SERIES

BPR - Back Pressure Regulator

PORT CONFIGURATION

250 - 1/4" NPT, Side IN - Bottom OUT
250I - 1/4" NPT, Side IN - Side OUT

SET PRESSURE

Specify set pressure in PSI

SPRING RANGE

A - 15 to 65 PSI (1.0 to 4.5 bar)
B - 50 to 175 PSI (3.4 to 12.1 bar)
C - 150 to 350 PSI (10.3 to 24.1 bar)
D - 300 to 525 PSI (20.7 to 36.2 bar)

Replacement Spring Kits / Repair Kit

Part Number	Spring
CRM-SK-A	A (15 to 65 PSI)
CRM-SK-B	B (50 to 175 PSI)
CRM-SK-C	C (150 to 350 PSI)
CRM-SK-D	D (300 to 525 PSI)

All Replacement Spring Kits come with a Replacement Spring, Adjustment Screw, Chamber Seal, and either Diaphragm Gasket (A, B, and C springs) or Chamber Ring (D Spring).

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CRYOGENIC REGULATOR, MINI
1/4" NPT
Inlet 600 PSI (41.4 bar)

CRM SERIES

Description

CRM Series pressure regulators provide high flow and quick, positive shut off at the desired set pressure. The regulator design is a non-balanced, spring reference, pressure reducing type regulator. They were designed especially for use as pressure build regulators for cryogenic liquid cylinders but can be used in many other applications. Solid, non-tied diaphragm provides leak-free and long-lasting performance. Optimized diaphragm and adjustment spring designs provide high flow performance. All CRM Series regulators are supplied factory pre-set and cleaned for oxygen service.

Features

- **OPTIMIZED FOR HIGH FLOW**: Optimized Spring and Diaphragm Design allows for high flow rates and low pressure drop.
- **QUICK SHUT-OFF**: Regulators transition from the flowing condition to shut in a tight pressure band.
- **SOLID, NON-TIED, DIAPHRAGM**: Solid diaphragm eliminates potential leak path and increases sensitivity.
- **DESIGNED FOR CRYOGENICS**: All materials were selected specifically for use in cryogenic environments.
- **CLEANED FOR OXYGEN SERVICE**: Regulators are cleaned for use in Oxygen service standard.

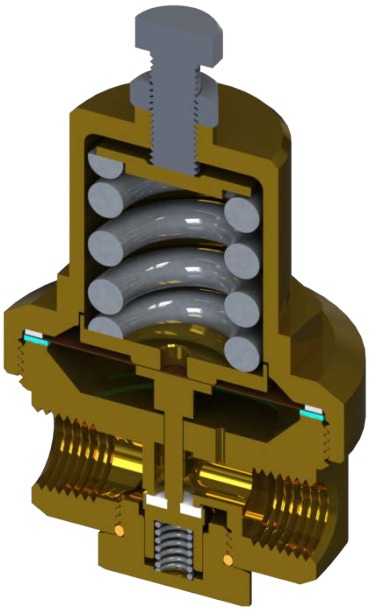
Technical Data

Max Inlet Pressure: 600 PSIG (41.4 bar)

Outlet Pressure Ranges:

Spring	Outlet Pressure Range
A	15 to 65 PSIG (1.0 to 4.5 bar)
B	50 to 175 PSIG (3.4 to 12.1 bar)
C	150 to 350 PSIG (10.3 to 24.1 bar)
D	300 to 525 PSIG (20.7 to 36.2 bar)

A, B, and C Range Springs are interchangeable.
D Range Spring requires Chamber Ring.



Temperature Range: -320° to 200°F (-196° to 93°C)

Full Open Flow Coefficient: 0.51

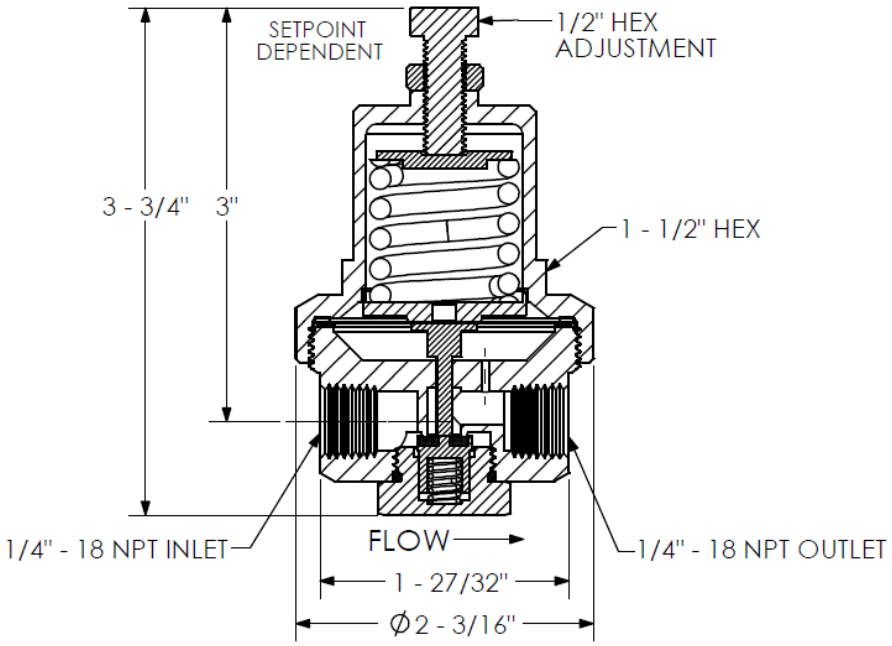
Materials of Construction

Component	Material
Body, Chamber, Valve Body, Stem, Spring Button, Spring Retainer, Bottom Plug	CDA 360 Brass, ASTM B16
Adjustment Springs	Chrome Silicon, ASTM A401
Adjustment Screw and Locknut	18-8 Stainless Steel
Valve Spring	302 SS, ASTM A313
Diaphragms	Phosphor Bronze
Diaphragm Gasket	Vulcanex ®
Valve Seal	PTFE
Chamber Seal	Gylon ®
Bottom Plug Seal	Silicone

NOTE: Regulators are assembled with Dupont Krytox® lubricant.

CRYOGENIC REGULATOR, MINI

Dimensional Data



How To Order

CRM-250 - B - 125

SERIES

CRM-250 - Cryogenic Regulator Mini, 1/4" NPT, Side IN, Side OUT

SPRING RANGE

A - 15 to 65 PSI (1.0 to 4.5 bar)
B - 50 to 175 PSI (3.4 to 12.1 bar)
C - 150 to 350 PSI (10.3 to 24.1 bar)
D - 300 to 525 PSI (20.7 to 36.2 bar)

SET PRESSURE

Specify set pressure in PSI

Replacement Spring Kits / Repair Kit

Part Number	Spring
CRM-SK-A	A (15 to 65 PSI)
CRM-SK-B	B (50 to 175 PSI)
CRM-SK-C	C (150 to 350 PSI)
CRM-SK-D	D (300 to 525 PSI)

All Replacement Spring Kits come with a Replacement Spring, Adjustment Screw, Chamber Seal, and either Diaphragm Gasket (A, B, and C springs) or Chamber Ring (D Spring).

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GENERANT

VENT RELIEF VALVE
1/8" - 1" NPT
.5 - 150 Psig (0.03 – 10.3 bar)

VRV SERIES

Description

A compact, highly accurate, direct acting pressure relief valve. Factory preset to desired crack pressure and/or flow specifications. Internal adjustment provides tamper proof safety against inadvertent pressure changes. Available vent to atmosphere or inline configurations in brass, aluminum and 316 stainless steel. Valves feature a Quad ring seal which provides for extreme accuracy and repeatability with a narrow reseal band. Optional deflector cap increases flow capacity and provides for deflection of discharge.

VRV
Vent to Atmosphere

Features

- Accurate and Repeatable Cracking Pressure
- 100% Factory Preset and Tested
- Zero Leakage to 95-98% of Set Pressure
- Tamper Proof Adjustment
- Excellent Reseal Performance
- Compact Size

Technical Data

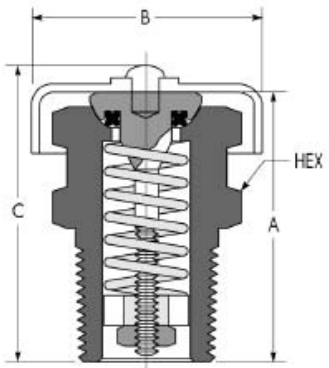
- Set Pressure Range: 0.5 to 150 Psig (0.03 to 10.34 bar)
- Inline Valves (Series VRVI):
  Proof Pressure: 400 Psig (28 bar)
  Burst Pressure: >500 Psig (34 bar)
- Set Pressure Tolerance: Factory preset
  < 2 Psig (0.14 bar): +/-10%
  2 to 150 Psig (0.14 to 10.3 bar): +/- 5%
  (on increasing pressure)
- Reseal:
  80% of Set Pressure for valves specified 2-10 Psig (0.14 to 0.7 bar)
  92% of Set Pressure for valves specified 10-150 Psig (0.7 to 10.3 bar)

Temperature Range: -320º to 400º F (-195º C to 205º C)

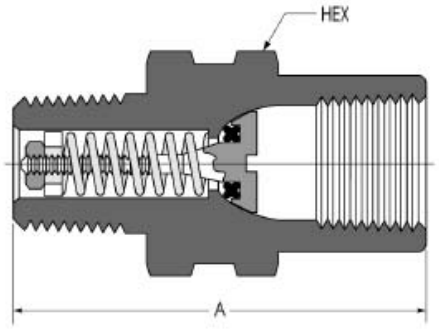
(based on sealing selection, see ordering information)

VRVI
Inline

SERIES VRV
VENT RELIEF VALVE



VRV & VRVD
Vent to Atmosphere



VRVI
Inline

Dimensional Data

Pipe Size NPT[1]	VRV & VRVD				VRVI	
	A	B	C	Hex	A	Hex
1/8”	.97	.69	1.10	1/2"	Not Available	
1/4"	1.20	.92	1.32	5/8”	1.62	3/4"
3/8”	1.24	1.17	1.38	3/4"	2.12	7/8”
1/2"	1.75	1.40	1.92	1”	2.20	1”
3/4"	2.25	1.73	2.44	1-1/8”	2.72	1-1/4”
1”	3.12	1.94	3.29	1-1/2”	Not Available	

1 Available with male straight thread connections. (SAE J1926, MS33656 with cone point removed) Consult factory

Materials of Construction

Component	Valve Body Material		
	Brass	Aluminum[1]	Stainless Steel
Valve Body	Brass, ASTM B16 (Nickel Plated, ASTM B689)	2024 Aluminum ASTM B211 (Clear Anodized, ASTM B580)	316 SS, ASTM A479
Stem	Brass, ASTM B16		
Spring Retainer[2]			
Seal[3]	As specified, see ordering information		
Spring	302 SS/17-7 PH, ASTM A313		
Locknut	18-8 SS		
Deflector Cap and Rivet	2024 Aluminum ASTM B211 (Clear Anodized, ASTM B580)		

1 Available in 1/8” and 1/4" valves only
2 All 1/8” and 1/4" valves have 316 stainless steel (ASTM A479) retainers
3 Lubricated with Krytox™

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SERIES VRV
VENT RELIEF VALVE

Flow Data, Series VRV (Vent to Atmosphere)

Nominal Spring		1		5		10		20		50		100		150	
Set Pressure Range		0.5 - 2.5		2.6 - 7.5		7.6 - 15		16 - 35		36-75		76 - 125		126 - 150	
Valve Size	Orifice	Flow (SCFH)	Kd	Flow (SCFH)	Kd	Flow (SCFH)	Kd	Flow (SCFH)	Kd	Flow (SCFH)	Kd	Flow (SCFH)	Kd	Flow (SCFH)	Kd
1/8" NPT (VRV-125)	0.187	7.7	0.03	34	0.06	55	0.07	90	0.08	260	0.12	500	0.13	610	0.11
1/4" NPT (VRV-250)	0.275	8	0.01	37	0.03	69	0.04	123	0.05	515	0.11	2011	0.24	2290	0.19
3/8" NPT (VRV-375)	0.345	12	0.01	58	0.03	108	0.04	150	0.04	550	0.07	1300	0.1	1140	0.06
1/2" NPT (VRV-500)	0.410	50	0.04	110	0.04	150	0.04	220	0.04	1458	0.14	3725	0.2	4000	0.15
3/4" NPT (VRV-750)	0.570	74	0.03	82	0.01	95	0.01	225	0.02	1050	0.05	2080	0.06	3450	0.07
1" NPT (VRV-1000)	0.785	Consult Factory		175	0.02	114	0.01	310	0.02	550	0.01	4600	0.07	5500	0.06

Flow Data, Series VRVD (Vent to Atmosphere, with Deflector Cap)

Nominal Spring		1		5		10		20		50		100		150	
Set Pressure Range		0.5 - 2.5		2.6 - 7.5		7.6 - 15		16 - 35		36-75		76 - 125		126 - 150	
Valve Size	Orifice	Flow (SCFH)	Kd	Flow (SCFH)	Kd	Flow (SCFH)	Kd	Flow (SCFH)	Kd	Flow (SCFH)	Kd	Flow (SCFH)	Kd	Flow (SCFH)	Kd
1/8" NPT (VRVD-125)	0.187	10.3	0.04	39	0.07	95	0.12	100	0.09	280	0.13	580	0.15	780	0.14
1/4" NPT (VRVD-250)	0.275	11	0.02	40	0.03	100	0.05	172	0.07	2340	0.5	4272	0.5	6650	0.55
3/8" NPT (VRVD-375)	0.345	13	0.01	77	0.04	130	0.05	195	0.05	738	0.1	4353	0.33	6275	0.33
1/2" NPT (VRVD-500)	0.410	60	0.05	246	0.09	420	0.11	658	0.12	2605	0.25	6800	0.37	7600	0.29
3/4" NPT (VRVD-750)	0.570	50	0.02	76	0.01	116	0.02	2500	0.23	6000	0.30	11000	0.30	20000+	0.34+
1" NPT (VRVD-1000)	0.785	Consult Factory		560	0.06	500	0.04	600	0.03	660	0.02	12000	0.18	20000+	0.20+

Flow Data, Series VRVI (Inline)

Nominal Spring		1		5		10		20		50		100		150	
Set Pressure Range		0.5 - 2.5		2.6 - 7.5		7.6 - 15		16 - 35		36-75		76 - 125		126 - 150	
Valve Size	Orifice	Flow (SCFH)	Kd	Flow (SCFH)	Kd	Flow (SCFH)	Kd	Flow (SCFH)	Kd	Flow (SCFH)	Kd	Flow (SCFH)	Kd	Flow (SCFH)	Kd
1/4" NPT (VRVI-250)	0.187	7.7	0.03	34	0.06	55	0.07	90	0.08	260	0.12	500	0.13	610	0.11
3/8" NPT (VRVI-375)	0.275	8	0.01	37	0.03	69	0.04	123	0.05	515	0.11	2011	0.24	2290	0.19
1/2" NPT (VRVI-500)	0.345	12	0.01	58	0.03	108	0.04	150	0.04	550	0.07	1300	0.1	1140	0.06
3/4" NPT (VRVI-750)	0.410	50	0.04	110	0.04	150	0.04	220	0.04	1458	0.14	3725	0.2	4000	0.15

Notes to Flow Data

- Flow and Kd (discharge coefficient) are stated at 110% accumulation above set point with Nitrogen and Zero Downstream Pressure
- Interpolate charts for set pressures between points given
- Restrictions in the inlet or outlet piping may reduce flow
- Exceeding 115% accumulation may result in valve failure
- Generant offers complete design assistance. Consult factory for correct relief valve sizing
- Individual flow curves available on request
- Orifice sizes are stated in inches

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SERIES VRV
VENT RELIEF VALVE

Ordering Information

VRV - 125 B - V - 15

SERIES
VRV - Vent to Atmosphere
VRVD - Vent to Atmosphere with Deflector Cap
VRVI - Inline Relief (Male x Female)

PORT SIZE

125 -1/8"
250 - 1/4"
375 - 3/8"
500 - 1/2"
750 - 3/4"
1000 - 1" (Note: VRVI Not Available)
NPT threads per ANSI/ASME B1.20.1

Material Code

B - Brass
A - Aluminum
SS - 316 SS
For other materials, consult factory

NOMINAL SET PRESSURE
Specify .5 - 150 Psig
(Teflon™ Seals not available below 20 Psig)
Valves that are not actuated for a period of time may exhibit higher initial crack pressure (first bubble) than subsequent cycles

SEAL MATERIAL
V - Viton™, -10°F to 375°F (-23°C to 190°C)
B - Buna-N, -40° F to 250° F (-40° C to 121° C)
N - Neoprene, -40° F to 250° F (-40° C to 121° C)
EP - Ethylene Propylene, -65° F to 300° F (-54° C to 148° C)
FS - Fluorsilicone, -80° F to 350° F (-62° C to 176° C)
S - Silicone, -65° F to 400° F (-54° C to 205° C)
T - Teflon™, -320° F to 400° F (-220° C to 205° C)

OPTIONS
Oxygen cleaning, alternative seals and other thread configurations, consult the factory

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GENERANT
Valves & BI-Lok Fittings

CHECK VALVE
1/8” – 2” NPT
0 – 4500 Psig

CV SERIES

Description

High flow, zero leak, low pressure drop check valve suitable for most fluid and gas applications. Fully guided poppet with free floating O-ring design is extremely tolerant of particulate contamination. A metal to metal positive stop in both the open and checked position protects O-ring and spring from over-stress fatigue. Zero external leakage is achieved by the utilization of a static O-ring seal with PTFE backup ring. When specified with the proper seal material, these valves are ideally suited to cryogenic system applications.

Technical Data

- Nominal Crack Pressures: .15, 1, 3 & 8 Psig (0.01, 0.07, 0.21 & 0.55 bar)
- Leakage: Zero to maximum operating pressure. PTFE seals may require back pressure to seal leak-tight
- Temperature Rating: -320°F to 450°F (-195°C to 232°C) based on seal material
- Maximum Operating Pressures to 300°F (149°C)

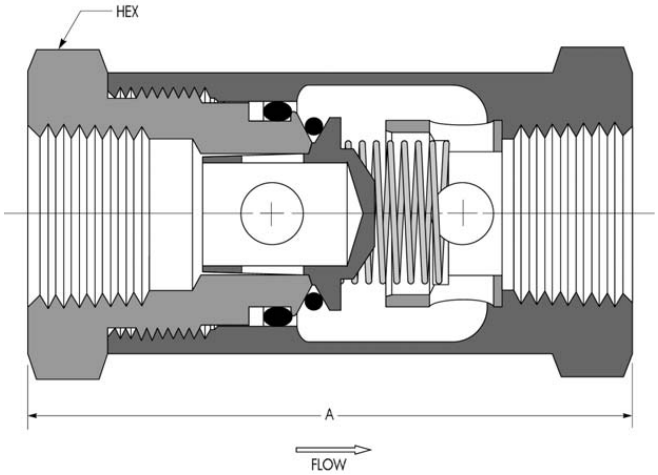
Pipe Size	Brass Psig (bar)	Carbon Steel Psig (bar)	303 Stainless Steel Psig (bar)	316 Stainless Steel Psig (bar)
1/8” – 1”	3000 (206)	3000 (206)	4500 (310)	
1-1/4” & 1-1/2”		Non standard, consult factory		
2”	1500 (103)			

Materials of Construction

Component	Valve Body Material			
	Brass	Carbon	303 SS	316 SS
Inlet Cap, Outlet Body, Poppet, Spring Retainer	Brass ASTM B16	Carbon Steel ASTM A108 Zinc & Black Plated per ASTM B633	303 SS ASTM A582	316 SS ASTM A479
Dynamic O-Ring[1]	Buna-N		Viton™	
Static O-Ring				
Backup Ring	Virgin PTFE			
Spring	302 SS, ASTM A313			

1 Lubricated with Krytox™

SERIES CV
CHECK VALVE



Dimensional/Flow Data

Pipe Size (NPT)	A (inches)	Hex	Cv	Flow at 5.0 Psid (SCFM)
1/8”	1.70	13/16”	1.7	35
1/4"	2.25	1”	3.0	60
3/8”	2.43	1 – 1/8”	3.9	80
1/2"	2.93	1 – 1/2"	7.4	150
3/4"	3.37	1 – 3/4"	11.4	280
1”	3.99	2”	14.2	380
1 – 1/4"	4.50	2 – 3/4"	26.8	700
1 – 1/2"	5.35			
2”	6.10	3 – 1/2” Round[1]	51.0	1200

1. Machined from 3-1/2” round stock with 2-3/4” wrench flats.
Flow tested in accordance with ISA S75.02 with air. Restrictions in the inlet or outlet piping may reduce flow

Ordering Information

CV - 500 B - V - 3

SERIES
CV - Check Valve

PIPE SIZE (NPT)
125 - 1/8”
250 - 1/4"
375 - 3/8”
500 - 1/2"
750 - 3/4"
1000 - 1"
1250 - 1-1/4" (brass only)
1500 - 1-1/2" (brass only)
2000 - 2" (brass only)
NPT threads per ANSI/ASME B1.20.1

MATERIAL CODE
B - Brass (1/8" - 2")
S - 303 SS (1/4" - 1")
SS - 316 SS (1/8" - 1)
C - Carbon Steel (1/4" - 1")

CRACK PRESSURE
.15 - (.1-.4 Psig) (0.01 bar)
1 - (.5 - 1 Psig) (0.07 bar)
3 - (2-4 Psig) (0.21 bar)
8 - (6-10 Psig) (0.55 bar)

SEAL MATERIAL
V - Viton™, -10°F to 375°F (-23°C to 190°C)
B - Buna-N, -40°F to 250°F (-40°C to 121°C)
N - Neoprene, -40°F to 300°F (-40°C to 148°C)
EP - Ethylene Propylene, -65°F to 300°F (-54°C to 148°C)
FS - Fluorosilicone, -80°F to 350°F (-62°C to 176°C)
S - Silicone, -70°F to 450°F (-56°C to 232°C)
T - PTFE, -320°F to 350°F (-195°C to 176°C)
PTFE Seal may require back pressure to seal leak tight

OPTIONS
Oxygen cleaning, alternative seals and other thread configurations, consult factory

Note: Viton™ and Krytox™ are trademarks of DuPont.

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GENERANT

HIGH PRESSURE RELIEF VALVE
1/8" - 3/4" NPT
10-2400 Psig

HPRV SERIES

Description

The HPRV Series Relief Valve provides accurate crack pressure with zero leakage up to 98% of nominal set pressure. When properly specified, this factory preset, tamper proof design, is ideally suited for most any liquid or gas application. Encapsulating the o-ring seal within the poppet eliminates seal extrusion and cold flow characteristics. By guiding the poppet into the body, a line of contact seal is ensured and at high crack pressure settings, the o-ring is protected by a metal-to-metal stop between the poppet and the body. High flow design, combined with narrow band interchangeable springs, minimizes system pressure rise as flow demand increases. Available in brass or stainless steel and inline or discharge to atmosphere. Valves can be supplied with a manual pull ring override.

HPRV
Inline

Features

- 100% Factory Preset and Tested
- Zero Leakage to 95-98% of Set Pressure
- Tamper Proof Adjustment
- Excellent Reseal Performance

Technical Data

- Set Pressure Range: 10 to 2400 Psig (0.7 to 166 Bar)
- Set Pressure Tolerance: Factory Preset +/-5% on increasing pressure
- Reseal: Elastomer Seals 90%-95% of Actual Crack Pressure. PTFE may be slightly lower
- Inline Valves (Series HPRV):
  Proof Pressure: 3700 Psig (225 Bar)
  Burst Pressure: >5000 Psig (345 Bar)
- Temperature Range: -320º F to 400º F (-220º C to 205º C)
  Based on seal selection, see ordering information

HPRVA
Vent to Atmosphere

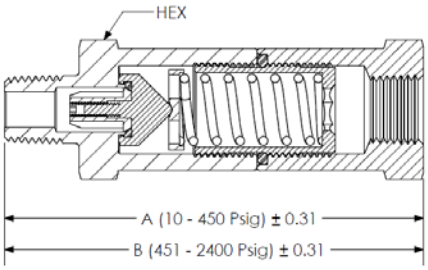
Materials of Construction

Component	Valve Body Material		
	Brass	303 Stainless Steel	316 Stainless Steel
Inlet Body, Outlet Cap, Spring Chamber, Spring Retainer,O'Ring Spreader	Brass, ASTM B16	303 SS, ASTM A582*	316 SS, ASTM A479*
Poppet	303 SS, ASTM A582		
Spring	302 SS / 17-7 PH ASTM A313		
Locking Screw	18-8 SS		
Seals*	As Specified, See Ordering Information		
Pull Stud	Brass, ASTM B16	303 SS, ASTM A582	316 SS, ASTM A479
Pull Ring	Plated Steel		

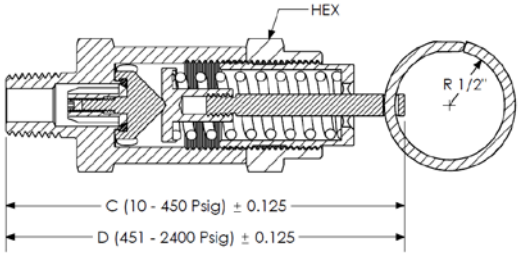
*Lubricated with Krytox ™

HPRVM
Vent to Atmosphere
(Manual Override)

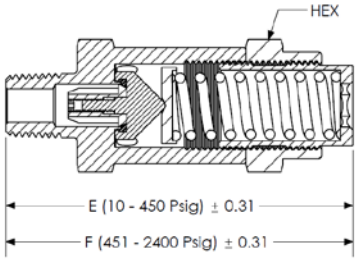
HIGH PRESSURE RELIEF VALVE



HPRV
Inline



HPRVM
Discharge to Atmosphere
(Manual Override)



HPRVA
Discharge to Atmosphere

Dimensional Data

Inlet (NPT)	HPRV		HPRM		HPRVA		Hex
	A	B	C	D	E	F	
1/8"	3.34	4.24	3.30	4.20	2.87	3.77	1"
1/4"							
3/8"							
1/2"	4.16	5.06	4.27	5.18	3.56	4.46	1-1/4"
3/4"	5.90	7.14	5.44	6.70	4.82	6.13	1-3/4"

Dimensional data is stated in inches.

Flow Data

Set Pressure Range	HPRV				HPRVA and HPRVM			
	10-1250		1251-2400		10-1250		1251-2400	
Inlet (NPT)	Orifice	Kd	Orifice	Kd	Orifice	Kd	Orifice	Kd
1/8"	.215	0.14	.215	0.16	.215	0.57	.215	0.65
1/4"	.275	0.27			.275	0.65		
3/8"								
1/2"	.515	0.20	.275	0.27	.515	0.35	.275	0.65
3/4"	Consult Factory							

Kd is stated at 110% of Nominal Set Pressure.
Orifice sizes are stated in inches.
Consult factory for proper sizing or flow requirements, flow curves available on request.

Ordering Information

HPRV - 250 SS - V - 450

SERIES
HPRV - Male x Female, Inline
HPRVA - Male Inlet, Discharge to Atmosphere
HPRVM - Male Inlet, Vent to Atmosphere with Manual Override

STANDARD PORTING CONNECTION

125 – 1/8" NPT	ANSI/ASME B1.20.1 (Inlet & Outlet)
250 – 1/4" NPT	
375 – 3/8" NPT	
500 – 1/2" NPT	
750 – 3/4" NPT	

OPTIONAL PORTING CONNECTION
Consult factory

-6SAE	Inlet -	MS33656 with Cone Point Removed (adapts to SAE J1926)
-8SAE		
-10SAE		
-12SAE	Outlet -	SAE J1926
-16SAE		
-6JIC	Inlet -	SAE J514, 37 Degree Flare
-8JIC		
-10JIC		
-12JIC	Outlet -	Corresponding SAE J1926 Size Female
-16JIC		

NOMINAL SET PRESSURE
Specify 10 - 2400 Psig

SEAL MATERIAL
V - Viton™, -20°F to 400°F (-29°C to 204°C)
B - Buna-N, -40°F to 250°F (-40°C to 121°C)
N - Neoprene, -40°F to 300°F (-40°C to 148°C)
EP - Ethylene Propylene, -65°F to 300°F (-54°C to 148°C)
S - Silicone, -70°F to 450°F (-56°C to 232°C)
T - Teflon™, -320°F to 400°F (-220°C to 204°C)

MATERIAL CODE
B - Brass
S - 303 Stainless Steel
SS - 316 Stainless Steel

OPTIONS
Oxygen cleaning, tamper proof lock wire, alternative seals and Other thread configurations, consult factory

Viton, Krytox, and Teflon are trademarks of DuPont.

PROPER COMPONENT SELECTION – When specifying a component, the total system design must be considered to ensure safe and trouble-free performance. Intended component function, materials compatibility, pressure ratings, installation, environment and maintenance are the responsibility of the system designer.

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GENERANT
Valves & BI-Lok Fittings

ONE PIECE CHECK VALVE
1/4" & 1/2" NPT
0 – 3000 Psig

OPC SERIES

Description
Compact one piece body, fully retained O-ring seal, poppet type check valve. Available in 1/4" and 1/2" NPT in brass or 316 stainless steel. Suitable for working pressures to 3000 Psig. A wide selection of seal materials and crack pressures make the Series OPC a quality and cost effective solution. All valves are 100% factory tested and available cleaned and packaged for oxygen service.

Features and Benefits
- Compact One Piece Body Construction
- Working Pressures to 3000 Psig (206 bar)
- Full Back Pressure Rating
- Fully Retained O-Ring Seal
- Cracking Pressures from .3 to 25 Psig (0.02 – 1.7 bar)
- 100% Factory tested for crack, leakage and reseal performance

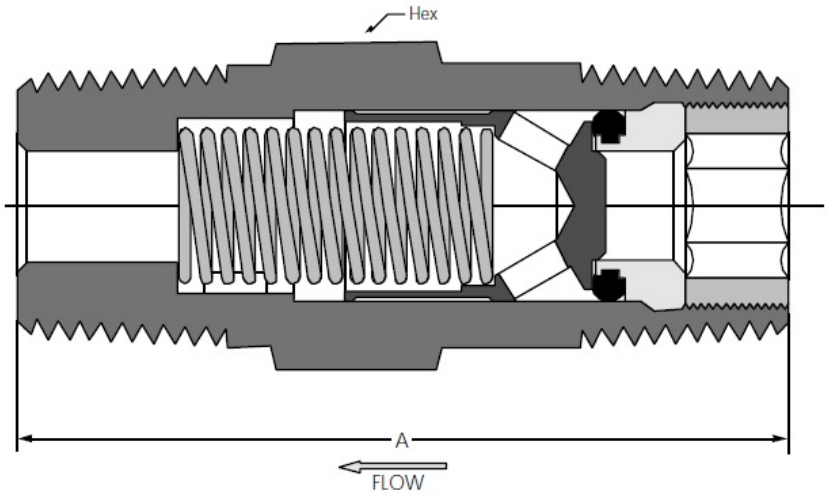
Technical Data
- Nominal Crack Pressures: .3, 1, 10, & 25 Psig (0.02, 0,07, 0.7, & 1.7 bar)
- Maximum Pressure: 3000 Psig @ 70°F (206 bar @ 21° C)
- Temperature Rating: -80°F to 450°F (-62°C to 232°C)
  (based on seal selection, see ordering information)

Materials of Construction

Component	Valve Body Material	
	Brass	Stainless Steel
Body, Poppet, Seat Insert, Locking Screw[1]	Brass, ASTM B16	316 SS, ASTM A479
Spring	302 SS, ASTM A313	
O-Ring Seal[2]	Buna-N	Viton™

1 1/4" Brass valves have 316 SS locking screw
2 Lubricated with Krytox™

SERIES OPC
ONE PIECE CHECK VALVE



Dimensional/Flow Data

Model Code	Port Configuration		A (inches)	Hex	Cv
	Inlet	Outlet			
OPC-4P	1/4" Male NPT	1/4" Male NPT	1.62	9/16"	0.35
OPC-4MF	1/4" Male NPT	1/4" Female NPT	1.75	3/4"	
OPC-4FF	1/4" Female NPT	1/4" Female NPT	2.41		
OPC-8P	1/2" Male NPT	1/2" Male NPT	2.28	7/8"	1.20
OPC-8MF	1/2" Male NPT	1/2" Female NPT	2.83	1 – 1/16"	

Flow tested in accordance with ISA S75.21 with air. Restrictions in the inlet or outlet piping may reduce flow.

Ordering Information

OPC - 4P SS - V - 1

SERIES
OPC - One Piece Check Valve

PORT CONFIGURATION
4P - 1/4" Male x 1/4" Male
4MF - 1/4" Male x 1/4" Female
4FF - 1/4" Female x 1/4" Female
8P - 1/2" Male x 1/2" Male
8MF - 1/2" Male x 1/2" Female
NPT Threads per ANSI/ASME B1.20.1

MATERIAL CODE
B - Brass
SS - 316 SS

CRACK PRESSURE
.3 - (.1 - .4 Psig) (0.02 bar)
1 - (.5 - 1 Psig) (0.07 bar)
10 - (8 - 12 Psig) (0.7 bar)
25 - (22 - 27 Psig) (1.7 bar)

SEAL MATERIAL
V - Viton™, -10°F to 375°F (-23°C to 190°C)
B - Buna-N, -40°F to 250°F (-40°C to 121°C)
N - Neoprene, -40°F to 300°F (-40°C to 148°C)
EP - Ethylene Propylene, -65°F to 300°F (-54°C to 148°C)
FS - Fluorosilicone, -80°F to 350°F (-62°C to 176°C)
S - Silicone, -70°F to 450°F (-56°C to 232°C)
T - PTFE, -50°F to 350°F (-46°C to 176°C)
PTFE Seal may require back pressure to seal leak tight

OPTIONS
Oxygen cleaning, alternative seals and other thread configurations, consult factory

Note: Viton™ and Krytox™ are trademarks of DuPont.

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GENERANT

INDUSTRIAL RELIEF VALVE (STAINLESS)
1/4" and 1/2" NPT
-4 and -8 Metal To Metal Face Seal
1/4" and 1/2" Bi-Lok Dual Ferrule Tube
10 - 750 Psig (0.69 - 51.7 Bar)

IRV

STAINLESS

SERIES

Description

The Generant Series Stainless Steel IRV, Industrial Relief Valve is a spring reference over pressure protection device. The valve can be ordered with set pressures ranging from 10 to 750 Psig (0.69 to 51.7 Bar) and come factory preset and permanently locked. Relief pressure can not be altered or adjusted in the field. Seat and poppet geometry combined with optimized spring ranges provide high flow rates with minimum pressure accumulation. Compact design and availability of a variety of inlet and outlet configurations reduces size and piping requirements. Relief pressure can be discharged to atmosphere or to a downstream connection. The IRV is supplied with FKM seals. For severe service applications and set pressures above 50 Psig (3.45 Bar), specify optional PTFE seals.

Features

- Supplied Factory Preset Set and Permanently Locked for Tamper Proof Service
- 100% Factory Tested for Leakage, Crack and Reseal Performance
- High Flow Capacity and Excellent Reseal Performance
- Available in NPT, Metal to Metal Face Seal and Bi-Lok Dual Ferrule Tube Connections
- Discharge to Atmosphere or a Wide Varity of Inline Piping Configurations
- Optional Deflector Cap available for Diverting Exhausted Gas to Atmosphere
- Available Cleaned and Packaged for Oxygen Service

Technical Data

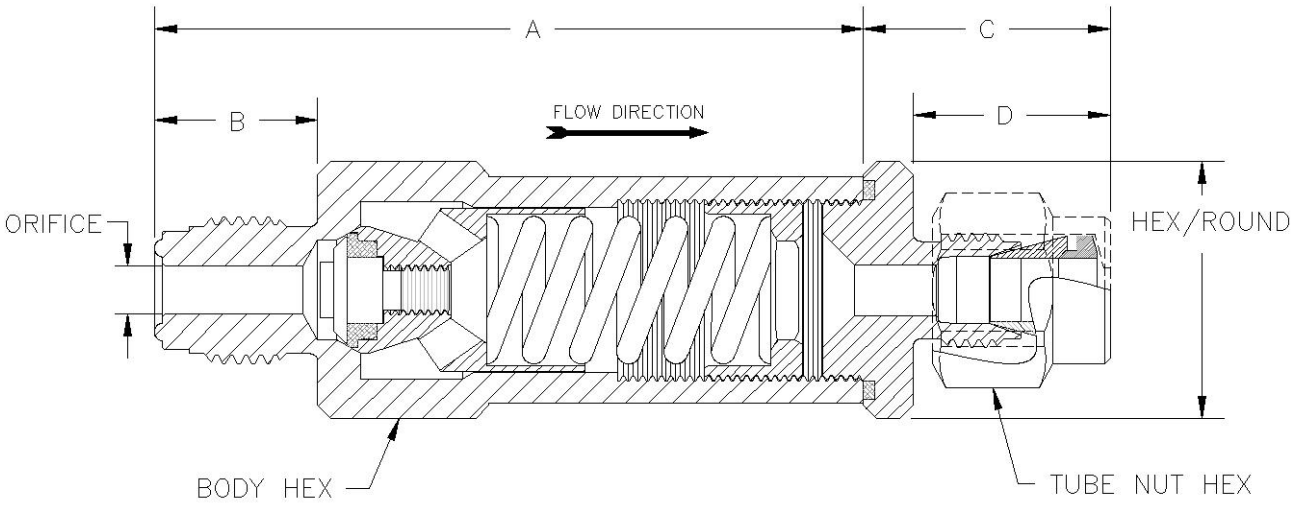
Set Pressure Range:
FKM: 10 - 750 Psig (0.69 to 51.7 Bar)
PTFE: 50 - 750 Psig (3.45 to 51.7 Bar)
Factory Set Tolerance: +/- 5% of Specified Pressure
Zero Leakage to 95% of Set Pressure
Full Rated Flow @ 110% of Set Pressure, unaffected by up to 10% Back Pressure
Reseal: FKM seals 90% of Set Pressure
PTFE seals 80% of Set Pressure
Temperature Rating: -60º F to 375º F (-51º C to 190º C) based on seal material (see how to order)
Lubricant: Krytox®

Materials of Construction

Component	Material
Body, Poppet, Seat Screw, Spring Retainer, In-Line Adapter[1], Nuts and Ferrules	316 Stainless Steel, ASTM A479[2]
Adjustment Spring	302 or 17-7 PH Stainless Steel, ASTM A313
Seals	FKM or PTFE

[1] Inline Adapters utilize FKM o'ring seals. Metal to Metal Face Seal Inline Adapters are Electro Polished to 10 Ra Max.
[2] Valves supplied with Metal to Metal Face Seal connections have Electro Polished Inlet, Poppet and Seat Screw to 10 Ra Max.

INDUSTRIAL RELIEF VALVE (STAINLESS)



Configuration Shown IRV4T-4V

Dimensional Data

Inlet Size	Designation	Orifice	A	B	Body Hex	Tube Nut Hex
1/4" NPT	4	.312 (7.93)	2.65 (65.02)	0.59 (14.99)	7/8"	N/A
1/2" NPT	8	.400 (10.16)				
-4 Face Seal	4V	.180 (4.57)	2.68 (68.07)	0.62 (15.75)		
1/4" Bi-Lok	4T	.180 (4.57)	3.35 (85.09)	0.70 (17.78)		9/16"
1/2" Bi-Lok	8T	.400 (10.16)	3.51 (89.15)	0.86 (21.84)		7/8"
-8 Face Seal	8V	.400 (10.16)	2.82 (71.63)	0.75 (19.05)	1"	N/A

Configuration	Outlet	C	D	Hex/Round	Tube Nut Hex
IRV	Vent to Atmosphere	N/A			
IRVD	Deflector Cap	0.75 (19.05)	N/A	7/8" Hex	N/A
IRV4	1/4" FNPT	0.37 (9.40)		1" Rd	
IRV6	3/8" FNPT	0.67 (17.02)			
IRV8	1/2" FNPT	0.74 (18.80)			
IRV4V	-4 Face Seal	0.80 (20.32)	0.62 (15.75)	7/8" Hex	
IRV4T	1/4" Bi-Lok	0.89 (22.61)	0.70 (17.78)		9/16"
IRV8T	1/2" Bi-Lok	1.05 (26.67)	0.86 (21.84)		7/8"
IRV8V	-8 Face Seal	0.94 (23.88)	0.75 (19.05)	1" Hex	N/A

Note: Dimensions shown with Bi-Lok nuts finger-tight. Dimensions are in inches (millimeters), for reference only and subject to change.
NPT Threads per ASME B1.20.1

Flow Data

Set Pressure Range (Psig)		Discharge Coefficient, Kd		
From	To	.180 Orifice (4.57mm)	.312 Orifice (7.92mm)	.400 Orifice (10.16mm)
8	19	0.05	0.44	0.25
20	28	0.30	0.57	0.30
29	45	0.30	0.57	0.34
46	62	0.34	0.57	0.34
63	89	0.60	0.57	0.34
90	130	0.60	0.57	0.34
131	180	0.60	0.55	0.28
181	275	0.57	0.55	0.28
275	400	0.37	0.43	0.28
401	615	0.37	0.28	0.25
616	750	0.37	0.17	0.12

Krytox® is a registered trademark of DuPont.

How To Order

IRV4 - 4V - V - 300 - X

Series
IRV Vent to Atmosphere
IRVD Deflector Cap
IRV4 1/4" Female NPT In-Line Adapter
IRV6 3/8" Female NPT In-Line Adapter
IRV8 1/2" Female NPT In-Line Adapter
IRV4V -4 Face Seal In-Line Adapter
IRV4T 1/4" Bi-Lok In-Line Adapter
IRV8T 1/2" Bi-Lok In-Line Adapter
IRV8V -8 Face Seal In-Line Adapter

Inlet Size Designation
4 1/4" NPT Male Inlet
8 1/2" NPT Male Inlet
4V -4 Metal to Metal Face Seal
4T 1/4" Bi-Lok Dual Ferrule Tube
8T 1/2" Bi-Lok Dual Ferrule Tube
8V -8 Metal to Metal Face Seal

Seals
V - FKM, -10° to 375° F (-23° to 190° C)
T - PTFE, -60° to 375° F (-51° to 190° C)

Specify Set Pressure
10-750 Psig (0.69 to 51.7 Bar) for Seal Material V
50-750 Psig (3.45 to 51.7 Bar) for Seal Material T

Cleaning Option
X - Clean and Packaged for Oxygen Service

PROPER COMPONENT SELECTION – When specifying a component, the total system design must be considered to ensure safe and trouble-free performance. Intended component function, materials compatibility, pressure ratings, installation, environment and maintenance are the responsibility of the system designer.

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GENERANT

INDUSTRIAL RELIEF VALVE (BRASS)
1/4" - 1/2" NPT
10 - 750 Psig (0.69 - 51.7 Bar)

SERIES IRV BRASS

Description

The Generant Series Brass IRV, Industrial Relief Valve is a spring reference over pressure protection device. The valve can be ordered with set pressures ranging from 10 to 750 Psig (0.69 to 51.7 Bar) and comes factory preset and permanently locked. Relief pressure cannot be altered or adjusted in the field. Seat and poppet geometry combined with optimized spring ranges provide high flow rates with minimum pressure accumulation. Relief pressure can be discharged to atmosphere or to a downstream connection. For severe service applications and set pressures above 50 Psig (3.45 Bar), specify optional PTFE seals.

Series IRV

Features

- Supplied Factory Preset Set and Permanently Locked for Tamper Proof Service
- 100% Factory Tested for Leakage, Crack and Reseal Performance
- High Flow Capacity and Excellent Reseal Performance
- Discharge to Atmosphere or Inline Piping Configurations
- Optional Deflector Cap available for Diverting Exhausted Gas to Atmosphere
- Available Cleaned and Packaged for Oxygen Service

Technical Data

Set Pressure Range:
FKM and Fluorosilicone: 10 - 750 Psig (0.69 to 51.7 Bar)
PTFE and PCTFE: 50 - 750 Psig (3.45 to 51.7 Bar)
Factory Set Tolerance: +/- 5% of Specified Pressure
Zero Leakage to 95% of Set Pressure
Full Rated Flow @ 110% of Set Pressure, unaffected by up to 10% Back Pressure
Reseal: 90% of Set Pressure
PTFE seals 80% of Set Pressure
Temperature Rating: -320º F to 375º F (-196º C to 190º C)
based on seal material (see how to order)
Lubricant: Krytox®

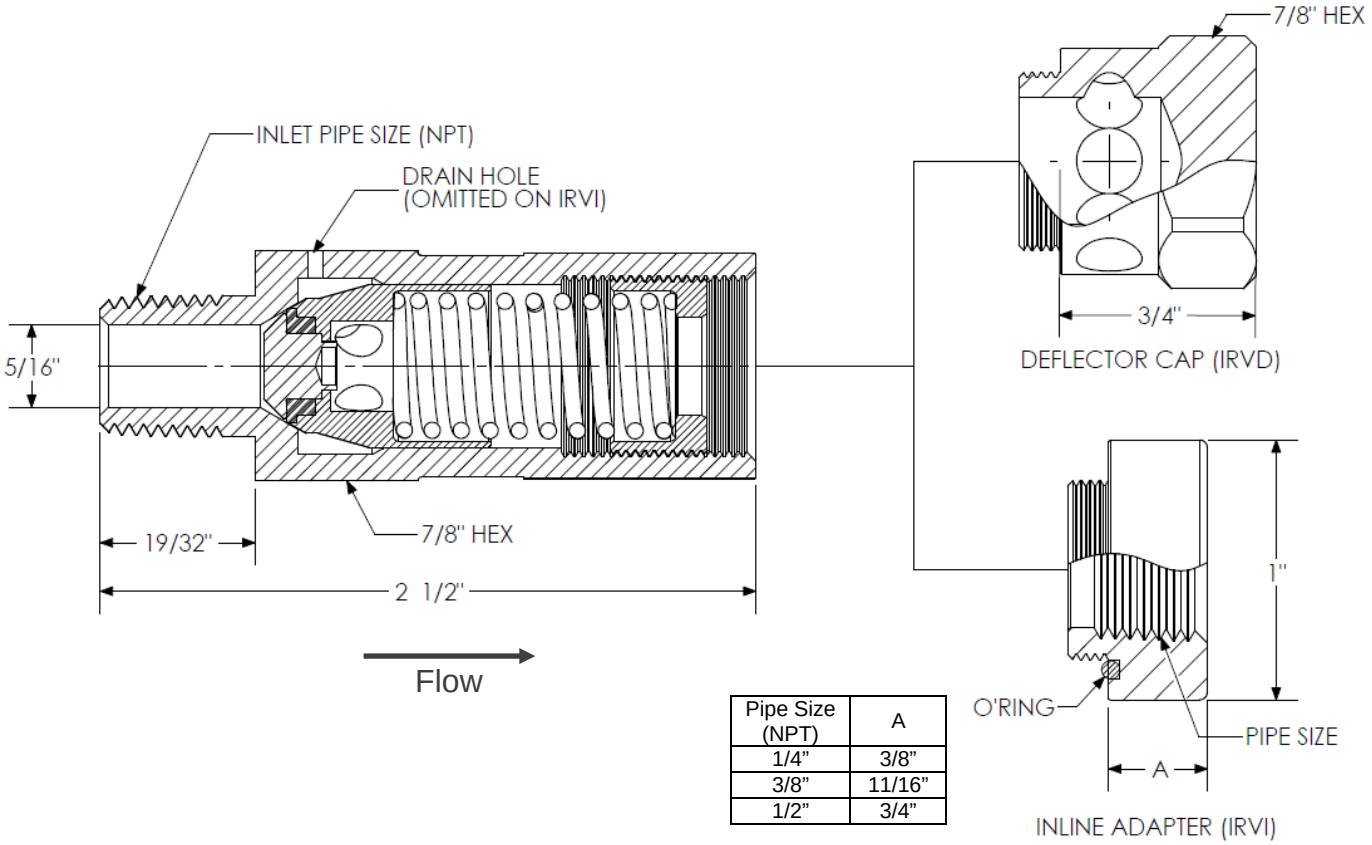
Series IRVI

Materials of Construction

Component	Material
Body, Poppet, Seat Rivet, Spring Retainer, In-Line Adapter*	CDA 360 Brass, ASTM B16
Adjustment Spring	302 or 17-7 PH Stainless Steel, ASTM A313
Seals	FKM, PTFE, PCTFE, Fluorosilicone

*In-line Adapters Utilize FKM O'Ring Seals

INDUSTRIAL RELIEF VALVE (BRASS)



Pipe Size (NPT)	A
1/4”	3/8”
3/8”	11/16”
1/2”	3/4”

Flow Data

Set Pressure Range (Psig)		Discharge Coefficient
From	To	Kd
10	28	0.59
29	45	0.59
46	62	0.59
63	89	0.54
90	130	0.42
131	180	0.35
181	275	0.25
275	400	0.12
401	615	0.18
616	750	0.14

How To Order

IRV - 250B - V - 300 - X

SERIES
IRV Vent to Atmosphere
IRVI2 1/4" Female NPT In-Line Adapter
IRVI3 3/8" Female NPT In-Line Adapter
IRVI4 1/2" Female NPT In-Line Adapter
IRVD Deflector Cap

INLET PIPE SIZE (NPT)
250B - 1/4" Male
375B - 3/8" Male
500B - 1/2" Male

SEAL MATERIAL
V - FKM, -20° F to 375° F (-29° C to 190° C)
T - PTFE, -60° F to 375° F (-51° C to 190° C)
K - PCTFE, -320° F to 200° F (-220° C to 93° C)
FS - Fluorosilicone, -80° F to 350° F (-62° C to 176° C)

Specify Set Pressure
10-750 Psig (0.69 to 51.7 Bar) for Seal Material V or FS
50-750 Psig (3.45 to 51.7 Bar) for Seal Material T or K

Cleaning Option
X - Clean and Packaged for Oxygen Service

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GENERANT
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GENERANT

CRYOGENIC/PRESSURE BUILD REGULATOR
3/8” and 1/2" NPT, BSPT
Inlet 400 Psig (28 Bar)

CR SERIES

Description

The Generant Series CR Cryogenic Regulator provides high flow during Cryogenic Vessel Pressure Build function and increased sensitivity to downstream pressure changes as a function of our pre-formed all metallic diaphragm and optimized spring design. The unique diaphragm is unlike anything on the market today and results in less decrease in Cryogenic vessel pressure and faster recovery during periods of higher demand, thus decreasing the potential for flooding the pressure build coil. The unit features a 304 SS Inlet Strainer/Filter to aid in reducing contaminant related failures. Optional Cleaned and Packaged for Oxygen Service Series CR Regulators utilize Monel Inlet Strainer/Filters. All Series CR Cryogenic Regulators are 100% Factory Tested and are supplied factory pre-set.

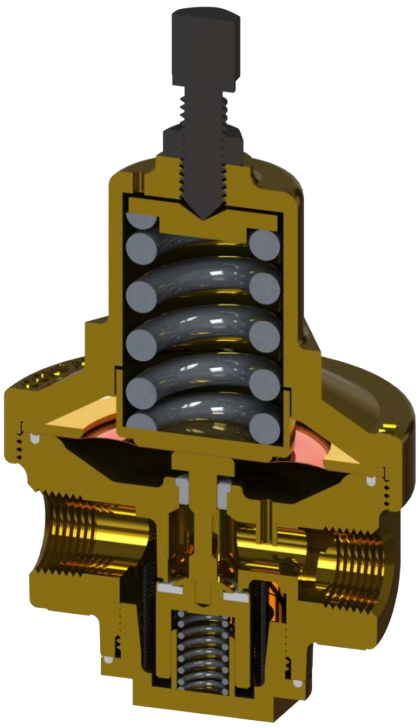
Features

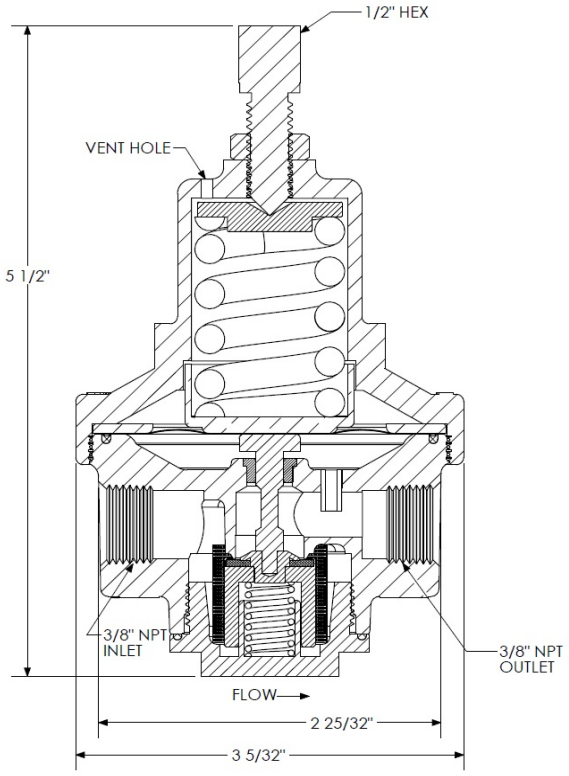
- Designed for High Flow Liquid Service
- Can be installed Upstream or Downstream of the Vaporizer
- Unique Pre-Formed Multiple Stacked Phosphorous Bronze Diaphragms
- Can be Supplied Factory Preset
- Hex Head Adjustment Screw with Locknut
- 304 SS Inlet Strainer/Filter
- Optional Cleaned and Packaged for Oxygen Service **(includes Monel Inlet Strainer/Filter**)

Materials of Construction

- Forged Brass Body and Chamber, ASTM 377
- Brass Bar Stock Components, ASTM B16
- Phosphorous Bronze Diaphragms, ASTM B103
- PTFE Valve, Diaphragm and Bottom Plug Seal, ASTM D1710
- PCTFE Valve Stem Bearing, ASTM D1430
- 17-7PH Stainless Steel Adjustment and Valve Spring, ASTM A313
- Stainless Steel Adjustment Screw and Locknut, ASTM A276
- 304 SS Inlet Strainer/Filter **(Monel Inlet Strainer/Filter when specified for Oxygen Service)**

CRYOGENIC/PRESSURE BUILD REGULATOR





Technical Data

Maximum Inlet Pressure: 400 Psi (28 Bar)
Outlet Pressure Range: 0 to 235 Psi (0 to 16 Bar)
Temperature Range: -320° to 225° F (78° to 380° K)
Fail Open C_V: 3/8" NPT Ports – 2.4
1/2" NPT and BSPT Ports – 2.9

Flow Capacity

Flow Capacity is system dependent. For accurate flow capacity data, consult Generant with your specific system characteristics for more information.

How To Order

2CR - 375 - C - X

SERIES
2CR - 2 Port Cryogenic/ Pressure Build Regulator

PORT SIZE
375 - 3/8" FNPT
500 - 1/2" FNPT
4BSPT - 1/2" BSPT

OUTLET PRESSURE CODE

CLEANING OPTION
X- Cleaned and Packaged for Oxygen Service (includes Monel Inlet Strainer/Filter)

CODE	RANGE (PSI)	FACTORY SETTING (PSI)	PSI/TURN (APPROX)
A	0 - 35	20	8
B	25 - 135	75	25
C	100 - 235	150	55

Note: Regulators are supplied pre-set to factory setting shown above. When adjusting regulator set pressure up (CW) or down (CCW), approximate PSI/TURN can be used as a reference.

For additional configurations consult factory.

Repair Kits

Includes: Valve Assembly, Bottom Plug O-Ring, Valve Spring, 304 SS Inlet Strainer/Filter (Monel Inlet Strainer/Filter for Oxygen Service Kits), Valve Stem, Preformed Phosphorous Bronze Diaphragms (2) and Diaphragm O-Ring.

Specify: CR-RK-500 (304 SS Inlet Strainer/Filter for Standard Service)
CR-RK-500-X (Monel Inlet Strainer/Filter for Oxygen Service)

Note: Repair Kits fit all port sizes.

Replacement Spring Kits

Includes: Adjustment Screw and Spring

Specify: CR-SK-500-A, 0-35 PSI Range
CR-SK-500-B, 25-135 PSI Range
CR-SK-500-C, 100-235 PSI Range

Note: Adjustment Screws are sized according to Springs. Spring Code is engraved on the Adjustment Screw (A, B, C).

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