

# PRECISION FLOW & PRESSURE CONTROL SOLUTIONS

*Engineered for Performance. Built for Reliability*



Since 1930, Generant has been designing and manufacturing high-quality valves and control components for demanding environments. We serve the needs of industries including medical gas, cryogenics, hydrogen, semiconductor, oil & gas, and more - with products known for their precision, reliability, and durability.

**GENERANT**

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973.838.6500

# RELIEF VALVES

Generant manufactures an extensive product offering of pressure relief valves including low pressure/high accuracy and high pressure/high flow designs.

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**SERIES VRV** - A compact, highly accurate pressure relief valve, factory preset for precise crack pressure and flow. Tamper proof design with excellent repeatability.

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**SERIES CRV** - Reliable overpressure protection with a permanently locked set pressure. Ideal for blocked line safety in cryogenic systems. Delivers high flow with minimal pressure accumulation.

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**SERIES HPRV** - Accurate crack pressure with zero leakage up to 98% of set pressure. Suitable for most liquid & gas applications. Guided poppet and encapsulated seal ensure reliability, even at high pressures.

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RELIEF VALVES (cont.)



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# RELIEF VALVES (cont.)



**SERIES IRV** - Provides reliable overpressure protection. Designed for high flow and minimal pressure accumulation, it vents to atmosphere or a downstream connection.



**SERIES APRV** - Spring reference over pressure protection device for applications requiring constant set pressure independent of changes in ambient pressure (altitude).



**SERIES LCV** - Designed exclusively for use on DOT 4L Cryogenic Liquid Cylinders. Reduces discharge noise and vents only to maintain tight pressure control.

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RELIEF VALVE PRODUCT LITERATURE



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**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.

**Features**

- Accurate and Repeatable Cracking Pressure
- 100% Factory Preset and Tested
- Zero Leakage to 95-98% of Set Pressure
- Tamper Proof Adjustment
- Excellent Reseat 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)
- Reseat:  
 50% of Set Pressure for valves specified 0.5 -1.9 Psig (0.03 to 0.13 bar)  
 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: -320° to 400° F (-195° C to 205° C)

*(based on sealing selection, see ordering information)*

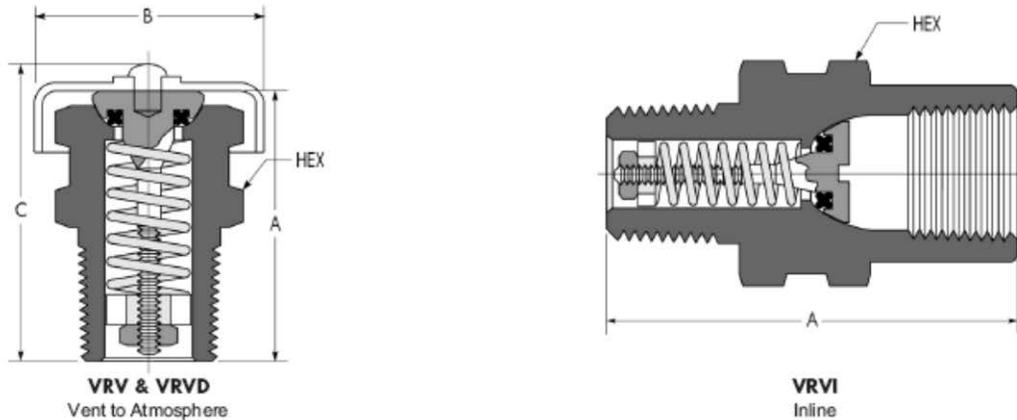


**VRV**  
**Vent to Atmosphere**



**VRVI**  
**Inline**

# SERIES VRV VENT RELIEF VALVE



## Dimensional Data

Pipe Size NPT <sup>1</sup>	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	

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

## Materials of Construction

Component	Valve Body Material		
	Brass	Aluminum <sup>1</sup>	Stainless Steel
Valve Body	Brass, ASTM B16 (Nickel Plated, ASTM B689)	2024 Aluminum ASTM B211 (Clear Anodized, ASTM B580)	316 SS, ASTM A479
Stem			
Spring Retainer <sup>2</sup>	Brass, ASTM B16		
Seal <sup>3</sup>	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)		

<sup>1</sup> Available in 1/8" and 1/4" valves only

<sup>2</sup> All 1/8" and 1/4" valves have 316 stainless steel (ASTM A479) retainers

<sup>3</sup> 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	1360	0.04	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	10000	0.27	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												
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

Viton, Krytox & 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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VRVH  
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 in vent to atmosphere or inline configurations. Valves feature an encapsulated O-ring seal to prevent extrusion at higher differential pressures.

**Features and Benefits**

- 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: 150 to 600 Psig (10.3 to 42 bar)
- Inline Valves (*Series VRVHI*):
  - Proof Pressure: 750 Psig (52 bar)
  - Burst Pressure: >1000 Psig (69 bar)
- Set Pressure Tolerance: Factory preset +/- 5% on increasing pressure:
- Reseal: 90% of Set Pressure for Elastomers Seals  
80% of Set Pressure for PTFE Seals
- Temperature Range:  
-320°F to 350°F (-195°C to 177°C)  
based on seal selection, see ordering information

**Materials of Construction**

Component	Material
Valve Body, Stem, O-Ring Cup	Brass, ASTM B16
Spring Retainer	316 SS, ASTM A479
Seal <sup>1</sup>	As specified, see ordering information
Spring	302 SS/17-7 PH, ASTM A313
Locknut	18-8 SS

1 Lubricated with Krytox™

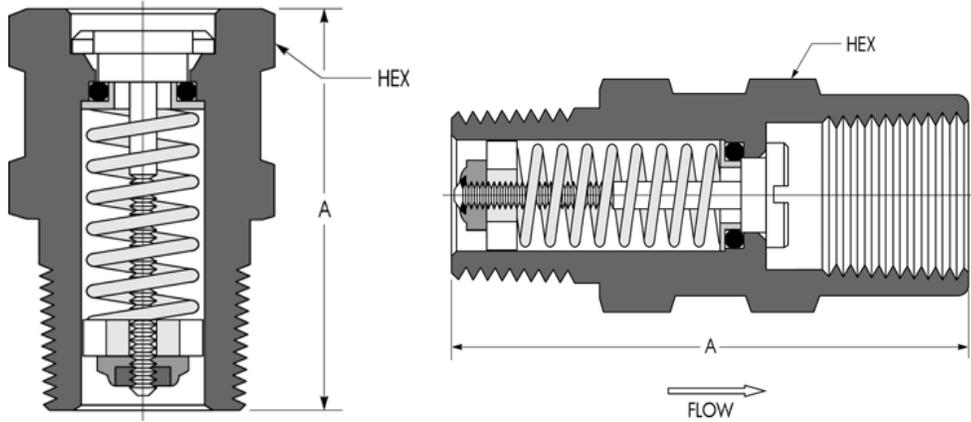


**VRVH**  
Vent to Atmosphere



**VRVHI**  
Inline

# SERIES VRVH VENT RELIEF VALVE



## Dimensional Data

Pipe Size NPT	VRVH		VRVHI	
	A	Hex	A	Hex
1/8"	.94	1/2"	1.44	1/2"
1/4"	1.29	5/8"	1.75	3/4"

Dimensional data is stated in inches

## Flow Data, Series VRVH (Vent to Atmosphere)

Nominal Spring		150		250		500	
Set Pressure Range (Psig)		125-175		175-350		350-600	
Valve Size	Orifice	Flow (SCFM)	Kd	Flow (SCFM)	Kd	Flow (SCFM)	Kd
1/8" NPT (VRVH-125)	0.156	7.5	0.12	12.5	0.12	33	0.16
1/4" NPT (VRVH-250)	0.293	50	0.22	90	0.24	150	0.21

## Flow Data, Series VRVHI (Inline)

Nominal Spring		150		250		500	
Set Pressure Range (Psig)		125-175		175-350		350-600	
Valve Size	Orifice	Flow (SCFM)	Kd	Flow (SCFM)	Kd	Flow (SCFM)	Kd
1/8" NPT (VRVHI-125)	0.156	12	0.18	13.5	0.13	35	0.17
1/4" NPT (VRVHI-250)	0.250	45	0.27	80	0.30	175	0.33

## Ordering Information

VRVHI - 250 B - V - 450

SERIES  
VRVH - Vent to Atmosphere  
VRVHI - Inline Relief (Male x Female)

PIPE SIZE (NPT)  
125 - 1/8" Male  
250 - 1/4" Male  
NPT threads per ANSI/ASME B1.20.1

MATERIAL CODE  
B - Brass  
For other materials, consult factory

NOMINAL SET PRESSURE  
Specify 150-600 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 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 - PTFE, -320°F to 350°F (-195°C to 176°C)  
PTFE Seals may not reseal bubble tight.

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

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

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

**CRV**  
**BRASS**

**SERIES**

**Description**

The Generant Series Brass CRV, Cryogenic Relief Valve is a spring reference over pressure protection device. Incorporating the exclusive "Dirt Guard" to protect from system debris, the CRV is ideally suited as a "Blocked Line Safety" in cryogenic systems. Every CRV Series valve is supplied cleaned and packaged for O2 service standard. This valve can be ordered factory preset from 10 to 750 Psig (0.7 to 51.7 Bar) and are permanently locked. Seat and poppet geometry combined with optimized spring ranges provide high flow with minimum pressure accumulation. Relief pressure can be discharged to atmosphere or to a downstream connection. CRV's can also be ordered with an Integral Bleed valve for safely venting valve inlet pressure. The bleed valve option comes with a Monel 400 fully-retained venting screw which is operated using a 5/64" allen wrench. The CRV is supplied with Fluorosilicone 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:** "CE Marked" to the requirements of the Pressure Equipment Directive (PED).
- **EXCLUSIVE "DIRT GUARD" POPPET:** Incorporates a poppet screen to extend valve life and ensure reliability.
- **OPTIMIZED FOR HIGH FLOW:** High Flow Capacity and Excellent Reseat Performance.
- **LOCKED SETPOINT:** Supplied Factory Preset and Permanently Locked.
- **CONFIGURABLE:** Discharge to Atmosphere or a Wide Variety of Outlet piping configurations. Optional Deflector Cap available for diverting exhausted gas.
- **INTEGRAL BLEED VALVE OPTION:** CRB Integral Bleed Valve Option allows Safe and Easy Venting of Inlet Pressure for System Service.
- **100% FACTORY TESTED:** Tested for Leakage, Crack and Reseat performance.
- **OXYGEN SERVICE COMPATIBLE:** Cleaned and Packaged for Oxygen Service standard.

**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%  
 NOTE: 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: -320° to 350° F (-196° C to 176° C)  
     based on seal material (see How To Order)  
 Lubricant: Krytox®

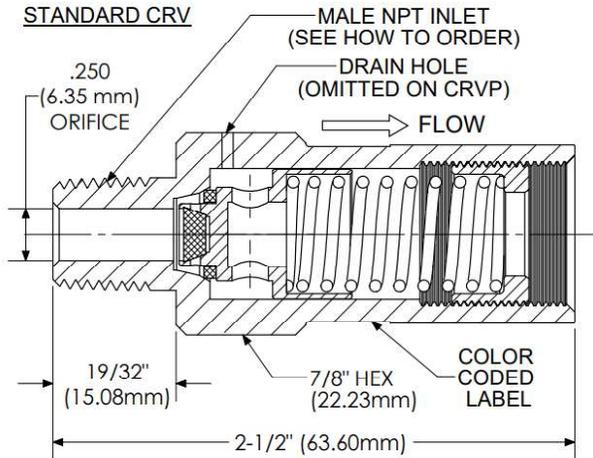
**Materials of Construction**

Component	Material
Body, Poppet, Spring Retainer, Pipe-A-Way 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	Film Coated Vinyl
Bleed Valve Adjustment Screw	Monel ® 400 (ASTM B164)

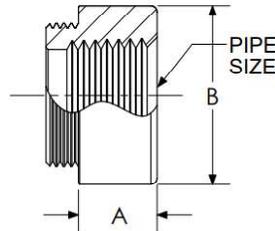


# CRYOGENIC RELIEF VALVE (BRASS)

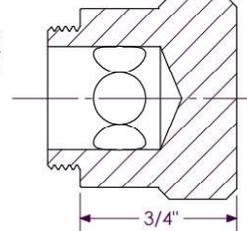
## Dimensional Information



**CRVP / CRBP OPTION:  
PIPE-A-WAY ADAPTER**  
OFFERED IN 1/4", 3/8", 1/2"  
FEMALE NPT OR 1/2" BSPT



**CRVD / CRBD OPTION:  
DEFLECTOR CAP**  
DIVERTS FLOW  
TO SIDES VIA  
SIX (6) 1/4" HOLES.



**CRVT / CRBT:  
TAMPER PROOF  
RING OPTION**

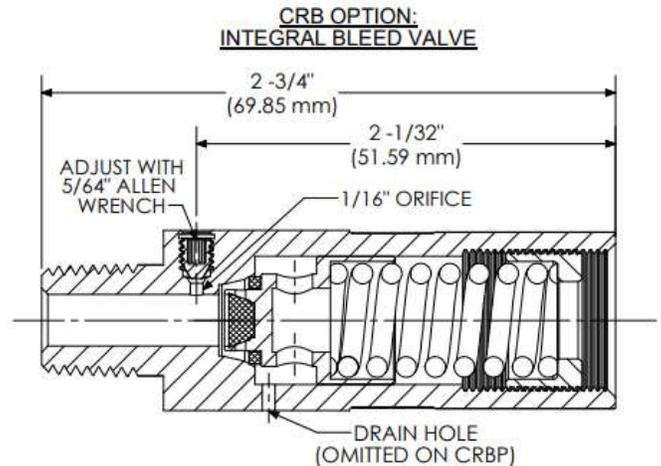
TAMPER PROOF RING (CRVT) INSTALLS FLUSH WITH THE END OF THE VALVE AND DISABLES VALVE OUTLET THREADS. OPTION IS NOT ILLUSTRATED.

## Flow Data

Set Pressure Range (PSIG)		Discharge Coefficient (Kd)	Valve Orifice .250" (6.35mm) Diameter (same for 1/4", 3/8" and 1/2" NPT)
From	To		
10.0	17.0	0.62	NOTE: Discharge Coefficient (Kd) is stated at 110% accumulation with a 90% safety factor applied.
17.1	29.0	0.62	
29.1	45.0	0.53	
45.1	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	400.0	0.61	
400.1	600.0	0.48	
600.1	750.0	0.40	

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

Relief Valve Flow Capacity can be calculated using **Generant's Online Flow Calculator** at [www.generant.com](http://www.generant.com). For Additional Info, contact Customer Service at 973-838-6500.



## How To Order

### CRV P3 - 250B - K - 350

#### SERIES

CRV - Cryogenic Relief Valve  
CRB - Cryogenic Relief Valve with Integral Bleed Valve (CRB only offered in 1/4" and 1/2" NPT inlet)

#### OUTLET OPTION

OMIT FOR VENT TO ATMOSPHERE  
P2 - With 1/4" Female Pipe-A-Way Adapter Installed  
P3 - With 3/8" Female Pipe-A-Way Adapter Installed  
P4 - With 1/2" Female Pipe-A-Way Adapter Installed  
T - With Tamper Proof Ring Installed  
D - With Deflector Adapter Installed  
B4 - With 1/2" BSPT Female Pipe-A-Way Adapter Installed

#### NOMINAL SET PRESSURE

10-750 Psig (0.7 - 51.7 Bar)

#### 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))

#### INLET PIPE SIZE (NPT)

250B - 1/4" Male  
375B - 3/8" Male (CRV Only)  
500B - 1/2" Male

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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SA.SL.CRV002.K.5784

**SERIES**

**CRV**  
**STAINLESS**

**DESCRIPTION**

The Generant Series CRV SS, Stainless Cryogenic Relief Valve is a direct-acting spring reference over pressure protection device. The Stainless 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 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. 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 sealed downstream connection. CRV SS can be ordered in a wide variety of seal materials depending on the desired set pressure and temperature.

**FEATURES**

- **AVAILABLE CE MARKED:** "CE Marked" to the Cat. IV requirements of the Pressure Equipment Directive (PED).
- **MULTIPLE CONNECTION STYLES:** NPT, Metal to Metal Face Seal and Dual Ferrule Tube Connections.
- **HIGH FLOW CAPACITY:** See Flow Data next page.
- **CONFIGURABLE OUTLET:** Discharge to Atmosphere or a Wide Variety of Sealed Outlet Pipe-A-Way Connections.
- **HYDROGEN COMPATIBLE:** All Stainless Design with Spring Located Downstream of Poppet Seal.
- **SETPOINT PERMANENTLY LOCKED:** Factory Pre-set and Permanently Staked for Tamper-Proof Service.
- **100% FACTORY TESTED:** Every valve is hand-tested for Leakage, Crack, and Reseat performance.
- **OXYGEN CLEAN STANDARD:** All Valves Supplied Cleaned and Packed for Oxygen Service.

**TECHNICAL DATA**

Nominal Set Pressure Range: 10 – 750 PSIG (0.7-51.7 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%  
 NOTE: Tolerance specifications per EN/ISO 4126-1.

Zero Leakage to 95% of Set Pressure  
 Full Rated Flow by 110% of Set Pressure  
 Reseat: 90% of set pressure OR  
 85% for PCTFE seals set below 100 PSIG (6.9 Bar)  
 85% for PTFE seals, any set pressure

Flow Capacity unaffected by up to 10% Back Pressure  
 Temperature Rating: -425° to 392° F (-254° C to 200° C)  
 NOTE: Temperature ratings vary by seal material (see How To Order).  
 Valves are designed to be installed with a "vapor barrier" between the cryogenic fluid and valve inlet. See SA.TD.SSCR001 for more info.

Lubricant: Krytox®

**MATERIALS OF CONSTRUCTION**

Component	Material
Body, Poppet, Seat Screw, Spring Retainer, In-Line Adapter <sup>1</sup> , Nuts and Ferrules	316 Stainless Steel (ASTM A479) <sup>2</sup>
Spring	302 or 17-7 PH Stainless Steel (ASTM A313)
Seals	PCTFE (ASTM D1430), PTFE, FKM or Fluorosilicone

<sup>1</sup> Inline Adapters utilize Viton® O-ring seals.  
<sup>2</sup> Metal-to-Metal Face Seal connections are supplied Electro Polished to 10 Ra Max.  
 NOTE: Viton® and Krytox® are registered trademarks of DuPont.



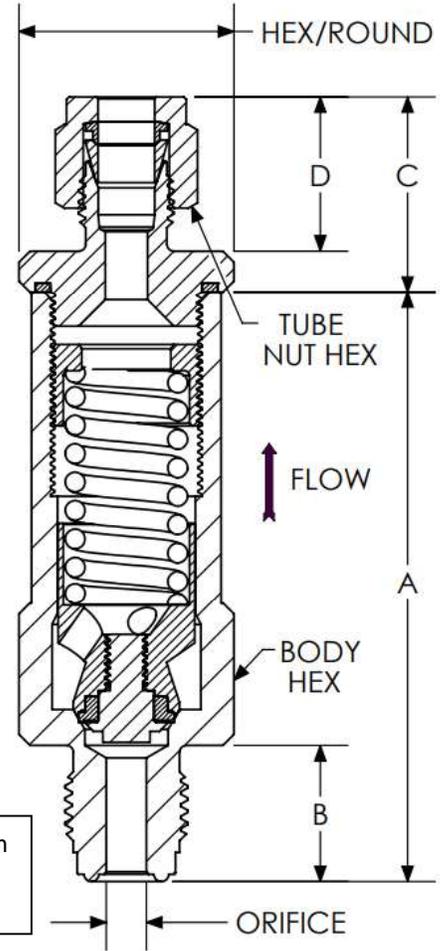
# CRYOGENIC RELIEF VALVE (STAINLESS)

## DIMENSIONAL DATA

Inlet Size	Inlet Code	Orifice inch (mm)	A inch (mm)	B inch (mm)	Body Hex	Tube Nut Hex
1/4" NPT	4	.312 (7.9)	2.65 (65.0)	0.59 (15.0)	7/8"	N/A
1/2" NPT	8	.400 (10.2)				
-4 Face Seal	4V	.192 (4.9)	2.68 (68.1)	0.62 (15.8)		9/16"
1/4" Bi-Lok	4T	.192 (4.9)	2.94 (74.7)	0.70 (17.8)		
3/8" Bi-Lok	6T	.281 (7.1)	2.94 (74.7)	0.76 (19.3)		
6SAE Male	6S	.281 (7.1)	2.45 (62.2)	0.39 (9.9)	N/A	
1/2" Bi-Lok	8T	.400 (10.2)	3.51 (89.2)	0.86 (21.8)	7/8"	
-8 Face Seal	8V	.400 (10.2)	2.82 (71.6)	0.75 (19.1)	1"	N/A

Outlet Configuration	Outlet Code	C inch (mm)	D inch (mm)	Hex / Round	Tube Nut Hex
Vent to Atm.	CRV	N/A			
Deflector Cap	CRVD	0.75 (19.1)	N/A	7/8" Hex	N/A
1/4" FNPT	CRV4	0.37 (9.4)		1" Rd	
3/8" FNPT	CRV6	0.67 (17.0)		7/8" Hex	
1/2" FNPT	CRV8	0.74 (18.8)			
-4 Face Seal	CRV4V	0.80 (20.3)	0.62 (15.8)	7/8" Hex	9/16"
1/4" Bi-Lok	CRV4T	0.89 (22.6)	0.70 (17.8)		11/16"
3/8" Bi-Lok	CRV6T	0.65 (16.6)	0.76 (19.3)		N/A
6SAE Female	CRV6S	0.64 (16.3)	N/A		7/8"
1/2" Bi-Lok	CRV8T	1.05 (26.7)	0.86 (21.8)		N/A
-8 Face Seal	CRV8V	0.94 (23.9)	0.75 (19.1)	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.



## HOW TO ORDER

CRV4 - 4 - K - 350

Configuration Shown:  
CRV4T-4V

### CONFIGURATION

- CRV Vent To Atmosphere
- CRVD Deflector Cap
- CRV4 1/4" NPT Female Inline Adapter
- CRV6 3/8" NPT Female Inline Adapter
- CRV8 1/2" NPT Female Inline Adapter
- CRV4V -4 Face Seal Inline Adapter
- CRV4T 1/4" Bi-Lok Inline Adapter
- CRV6T 3/8" Bi-Lok Inline Adapter
- CRV8T 1/2" Bi-Lok Inline Adapter
- CRV8V -8 Face Seal Inline Adapter

### Inlet Size Designation

- 4 1/4" Male NPT
- 8 1/2" Male NPT
- 4V -4 Metal to Metal Face Seal
- 4T 1/4" Bi-Lok Dual Ferrule Tube
- 6T 3/8" Bi-Lok Dual Ferrule Tube
- 6S -6SAE O'Ring Male
- 8T 1/2" Bi-Lok Dual Ferrule Tube
- 8V -8 Metal to Metal Face Seal

### Seal Material

- K PCTFE, above 50 PSIG Only (-425° to 165°F (-254° to 74°C))
- V FKM (Viton TM) (-20° to 375°F (-29° to 190°C))
- FS Fluorosilicone (-85° to 392°F (-65° to 200°C))
- T PTFE, above 50 PSIG Only (-425° to 375°F (-254° to 190°C))

### Specify Set Pressure

10 - 750 PSIG

## FLOW DATA

Set Pressure Range (PSIG)		Discharge Coefficient, $K_{dr}$ (90% derated per ISO 4126-1)			
From	To	.192" Orifice (4.9mm)	.281" Orifice (7.1mm)	.312" Orifice (7.9mm)	.400" Orifice (10.2mm)
10	21.9	0.14	0.07	0.05	0.04
22	45.9	0.61	0.52	0.46	0.28
46	62.9	0.61	0.55	0.43	0.28
63	89.9	0.68	0.60	0.51	0.31
90	140.9	0.66	0.62	0.51	0.31
141	275.9	0.63	0.58	0.51	0.32
276	400.9	0.63	0.60	0.52	0.32
401	615.9	0.42	0.23	0.18	0.27
616	750	0.33	0.12	0.15	0.11

NOTE: Derated Discharge Coefficient ( $K_{dr}$ ) is stated at 110% accumulation or 0.1 bar, whichever is greater.

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.

**GENERANT**

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# HPRV

# SERIES

**Description**

The HPRV Series High Pressure Relief Valve provides accurate crack pressure with zero leakage up to 98% of set pressure. When properly specified, this factory preset, tamper proof design is ideally suited for most liquid and gas applications. Encapsulating the o-ring seal within the poppet prevents seal extrusion and cold flow. A precise line of contact seal is maintained by guiding the poppet in the body. At high crack pressure settings, the o-ring is protected by a metal-to-metal stop between the poppet and the body. The valve's high flow design, combined with narrow band interchangeable springs, minimizes system pressure rise as flow demand increases. Series HPRV valves are available in brass or stainless steel and inline or discharge to atmosphere configurations. They can also be supplied with a manual pull ring override and cleaned for oxygen service.

**Features**

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

**Technical Data**

- Set Pressure Range: 10 to 2400 Psig (0.7 to 166 Bar)
- Set Pressure: Factory Preset +/-5% on increasing pressure
- Reseat: 90%-95% of Actual Crack Pressure

Leakage Allowance Specifications for Valves with PTFE Seal Option:

Pressure Range	Leak Rate up to 90% Crack	Reseat Pressure	Max Leak @ Reseat Pressure
10-100 PSI	< 15 SCCM	50% of Crack	15 SCCM Max
100.1+ PSI	< 5 SCCM	80% of Crack	5 SCCM Max

\* all allowable leakage rates specified in N2 gas.

- Inline Valves (Series HPRV):  
Proof Pressure: 3700 Psig (225 Bar)  
Burst Pressure: >5000 Psig (345 Bar)
- Temperature Range: -320° F to 400° F (-220° C to 204° C)  
Based on seal selection, see ordering information

**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™

SA.SL.HPRV001.H.4864



**HPRV**  
Inline

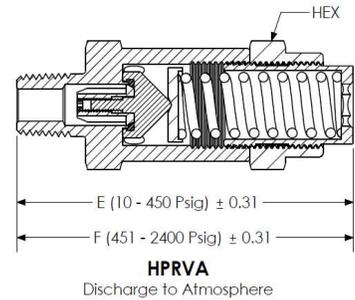
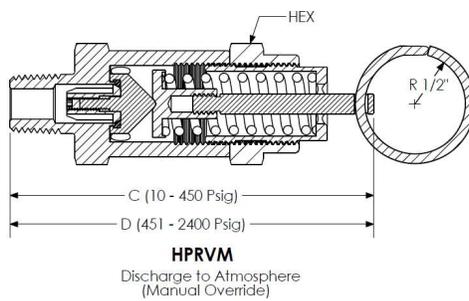
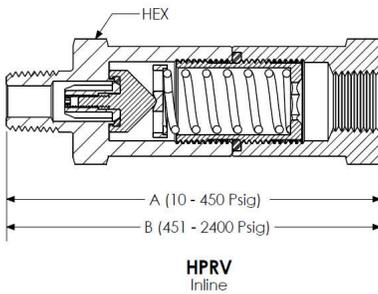


**HPRVA**  
Vent to Atmosphere



**HPRVM**  
Vent to Atmosphere  
(Manual Override)

# HIGH PRESSURE RELIEF VALVE



## 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"			.515	0.20	.275	0.27		
1/2"								
3/4"	See "HPRV-750 Flow Datasheet" (Not offered below 70 PSI)							

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	

\* Available in Brass only.

#### 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 400°F (-56°C to 204°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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**IRV**

**BRASS**

**SERIES**

**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.

**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: -320° F to 375° F (-196° C to 190° C)  
 based on seal material (see how to order)  
 Lubricant: Krytox®

**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

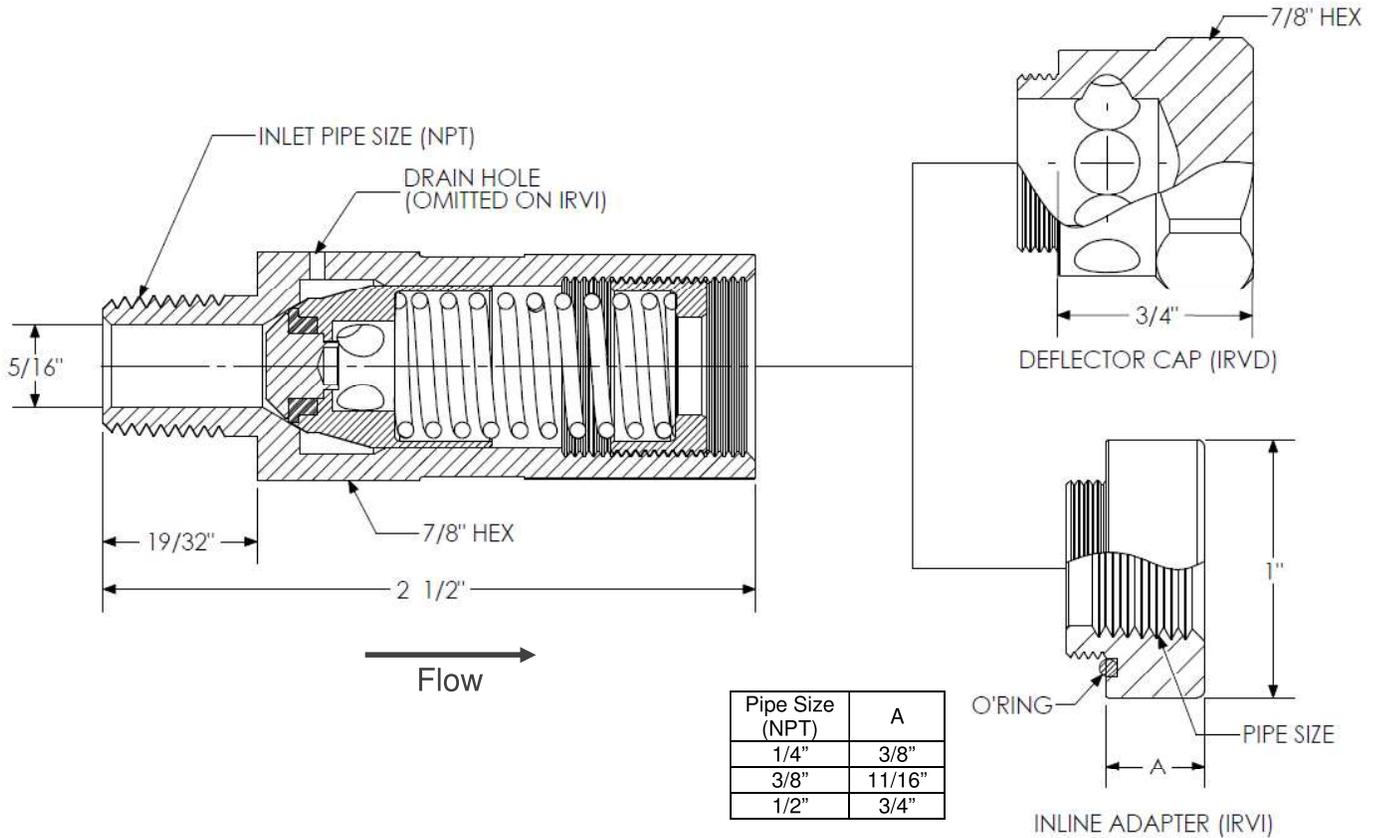


**Series IRV**



**Series IRVI**

# INDUSTRIAL RELIEF VALVE (BRASS)



### 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

\*Orifice Diameter 0.312

### How To Order

#### 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

**IRV - 250B - V - 300 - X**

Krytox® is a registered trademark 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.



Valves & *BI-Lok* Fittings

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SA.SL.IRV002.B.4058

**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)**

**SERIES**  
**IRV**  
**STAINLESS**

**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 Variety 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: -60° F to 375° F (-51° C to 190° C)  
 based on seal material (see how to order)  
 Lubricant: Krytox®

**Materials of Construction**

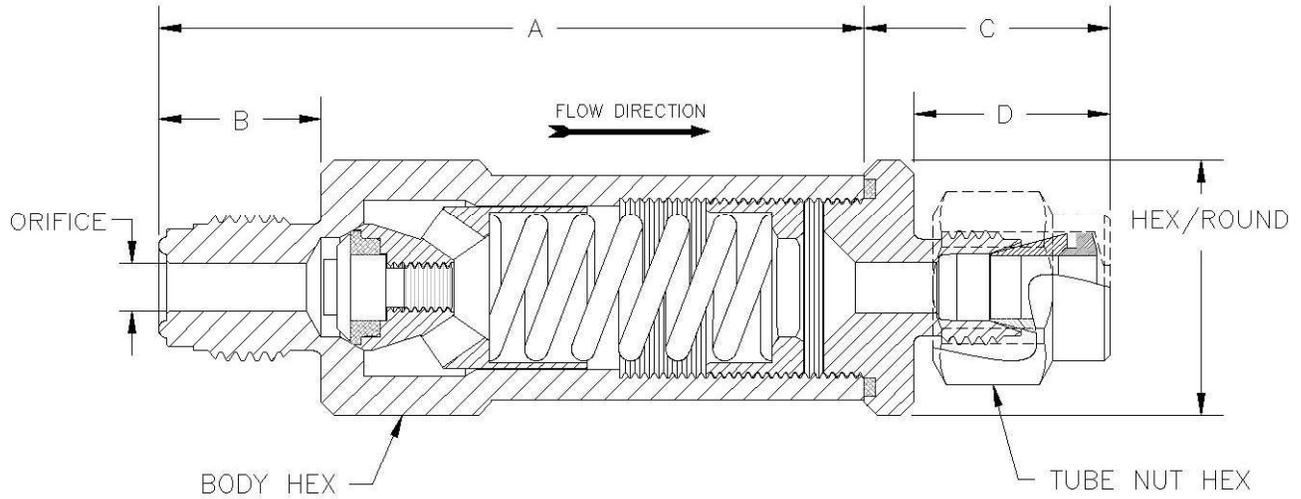
Component	Material
Body, Poppet, Seat Screw, Spring Retainer, In-Line Adapter <sup>1</sup> , Nuts and Ferrules	316 Stainless Steel, ASTM A479 <sup>2</sup>
Adjustment Spring	302 or 17-7 PH Stainless Steel, ASTM A313
Seals	FKM or PTFE

<sup>1</sup> Inline Adapters utilize FKM o'ring seals. Metal to Metal Face Seal Inline Adapters are Electro Polished to 10 Ra Max.

<sup>2</sup> 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)		9/16"
1/4" Bi-Lok	4T	.180 (4.57)	3.35 (85.09)	0.70 (17.78)		
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)			
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	9/16"
IRV4T	1/4" Bi-Lok	0.89 (22.61)	0.70 (17.78)		
IRV8T	1/2" Bi-Lok	1.05 (26.67)	0.86 (21.84)		
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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**APRV**  
  
**SERIES**

**Description**

The Generant Series APRV, Absolute Pressure Relief Valve, is a spring reference over pressure protection device for applications requiring constant set pressure independent of changes in ambient pressure (altitude). The valve was developed primarily for use with liquid helium dewars and the valve has been extensively tested to verify that the valve can withstand the extreme cold environment (FS Seals). Valves are constructed primarily of brass, with the seal and stainless steel spring being the only non-brass components. Valves come factory preset with set pressures ranging from 15.0 to 24.0 PSIA (1.02 to 1.65 Bar). Relief pressure can be discharged to atmosphere or to a downstream connection.

**Features**

- Supplied Factory Preset
- 100% Factory Tested for Leakage, Crack and Reseat Performance
- Minimal Set Pressure Drift due to change in ambient pressure
- Qualified for Extreme Low Temperature applications
- High Flow Capacity and Excellent Reseat Performance
- Discharge to Atmosphere or Inline Piping Configurations

**Technical Data**

Set Pressure Range: 15.0 to 24.0 PSIA (1.02 to 1.65 Bar)  
 Factory Set Tolerance: ± 0.5 PSI  
 Reseat: 92% of Set Pressure in PSIA  
 Temperature Rating: -80° F to 350° F (-62° C to 176° C)

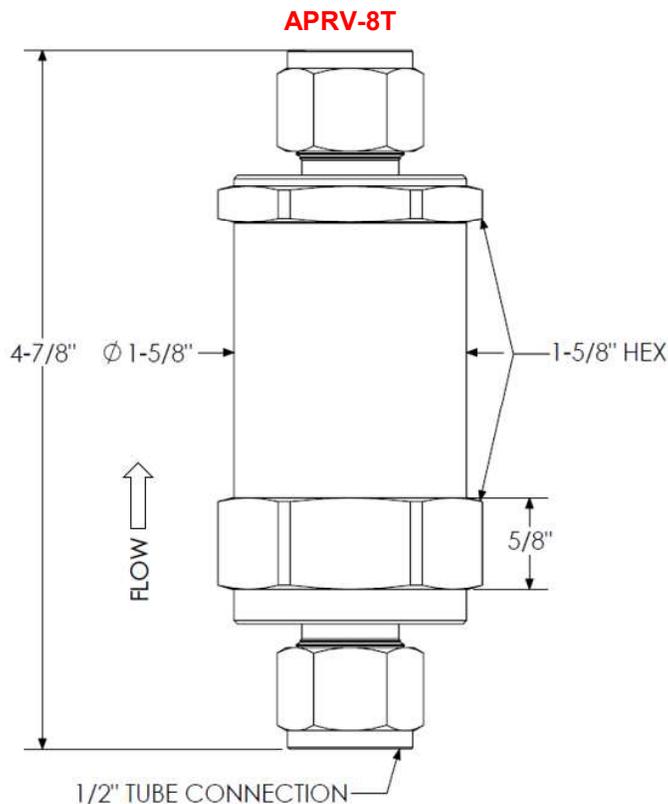
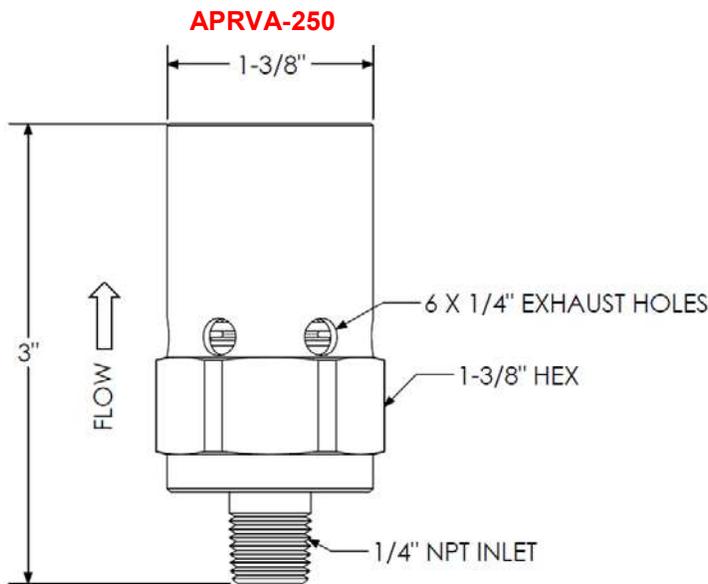
**Materials of Construction**

Component	Material
Body, End Cap*	Nickel Plated CDA 360 Brass, ASTM B16
Poppet, Adjustment Screw, Nuts, Ferrules	CDA 360 Brass, ASTM B16
Bellows	Brass and 300 Series Stainless Steel
Seals	Fluorosilicone

NOTE: Seals lubricated with Krytox ®  
 \*applicable only for inline versions (APRV)



# ABSOLUTE PRESSURE RELIEF VALVE



## Flow Data

Set Pressure (PSIA)	Flow at 110% of Set Pressure in PSIA (SCFM N2)
16.0	1.52
18.0	1.90

For other set pressures, consult factory.

NOTE: to convert flow from SCFM N2 to SCFM He, multiply by 2.64

## How To Order

APRVA-250 - FS - 15.2

### SERIES AND CONFIGURATION

APRVA-250 - Absolute Pressure Relief Valve, Vent to Atmosphere, 1/4" NPT Inlet Port

APRV-8T - Absolute Pressure Relief Valve, Inline, 1/2" Bi-Lok Dual Ferrule Tube Inlet and Outlet Ports

### SET PRESSURE

Specify set pressure in PSIA (15.0 - 24.0 PSIA)

### SEAL MATERIAL

FS - Fluorosilicone, -80°F to 350°F (-62°C to 176°C)

NOTE: For other port configurations and seal materials, consult factory.

Krytox® is a registered trademark 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.



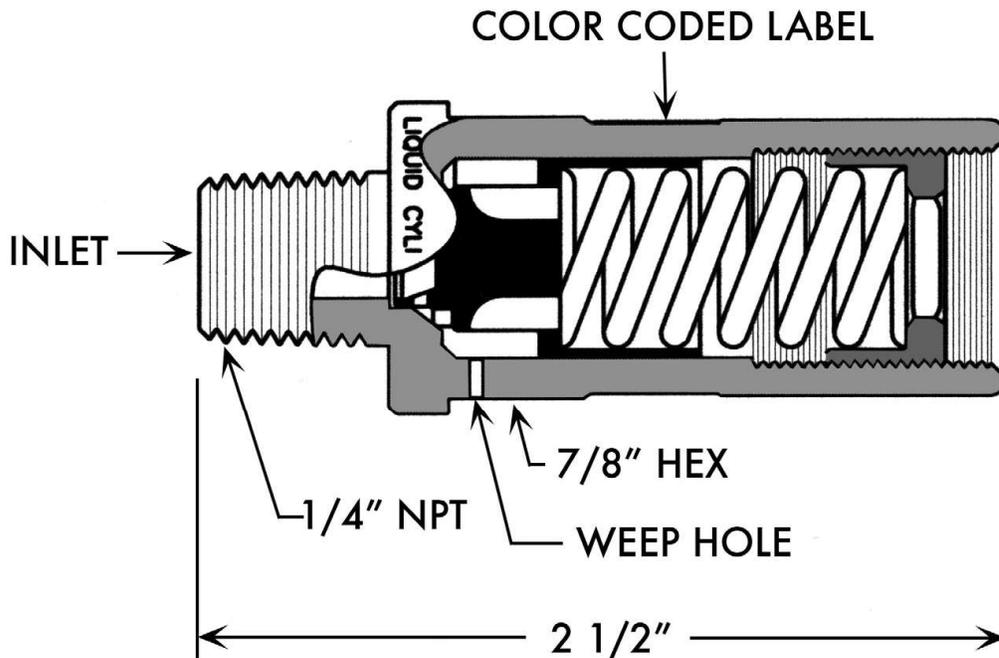
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SA.SL.APRV001.B.2680



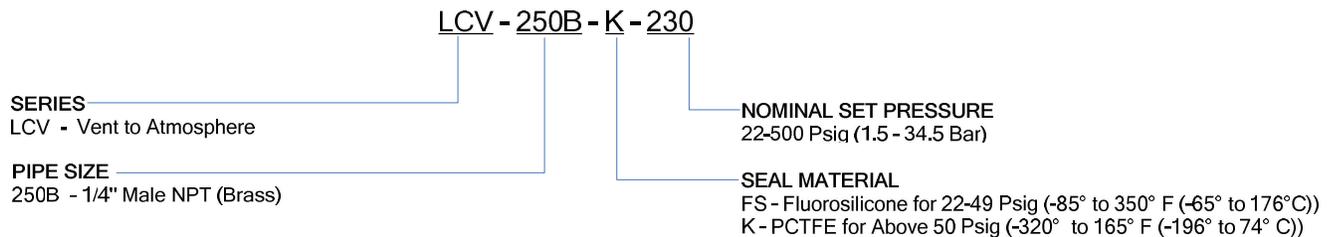
# LIQUID CYLINDER VALVE



## Flow Data

Set Pressure (PSIG)	Flow Rate (SCFM N2)	
	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



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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# REGULATORS

Generant has been manufacturing pressure regulators for over 50 years. Our regulators have been installed in many different applications from cryogenic tanks to general industrial services.

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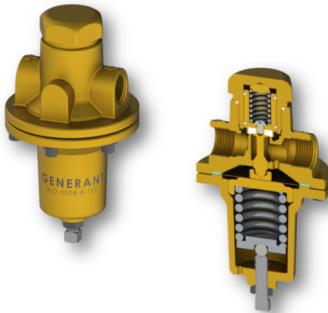
**SERIES GDR** - Delivers precise, stable pressure control with high flow and low droop. Its balanced design and solid, non-tied diaphragm ensure long-lasting, leak-free performance.

---



**SERIES BPRX** - High-efficiency economizer service on large cryogenic tanks, trailers, and systems. Delivers high flow above setpoint with minimal leakage below.

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**SERIES BLD** - High flow and rapid shutoff at the desired set pressure. Designed for pressure build applications, it features a non-balanced, spring reference design.

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REGULATORS (cont.)

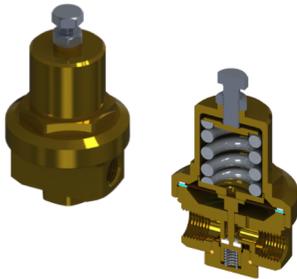


**GENERANT**

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# REGULATORS (cont.)

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**SERIES CRM** - Delivers high flow and fast, positive shutoff at the desire set pressure. Designed primarily for cryogenic liquid cylinder pressure build applications, its design ensures long-lasting, leak-free performance.

---



**SERIES FLR** - Built for final line regulation on cryogenic liquid cylinders it delivers consistent pressure control with high flow capability. Suitable for a wide range of demanding gas applications.

---



**SERIES GEM** - Combines pressure build and economizer functions for optimal performance in cryogenic liquid cylinders. With separate internal paths, it eliminates fuction overlap to improve efficiency.

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REGULATOR PRODUCT LITERATURE



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**GDR  
GDR  
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 580 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.
- **PED COMPLIANT:** SEP Declaration available (2014/68/EU Art. 4, ¶ 3)

**Technical Data**

**GDR-500**

Max Inlet Pressure: 580 PSIG (40 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-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**

Max Inlet Pressure: 580 PSIG (40 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-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 or EPDM
Soft Seals (Valve and O'Rings)	FKM or EPDM
Trim (Flange Screws and Locknut)	18-8 Stainless Steel

NOTES: Regulators are assembled with Dupont Krytox® lubricant.



**STANDARD**



**PILOT OPERATED**



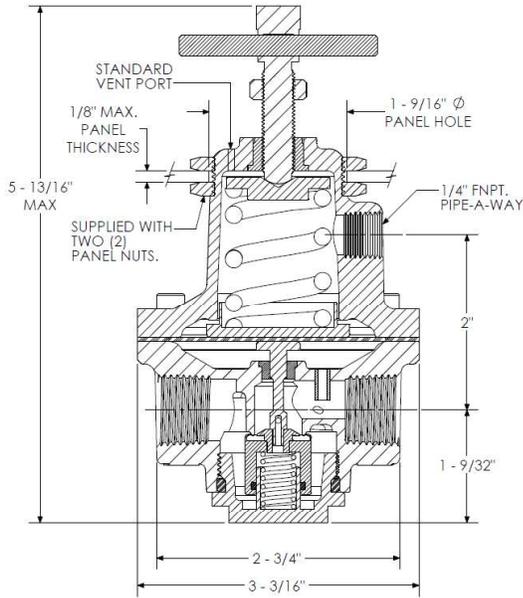
**PANEL MOUNT**



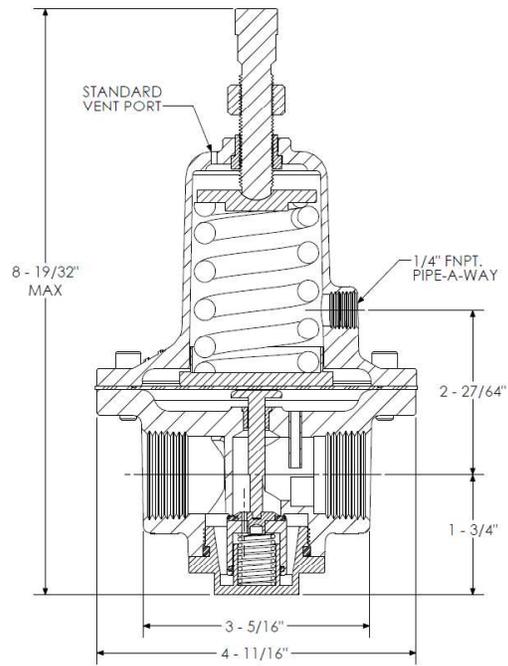
**PIPE-A-WAY OPTION**

# GAS DELIVERY REGULATOR

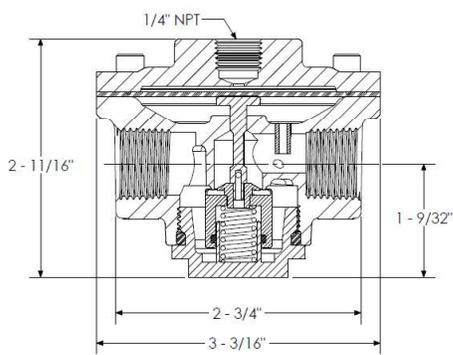
## Dimensional Data



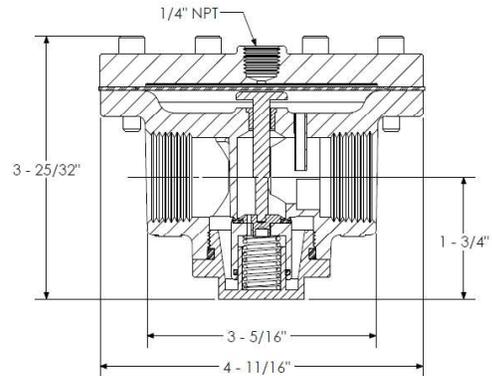
**GDR-500**  
(shown with Panel Mount and Pipe-A-Way Options)



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



**GDR-500 Pilot Operated**

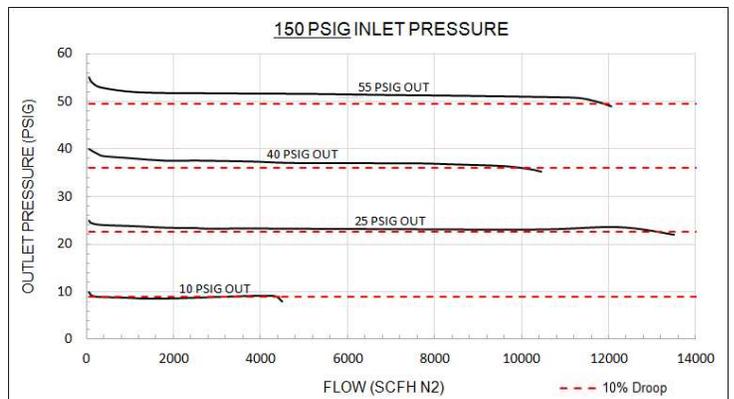
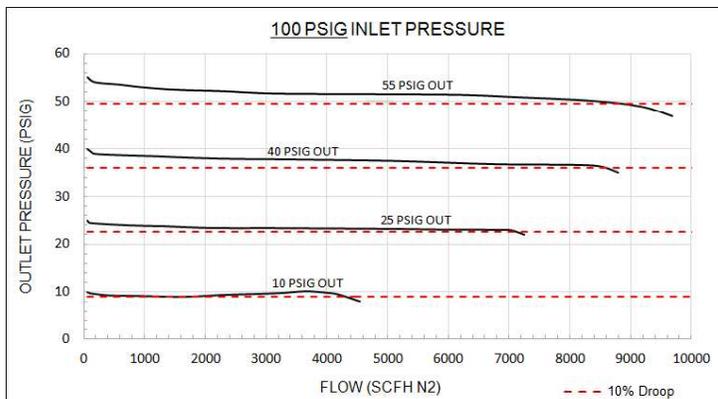


**GDR-1000 Pilot Operated**

## Flow Performance

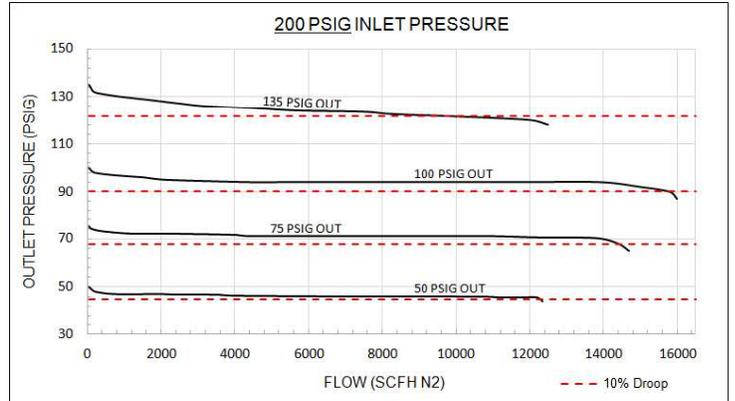
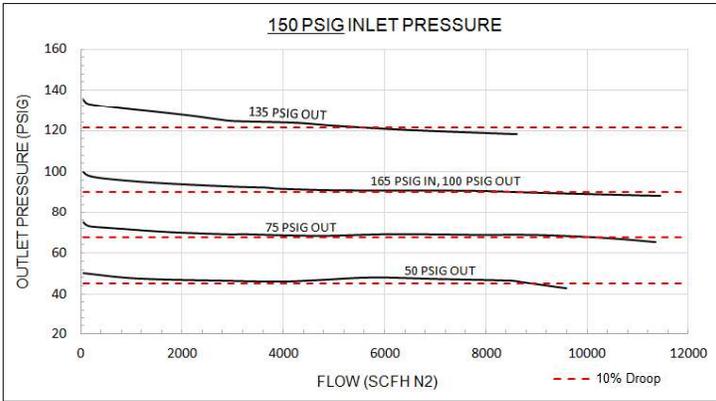
Each chart provides a variety of regulator setpoints and its respective flow performance with a constant inlet pressure condition. Flow Testing was performed using Nitrogen gas at ambient conditions. Use gas conversion factors listed on the next page to convert flow rates to a different gas service.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

### GDR-500: A Spring

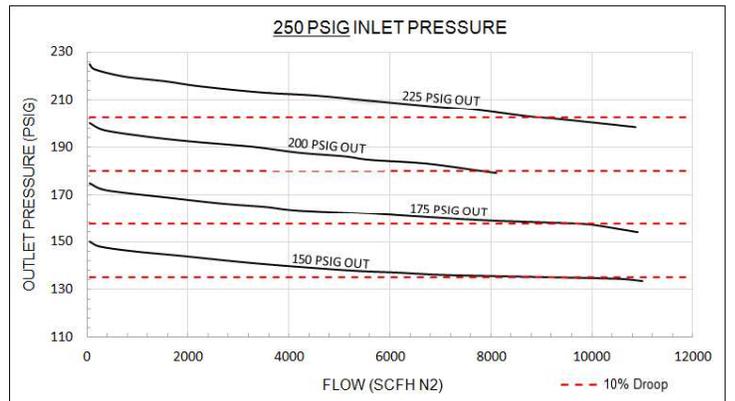
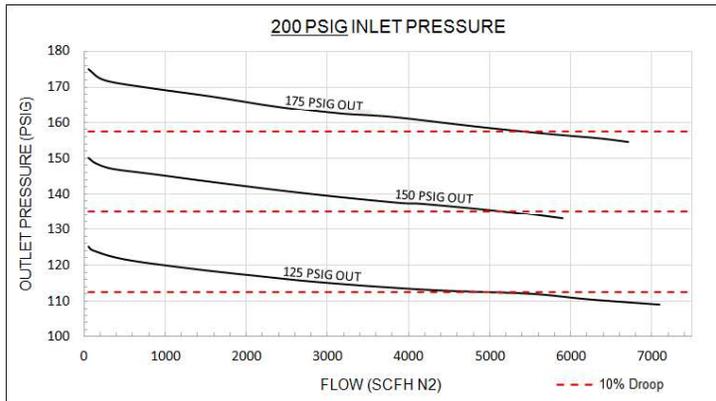


## Flow Performance (continued)

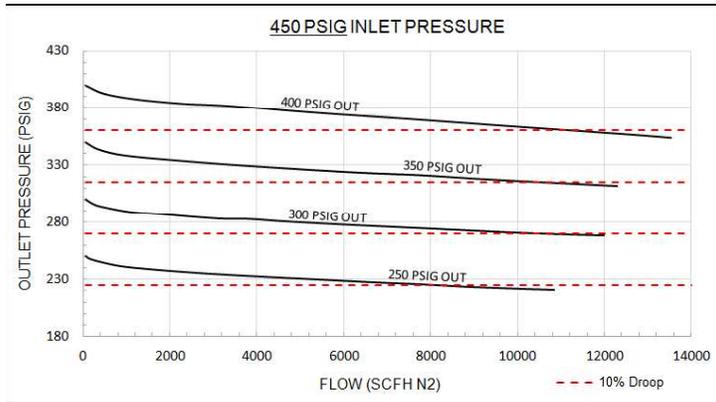
### GDR-500: B Spring



### GDR-500: C Spring



### GDR-500: D Spring

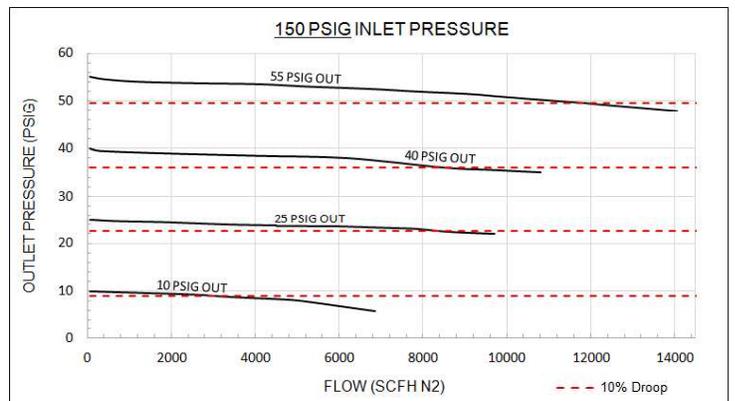
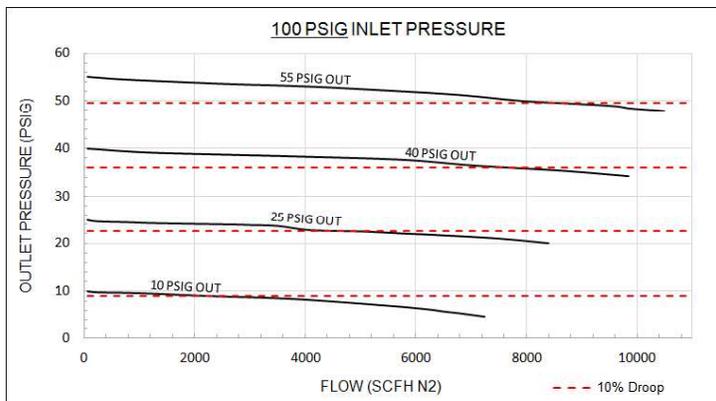


### GAS CONVERSION FACTORS

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

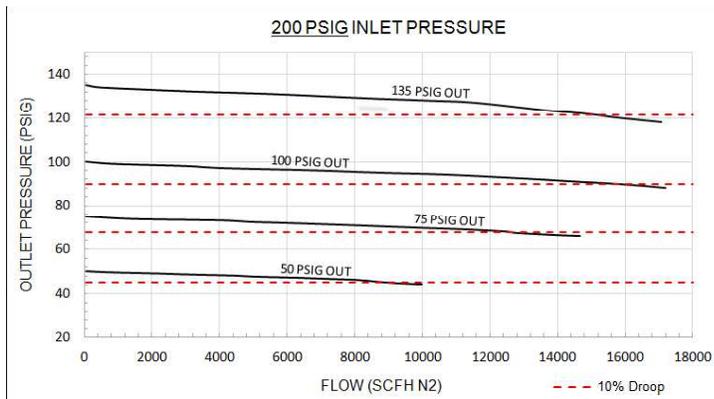
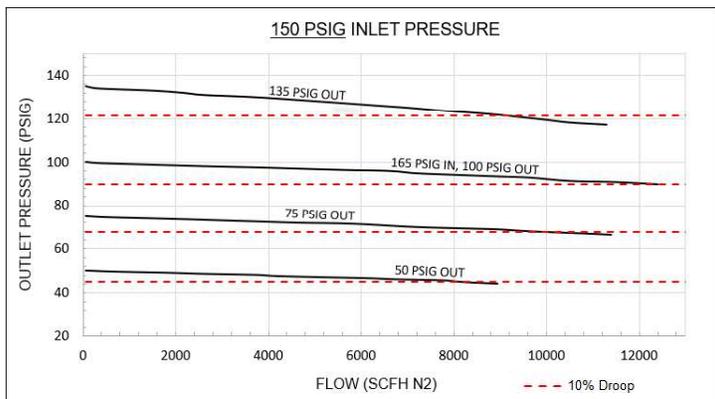
Gas	Conversion Factor
Air	0.985
Argon	0.837
Carbon Dioxide	0.795
Helium	2.645
Hydrogen	3.603
Nitrogen	1.0
Nitrous Oxide	0.799
Natural Gas	1.285
Oxygen	0.935
Methane	1.320

### GDR-1000: A Spring

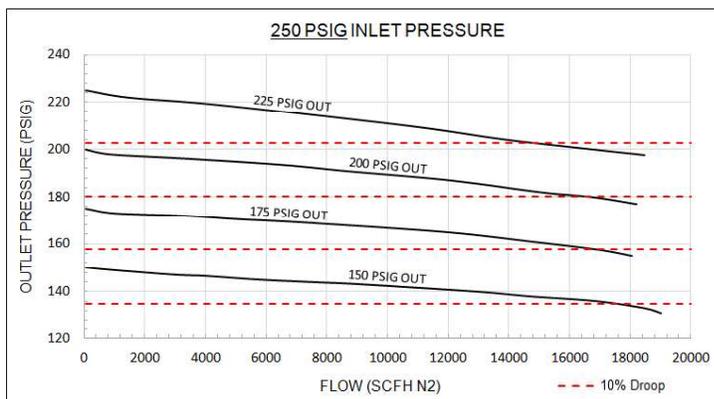
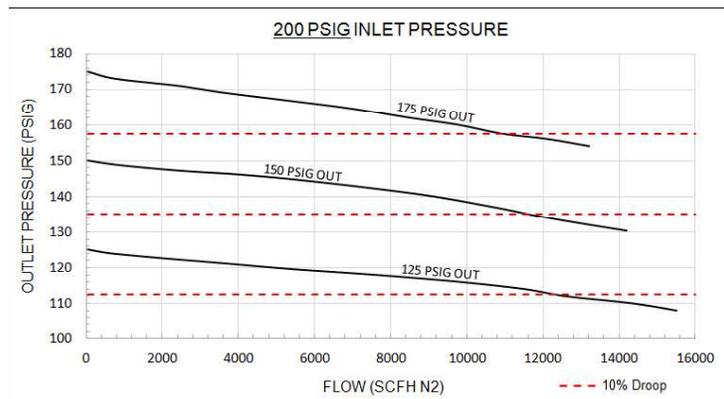


## Flow Performance (continued)

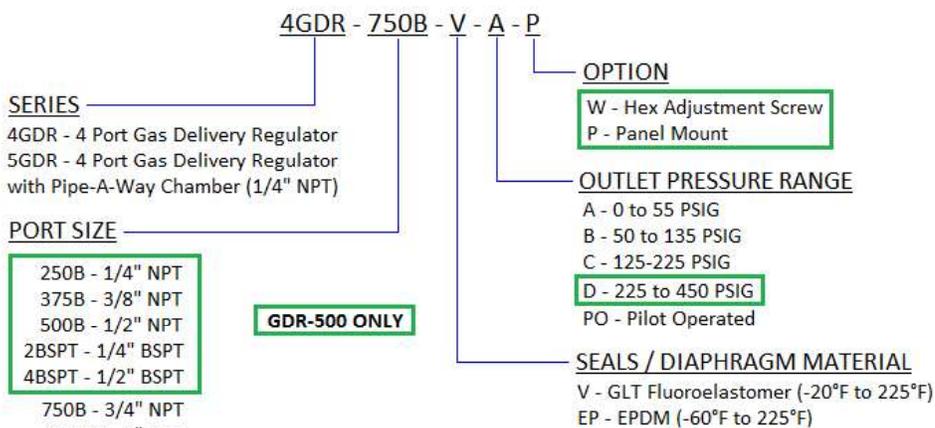
### GDR-1000: B Spring



### GDR-1000: C Spring



## How To Order



Note: All Regulators are supplied with 2 (two) 1/4" NPT Pipe Plugs. Pipe plugs are supplied finger tight. Final installation is the responsibility of the end user.

Compatibility Note: EP Seals are Recommended for CO2 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
3/4" & 1"	FKM	GDR-RK-2V
	EPDM	GDR-RK-2EP

NOTE: All Repair 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

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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BPRX SERIES

DESCRIPTION:

BPRX Series back pressure regulators are designed especially for use as high efficiency economizer regulators on large cryogenic tanks, trailers, and systems. Optimized diaphragm and adjustment spring designs provide high flow at pressures above the desired setpoint. It is designed for cryogenic service with a lapped poppet and seat to minimize leakage below setpoint. The BPRX Series is offered in brass or stainless steel material configurations and has been extensively qualified for long-lasting performance. All BPRX Series regulators are supplied factory pre-set and cleaned for oxygen service.

FEATURES:

- **OPTIMIZED FOR HIGH FLOW:** Designed for high flow rates in economizer and vent-to-atmosphere applications.
- **QUICK SHUT-OFF:** Regulators transition from the flowing condition to shut in a tight pressure band.
- **INLET FILTER SCREEN:** Monel® 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:

Maximum Inlet Pressure: 750 PSIG (51.7 bar)

Pressure Ranges:

Spring	Pressure Range	PSI/Turn*
A	15 to 75 PSIG (1.0 to 5.2 bar)	10
B	50 to 200 PSIG (3.4 to 13.8 bar)	25
C	100 to 350 PSIG (6.9 to 24.1 bar)	45
D	300 to 600 PSIG (20.7 to 41.4 bar)	75

\*PSI/Turn Value is approximate change in setpoint per full turn of the adjustment screw (CW to increase, CCW to decrease), for reference only.

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

MATERIALS OF CONSTRUCTION:

Component	Material Grade	
	Brass Body	316 Stainless Body
Body, Chamber, Spring Retainer, Chamber Ring	CDA 360 Brass, ASTM B16	316SS, ASTM A479
Adjustment Springs	17-7PH SS	
Adjustment Screw, Locknuts (2), Lock Washer, Ball Bearing, Spring Button	Stainless Steel (Non-Wetted)	
Seat and Poppet Set	316 SS (A479) or Monel®	316SS, ASTM A479
Diaphragms, Damper	Phosphor Bronze	300 Series Stainless Steel
Inlet Filter Screen	Monel®, ASTM E437	
Seat Seal	PTFE	
Chamber and Diaphragm Assm. Seal	Gylon®	

NOTE: Regulators are assembled with Krytox® lubricant.



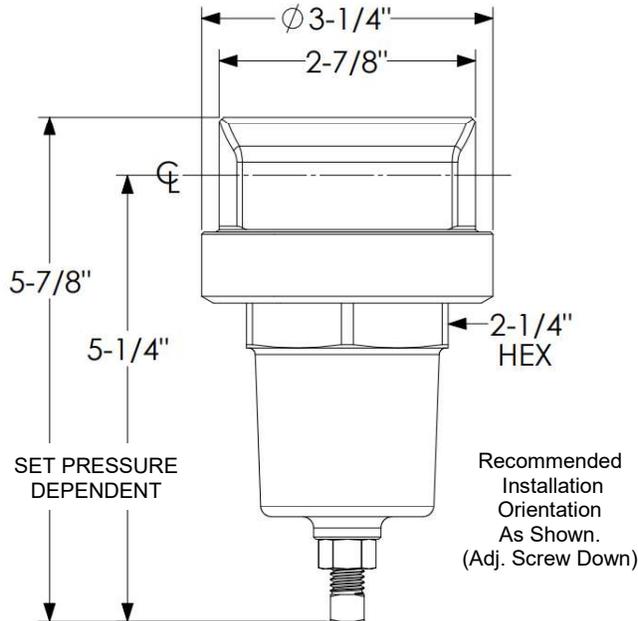
BRASS



316SS

# BACK PRESSURE REGULATOR

## DIMENSIONAL DATA



## FLOW INFORMATION (500 Size - 1/2" NPT)

Set Pressure (PSIG)	Economizer Cv Value		
	110%	120%	130%
50	0.314	0.554	0.688
150	0.603	0.795	0.935
325	0.612	0.838	0.902
475	0.591	0.658	0.658

Set Pressure (PSIG)	Flow to Atm. (SCFH N2)		
	110%	120%	130%
50	990	1280	1400
150	1550	3975	5750
325	4950	9900	13725
475	5150	10450	13125

## HOW TO ORDER

**BPRX - 500B - B - 140 - M**

**SERIES**  
BPRX - Back Pressure Regulator, Large Body

**PORT CONFIGURATION**  
375B - 3/8" NPT, Brass  
500B - 1/2" NPT, Brass  
375SS - 3/8" NPT, 316 Stainless Steel  
500SS - 1/2" NPT, 316 Stainless Steel

**M OPTION**  
Monel® Option for Poppet and Seat  
OMIT for 316SS Poppet and Seat

**SET PRESSURE**  
Specify set pressure in PSI  
OMIT FOR STANDARD SET (BY SPRING, SEE TABLE)

**SPRING RANGE**  
A - 15 to 75 PSI (1.0 to 5.2 bar)  
B - 50 to 200 PSI (3.4 to 13.8 bar)  
C - 100 to 350 PSI (6.9 to 24.1 bar)  
D - 300 to 600 PSI (20.7 to 41.4 bar)

Spring	Std. Set
A	50
B	150
C	325
D	475

Standard Sets do not come engraved with "Factory Set Pressure."

## REPAIR KITS

Part Number	Description	Seat / Poppet Mat'l
BPRX-RK-*	Seat & Poppet Set, Diaphragms, Gaskets, Seat Seal, Inlet Filter	316 SS
BPRX-RK-M-*		Monel ®

\* Specify "B" for Phos. Bronze Diaphragms  
Specify "SS" for Stainless Steel Diaphragms

## SPRING KITS

Part Number	Description
BLD-SK-*	Spring Kit, A, B, C Range * Specify Model Spring Code: A, B, C
BPRX-SK-D	Spring Kit, D Range

Note: BLD & BPRX Spring kits are identical for Spring Ranges A, B, C.  
All Spring kits come with a Replacement Spring & Chamber Seal. D Spring kit also contains Diaph. Seal, Chamber Ring, & Retainer.

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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BPR

**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.

**FEATURES:**

- **OPTIMIZED FOR HIGH FLOW:** Designed for high flow rates in economizer and vent-to-atmosphere applications.
- **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.



BPR-250

**TECHNICAL DATA:**

Maximum Inlet Pressure: 750 PSIG (51.7 bar)

Pressure Ranges:

Spring	Pressure Range	PSI/Turn*
A	15 to 65 PSIG (1.0 to 4.5 bar)	15
B	40 to 175 PSIG (2.7 to 12.1 bar)	25
C	100 to 350 PSIG (6.9 to 24.1 bar)	55
D	300 to 600 PSIG (20.7 to 41.4 bar)	85

\*PSI/Turn Value is approximate change in setpoint per full turn of the adjustment screw (CW to increase, CCW to decrease), for reference only.

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

**MATERIALS OF CONSTRUCTION:**

Component	Material
Body, Chamber, Spring Button, Spring Retainer, Chamber Ring	CDA 360 Brass, ASTM B16
Adjustment Springs	17-7PH SS
Adjustment Screw, Locknut, Diaphragm Assembly Screw, Lock Washer	18-8 Stainless Steel
Poppet, Seat	303 SS, ASTM A313   Monel® 400
Diaphragms, Res. Damper	Phosphor Bronze
Inlet Filter Screen	Brass Wire Mesh, ASTM E437
Diaphragm Gasket	Vulcanex ®
Chamber and Diaphragm Assembly Seal	Gylon ®



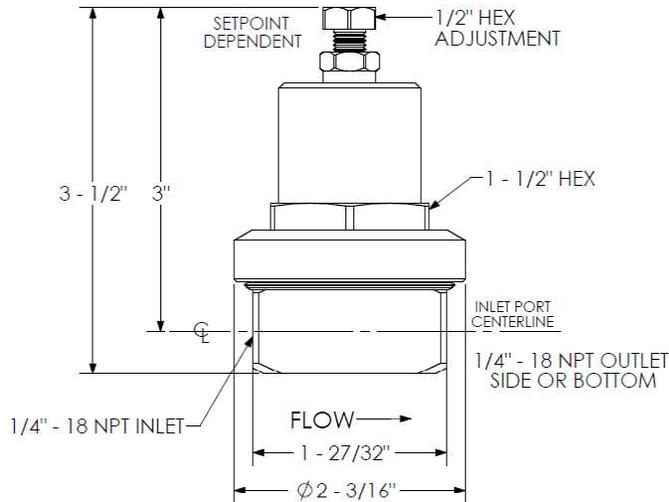
BPR-250I

SERIES

NOTE: Regulators are assembled with Dupont Krytox® lubricant.

# BACK PRESSURE REGULATOR

## DIMENSIONAL DATA



## SPRING KITS

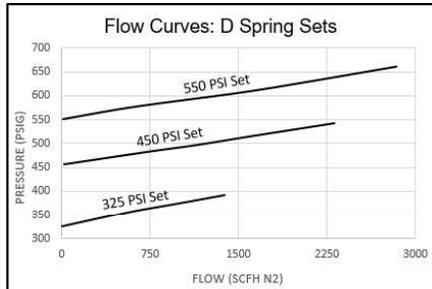
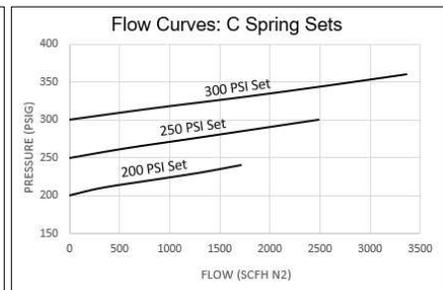
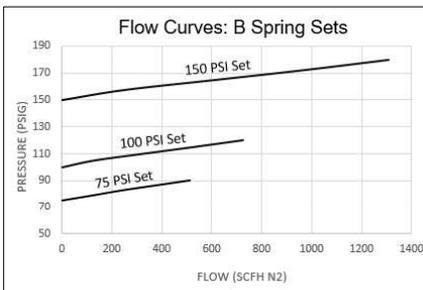
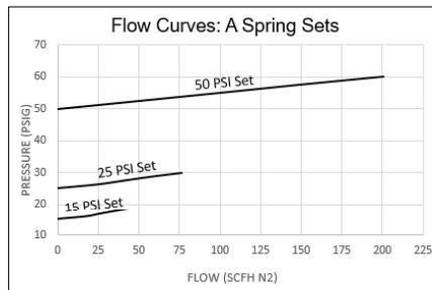
Part Number	Spring
BPR-SK-A	A (15 to 65 PSI)
BPR-SK-B	B (40 to 175 PSI)
BPR-SK-C	C (100 to 350 PSI)
BPR-SK-D	D (300 to 600 PSI)

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

## REPAIR KITS

Part Number	Description	Trim Mat'l
BPR-RK	Trim (Seat & Poppet Set), Diaphragms, Gasket, Seals, Filter Screen	303 SS
BPR-RK-M		Monel®

## FLOW PERFORMANCE



### NOTES:

Flow Curves are derived from actual test data at test points up to 120% accumulation above set pressure.

All tests conducted with 0 PSIG on the outlet.

For flow information at higher overpressures, set pressures not listed, or for applications where back pressure is present on the outlet, consult factory.

## HOW TO ORDER

**BPR - 250 - B - 140 - M**

**SERIES**  
BPR - Back Pressure Regulator

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

**M OPTION**  
Monel® Option for Poppet and Seat  
OMIT for 303 SS Poppet and Seat

**SET PRESSURE**  
Specify set pressure in PSI  
OMIT FOR STANDARD SET (BY SPRING, SEE TABLE)

**SPRING RANGE**  
A - 15 to 65 PSI (1.0 to 4.5 bar)  
B - 40 to 175 PSI (2.7 to 12.1 bar)  
C - 100 to 350 PSI (6.9 to 24.1 bar)  
D - 300 to 600 PSI (20.7 to 41.4 bar)

Spring	Std. Set
A	35 PSI
B	125 PSI
C	300 PSI
D	450 PSI

Standard Sets do not come engraved with "Factory Set Pressure."

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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**BLD**

**SERIES**

**DESCRIPTION:**

BLD Series cryogenic pressure regulators provide high flow and shut off quickly at the desired set pressure. The regulator design is a non-balanced, spring reference, reducing type regulator and comes with PTFE seals for cryogenic use. These regulators are optimized for use in pressure build applications. The solid (non-tied) metal diaphragms provide long lasting, leak-free performance. The springs for BLD Series regulators have been designed for optimized flow within the set pressure range. All BLD Series regulators are supplied cleaned for oxygen service.

**FEATURES:**

- **OPTIMIZED FOR HIGH FLOW:** Design provides high flow rates at low pressure differential.
- **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.
- **EXTENSIVELY FIELD QUALIFIED**

**TECHNICAL DATA:**

Max. Inlet Pressure: 600 PSIG (41.4 bar)

Outlet Pressure Ranges:

Spring	Outlet Pressure Range	PSI/Turn*
A	15 to 75 PSI (1.0 to 5.2 bar)	12
B	50 to 200 PSI (3.4 to 13.8 bar)	20
C	100 to 350 PSI (6.9 to 24.1 bar)	40
D	300 to 600 PSI (20.7 to 41.4 bar)	70

\*PSI/Turn Value is approximate change in setpoint per full turn of the adjustment screw (CW to increase, CCW to decrease), for reference only.

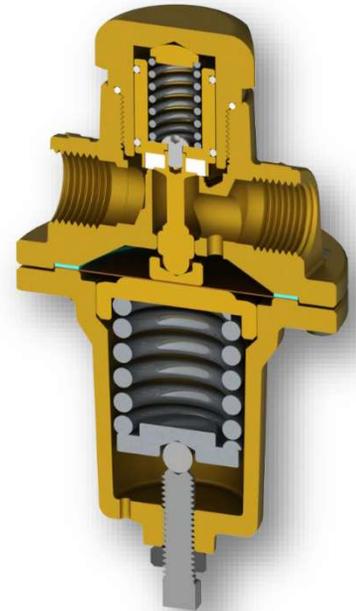
Temperature Range: -320° to 200°F (-196° to 93°C)

Full Open Flow Coefficient: 2.20

**MATERIALS OF CONSTRUCTION:**

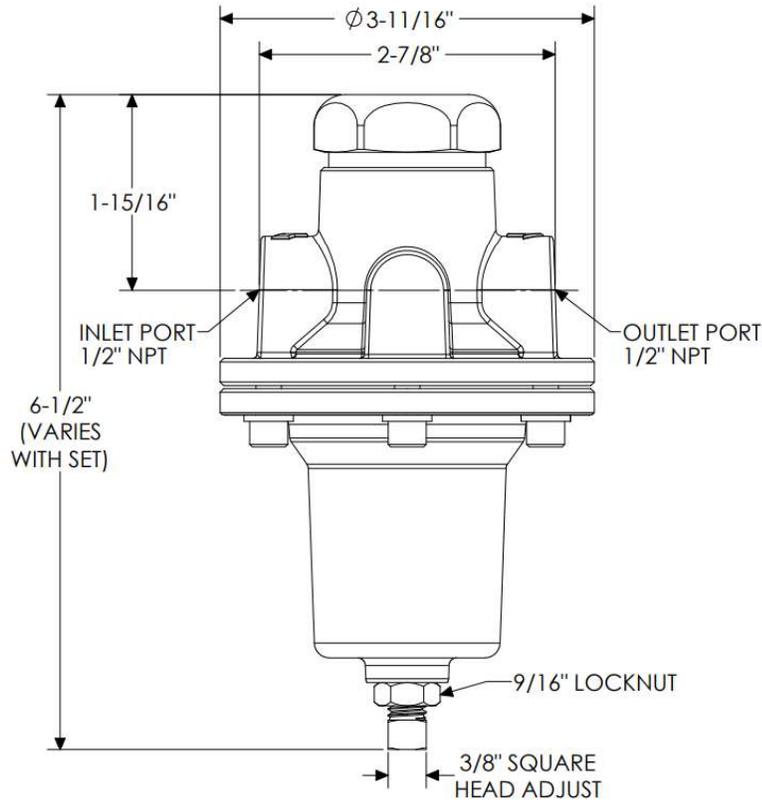
Component	Material
Body, Chamber	Brass, ASTM B124
Stem, Spring Retainer, Bottom Plug, BP Button, Stem Cap	Brass, ASTM B16
Adjustment Springs, Valve Spring	17-7PH SS
Adjustment Bolt, Locknut, Chamber Bolts, Lock Washers, Valve Screw	18-8 SS
Adjustment Screw Ball Bearing	440C SS
Diaphragms	Phosphor Bronze
Spring Button	303SS, ASTM A582
Valve Seal, Bottom Plug Seal, Chamber Seal, Valve O'Rings	PTFE

NOTE: Regulators are assembled with Dupont Krytox® lubricant.



# CRYOGENIC PRESSURE REGULATOR

## DIMENSIONAL DATA



## SPRING KITS

Part Number	Range
BLD-SK-A	15 to 75 PSI
BLD-SK-B	50 to 200 PSI
BLD-SK-C	100 to 350 PSI
BLD-SK-D	300 to 600 PSI

All Replacement Spring Kits come with a Replacement Spring, Spring Retainer, and Chamber Seal. D Range Spring Kits also come with a Chamber Ring.

## REPAIR KITS

Part Number	Description
BLD-RK	<b>Complete Repair Kit</b> Includes Valve Assembly, Valve Spring, Bottom Plug Seal, Chamber Seal, and Diaphragms (4)
BLD-VLV-RK	<b>Valve Only Repair Kit</b> Includes Valve Assembly, Valve Spring, and Bottom Plug Seal

## PERFORMANCE INFORMATION

Generant has flow information based on actual testing for both Pressure Build circuit applications and true cryogenic pressure reducing regulator applications. For more information, see Generant document SA.TD.BLD001.5256 *BLD Series Flow Datasheet*. The Full Open Flow Coefficient is listed in Technical Data.

## HOW TO ORDER

**2BLD - 500B - B - 125**

**SERIES** ————

2BLD - 2 Port BLD Regulator

**INLET SIZE** ————

500B - 1/2" NPT Ports, Brass

**SET PRESSURE**

Specify Set Pressure in PSI  
OMIT FOR STANDARD SET  
(BY SPRING, SEE TABLE)

**OUTLET PRESSURE RANGE**

A - 15 to 75 PSI (1.0 to 5.2 bar)  
B - 50 to 200 PSI (3.4 to 13.8 bar)  
C - 100 to 350 PSI (6.9 to 24.1 bar)  
D - 300 to 600 PSI (20.7 to 41.4 bar)

**ADAPTER KIT**

Order Part Number **BLD-A401-B**.  
Adapter Kit consists of two (2) fittings for easy interchange with other commonly used 1/2" NPT PB Regulators. No hard piping changes required.

Spring	Std. Set
A	35
B	125
C	300
D	450

Standard Sets do not come engraved with "Factory Set Pressure."

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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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:** Design provides high flow rates at low pressure differential.
- **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.
- **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	PSI/Turn*
A	15 to 65 PSIG (1.0 to 4.5 bar)	15
B	50 to 175 PSIG (3.4 to 12.1 bar)	25
C	150 to 350 PSIG (10.3 to 24.1 bar)	55
D	300 to 525 PSIG (20.7 to 36.2 bar)	70

\*PSI/Turn Value is approximate change in setpoint per full turn of the adjustment screw (CW to increase, CCW to decrease), for reference only.

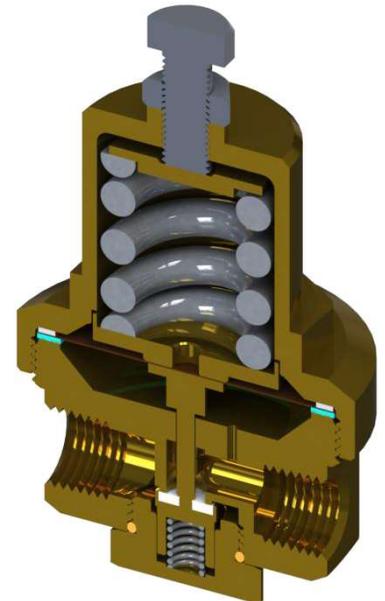
Temperature Range: -320° to 200°F (-196° to 93°C)

Full Open Flow Coefficient: 0.51

**MATERIALS OF CONSTRUCTION:**

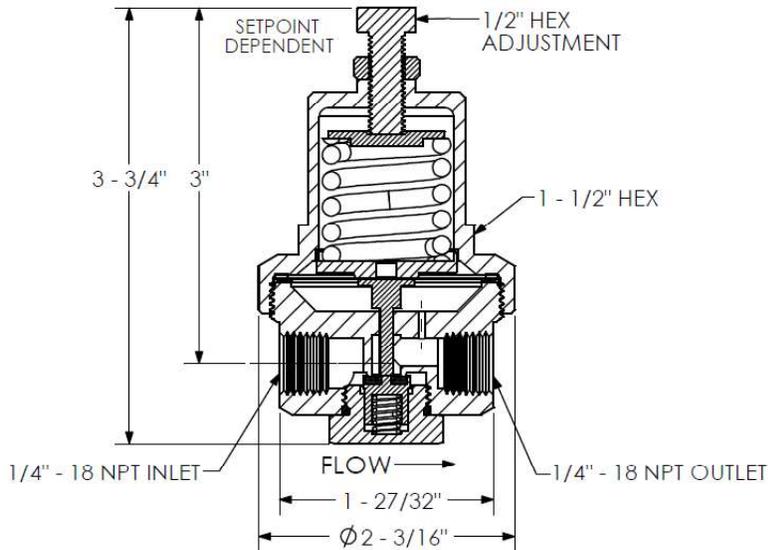
Component	Material
Body, Chamber, Valve Body, Stem, Spring Button, Spring Retainer, Bottom Plug	CDA 360 Brass, ASTM B16
Adjustment Springs	17-7PH SS
Adjustment Screw and Locknut	18-8 Stainless Steel
Inlet Filter Screen	Brass Wire Mesh, ASTM E437
Valve Spring	302 SS, ASTM A313
Diaphragms	Phosphor Bronze
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



## 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)

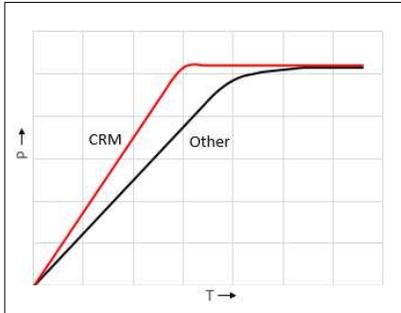
All Replacement Spring Kits come with a Replacement Spring, Chamber Seal, and either Diaphragm Gasket (A, B, and C springs) or Chamber Ring (D Spring).

Repair Kit P/N	Description
CRM-V-RK	Valve Only Repair Kit: Contains bottom plug o'ring, valve, valve spring, and inlet filter.

## FLOW PERFORMANCE

### QUALIFIED PERFORMANCE

High Flow Design results in Reduced Pressure Build Time and Higher Steady State Pressure during high use periods.



Extensively field qualified. OEM Approved & Endorsed.

### SPECIFIC APPLICATIONS

For flow performance information in specific applications, consult factory. Generant has a large database of flow information for CRM Series regulators in both gas and liquid applications. Our engineers can provide flow estimates for nearly any applicable pressure condition and many different fluid medias.

Give us a call at 973-838-6500 and let us provide more information based on your specific application requirements.

## HOW TO ORDER

**CRM-250 - B - 125**

**SERIES**

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

**SET PRESSURE**

Specify set pressure in PSI  
OMIT FOR STANDARD SET (BY SPRING, SEE TABLE)

**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)

Spring	Std. Set
A	35 PSI
B	125 PSI
C	300 PSI
D	450 PSI

Standard Sets do not come engraved with "Factory Set Pressure."

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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**FLR**  
**SERIES**

**DESCRIPTION:**

FLR 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 final line 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 FLR Series regulators are supplied factory pre-set and cleaned for oxygen service.

**FEATURES:**

- **OPTIMIZED FOR HIGH FLOW:** High flow while maintaining outlet pressure near setpoint.
- **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	PSI/Turn*
A	15 to 65 PSIG (1.0 to 4.5 bar)	15
B	50 to 175 PSIG (3.4 to 12.1 bar)	25
C	150 to 350 PSIG (10.3 to 24.1 bar)	55
D	300 to 525 PSIG (20.7 to 36.2 bar)	70

\*PSI/Turn Value is approximate change in setpoint per full turn of the adjustment screw (CW to increase, CCW to decrease), for reference only.

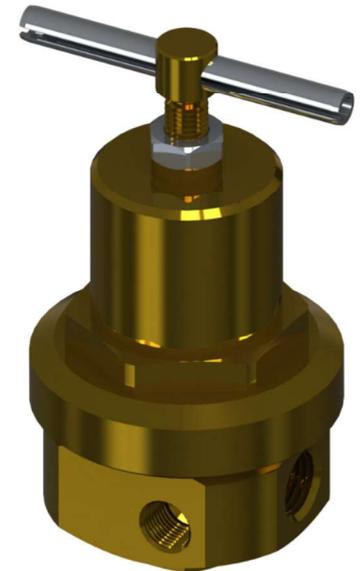
Temperature Range: -320° to 200°F (-196° to 93°C)

Full Open Flow Coefficient: 0.51

**MATERIALS OF CONSTRUCTION:**

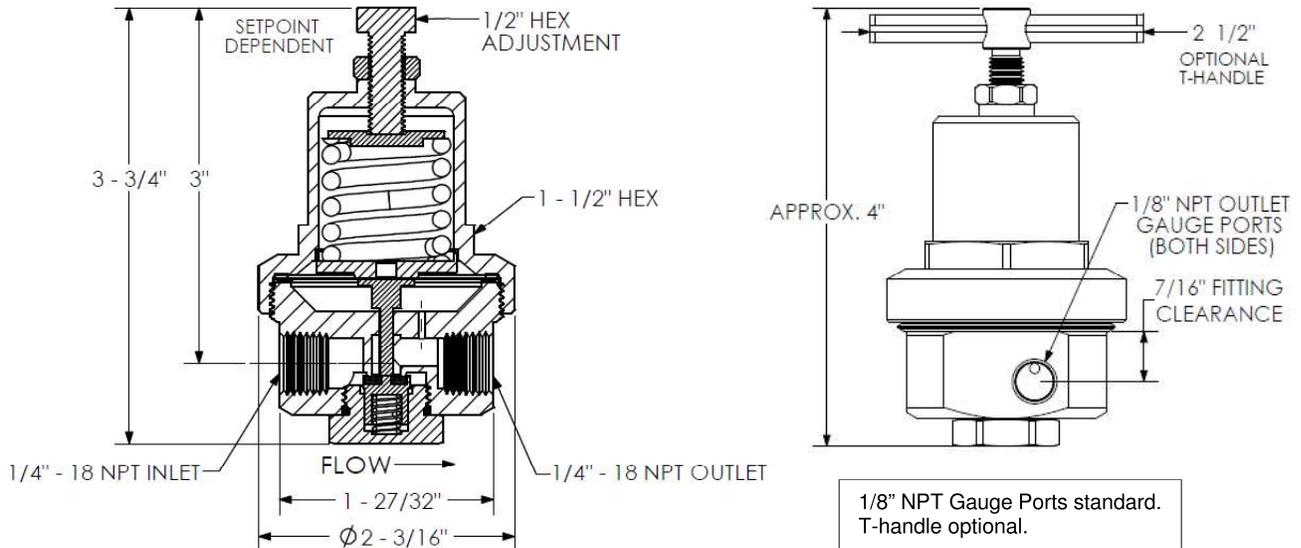
Component	Material
Body, Chamber, Valve Body, Stem, Spring Button, Spring Retainer, Bottom Plug	CDA 360 Brass, ASTM B16
Adjustment Springs	Chrome Silicon, ASTM A401
Adjustment Screw, Locknut, Optional T-Handle	18-8 Stainless Steel
Valve Spring	302 SS, ASTM A313
Diaphragms	Phosphor Bronze
Diaphragm Gasket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

NOTE: Regulators are assembled with Dupont Krytox® lubricant.



# FINAL LINE REGULATOR

## DIMENSIONAL DATA



## PERFORMANCE INFORMATION

FLR Series Regulators were designed for high flow rates at low droop levels. Units were extensively tested and qualified for CO<sub>2</sub> applications but can be used with a wide variety of medias. Regulators transition from high flow to shut in a tight pressure band.

For flow information in specific applications or pressure conditions, consult factory.

## SPRING KITS

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, Chamber Seal, and either Diaphragm Gasket (A, B, and C springs) or Chamber Ring (D Spring).

## HOW TO ORDER

**FLR-250 - B - 125 T**

**SERIES**  
 FLR-250 - Final Line Regulator,  
 1/4" NPT IN AND OUT,  
 1/8" NPT GAUGE PORTS (2)

**OPTIONAL T-HANDLE**  
 T - T-HANDLE  
 OMIT FOR STANDARD ADJUSTMENT BOLT

**SET PRESSURE**  
 Specify set pressure in PSI  
 OMIT FOR STANDARD SET (BY SPRING, SEE TABLE)

**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)

Spring	Std. Set
A	35 PSI
B	125 PSI
C	300 PSI
D	450 PSI

Standard Sets do not come engraved with "Factory Set Pressure."

Repair Kit	Description
CRM-V-RK	Valve Only Repair Kit: Contains bottom plug o'ring, valve, and valve spring.

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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**GEM  
SERIES**

**DESCRIPTION:**

GEM Series combo pressure build – economizer regulators offer optimum performance for cryogenic liquid cylinders. The regulators are designed for fast pressure building, steady head pressure during all use conditions, and maximum efficiency economization when cylinder pressure is near relief valve setting. The pressure-build and economizer functions are completely separated which eliminates function overlap and improves overall cylinder efficiency. GEM Series regulators provide high flow and quick, positive shut off at the desired set pressure. Solid, non-tied diaphragm allows for leak-free and long-lasting performance. All GEM Series regulators are supplied factory pre-set and cleaned for oxygen service.

**FEATURES:**

- **OPTIMIZED FOR CRYOGENIC LIQUID CYLINDERS:**  
Designed to exceed the PB and Economizer performance of current market offerings for cryogenic liquid cylinders.
- **SEPARATE PB AND ECON FUNCTIONS:**  
Design maintains separation between pressure build and economizer functions to eliminate overlap.
- **MAXIMIZED ECONOMIZER FLOW:**  
Regulators are designed for maximum economizer flow performance, minimizing product loss.
- **SOLID, NON-TIED, DIAPHRAGM:**  
Eliminates potential leak path and increases device sensitivity.
- **INLET FILTER SCREEN:**  
Protects regulator from system debris for reliability and long life.
- **CLEANED FOR OXYGEN SERVICE:**  
Regulators are cleaned for use in Oxygen service standard.

**TECHNICAL DATA:**

Max Inlet Pressure: 600 PSI (41.4 bar)

Spring Ranges and Adjustment Coefficients:

Spring	Outlet Pressure Range	PSI/Turn*
B	50 to 200 PSI (3.4 to 13.8 bar)	25
C	150 to 350 PSI (10.3 to 24.1 bar)	35
D	300 to 500 PSI (20.7 to 34.5 bar)	55

\* PSI / Turn Value is approximate change in setpoint per full turn of the adjustment screw (CW to increase, CCW to decrease), for reference only.

Temperature Range: -320° to 150°F (-196° to 65°C)

**MATERIALS OF CONSTRUCTION:**

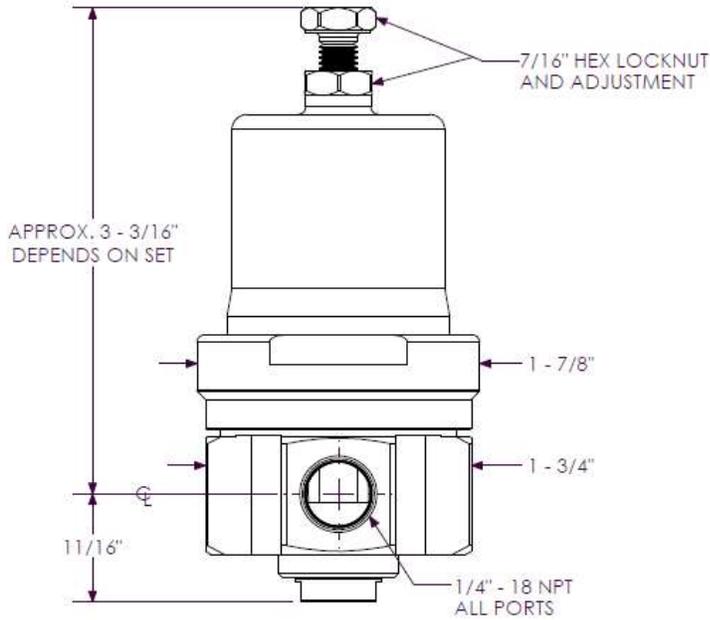
Component	Material
Body, Chamber, Chamber Ring, Valve Body, Stem, Spring Button, Spring Retainer, Bottom Plug, Inner Bonnet	CDA 360 Brass, ASTM B16
Adjustment Springs	17-7 PH SS, ASTM A313
Adjustment Screw and Locknut	18-8 Stainless Steel
Valve Spring	302 SS, ASTM A313
Diaphragms	Phosphor Bronze
Valve Seal and Stem Diaphragms	PTFE
Chamber and Bottom Plug Seal	Gylon®
Inlet Filter Screen	Brass Mesh, ASTM E437

NOTE: Regulators are assembled with Dupont Krytox® lubricant.

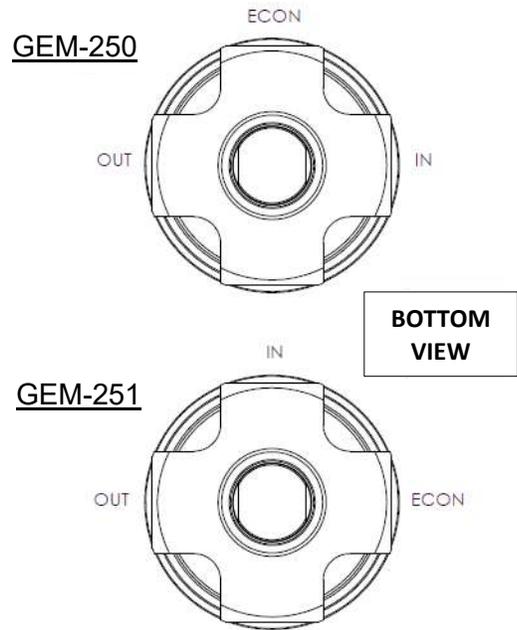


# COMBO PRESSURE BUILD – ECONOMIZER

## DIMENSIONAL DATA



## PORT CONFIGURATIONS



## PERFORMANCE AND SETTING INFORMATION

### BENCH SETTING AND TESTING

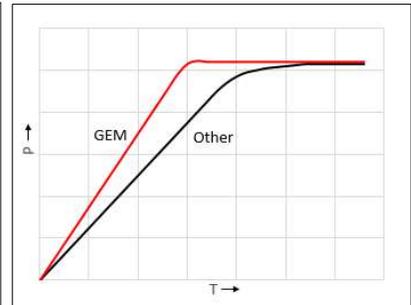
Regulators are 100% Factory Preset to desired Set Pressure (See How to Order below).

**IMPORTANT:** When setting off the cylinder (bench setting), it is important that the outlet and economizer ports are connected to avoid damage to the regulator.

Consult factory for specific instructions for proper bench setting and testing (Document EN-FR-160).

### QUALIFIED PERFORMANCE

High Flow Design results in Reduced Pressure Build Time and Higher Steady State Pressure during high use periods.



Extensively field qualified. OEM Approved & Endorsed.

## HOW TO ORDER / REPAIR KITS

### GEM - 250 - C - 300

#### SERIES / PORT CONFIGURATION

GEM-250 - GEM Regulator, Side Econ

GEM-251 - GEM Regulator, Side Inlet

\* see Port Config. reference above

#### SET PRESSURE

Specify set pressure in PSI  
OMIT FOR STANDARD SET (BY SPRING, SEE TABLE)

#### SPRING RANGE

B - 50 to 200 PSI (3.4 to 13.8 bar)

C - 150 to 350 PSI (10.3 to 24.1 bar)

D - 300 to 500 PSI (20.7 to 34.5 bar)

Spring	Std. Set
B	125 PSI
C	300 PSI
D	450 PSI

Standard Sets do not come engraved with "Factory Set Pressure."

P/N	Description
GEM-RK	Full Repair Kit: contains all seals, diaphragms, valve, stem, stem spring, valve spring and filter screen.
GEM-V-RK	Valve Only Repair Kit: contains bottom plug seal, valve, valve spring and filter screen.

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.



Valves & **BI-Lok** Fittings

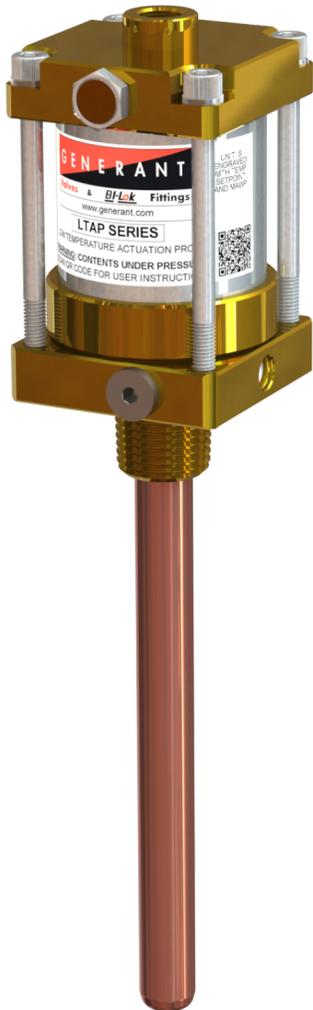
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# SERIES LTAP

The LTAP Series is built for cryogenic systems where low temperature protection is required. It is used when the vaporizer on the system can be overwhelmed for any reason (abnormally high draw rates, extremely cold ambient conditions, etc.).

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- Highly Accurate: Setpoint Tolerance of +/- 3°F
- Quick Open: Control head opens quickly at desired setpoint, less than - 3°F from first bubble to full open
- Repeatable & Reliable: Activates at temperature setpoint repeatedly & reliably in a wide range of ambient conditions
- Cleaned for O2 Service: Assembled cleaned for oxygen service as standard
- Robust Design: Solid brass design with working pressure up to 600 Psig

---

SERIES LTAP PRODUCT LITERATURE



**GENERANT**

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LTAP SERIES

**DESCRIPTION:**

The LTAP Series Low Temperature Actuation Probe is a temperature controlled pneumatic two-way valve. The device utilizes a pressurized copper probe which reacts to fluid temperature and opens a passageway in the top control head as the fluid temperature approaches the device temperature setpoint. The LTAP Series can be installed on cryogenic systems to protect end users when draw rates are higher than system capacity or ambient conditions are much colder than normal.

**FEATURES:**

- **HIGHLY ACCURATE:** Setpoint Tolerance of  $\pm 3^{\circ}\text{F}$ .
- **QUICK OPEN:** Control head opens quickly at desired setpoint: less than  $3^{\circ}\text{F}$  from first bubble to full open.
- **REPEATABLE AND RELIABLE:** Designed to activate at temperature setpoint repeatably and reliably in a wide range of ambient conditions.
- **CLEANED FOR O2 SERVICE:** Assembled Cleaned for Oxygen Service as Standard.
- **ROBUST DESIGN:** Solid brass design with Working Pressures up to 600 PSIG.

**TECHNICAL DATA:**

Maximum Probe Pressure: 600 PSIG (41.4 bar)  
 Maximum Control Head Pressure: 600 PSIG (41.4 bar)  
 Temperature Setpoint Range:  $-40^{\circ}\text{F}$  to  $0^{\circ}\text{F}$   
 Setpoint Tolerance: Nominal  $\pm 3^{\circ}\text{F}$   
 Full Open: Within  $-3^{\circ}\text{F}$  of Initial Open  
 Exposed Fluid Temperature Range:  $-320^{\circ}\text{F}$  to  $+150^{\circ}\text{F}$   
 Ambient Temperature:  $-60^{\circ}\text{F}$  to  $+150^{\circ}\text{F}$   
 Control Head Full Open Cv: 0.02  
 This Product is **NOT** a Safety Device or Safety Accessory.

**MATERIALS OF CONSTRUCTION:**

Component	Material
Probe	Copper Tube, ASTM B280
Soldering Material	Lead-Free Silver Solder
Valve Body, Control Head, Control Head Internal Components	Brass, ASTM B16
Springs	302SS, ASTM A313
Control Head Seals, Charge Valve Screw Seal	As Specified: EPDM or FS
Housing Sleeve	316SS, ASTM A269
Control Head Clip Ring	15-7 SS
Set Screws, Piston Pin, Tie Rod Bolts	18-8 SS

NOTE: LTAPs are assembled with Dupont Krytox<sup>®</sup> lubricant.

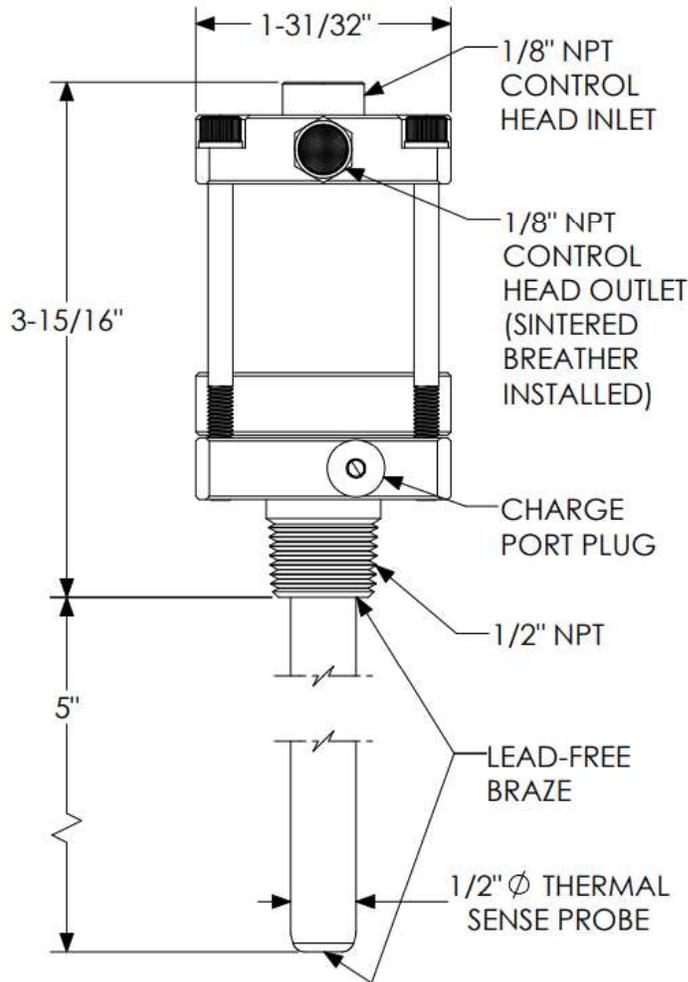


Installation Note

LTAP actuation probes are typically installed in a system with an orifice fitting and back pressure regulator controlling the dome-load pressure of a pilot operated reducing regulator.  
 Consult factory for a detailed schematic of typical installations.

# LOW TEMPERATURE ACTUATION PROBE

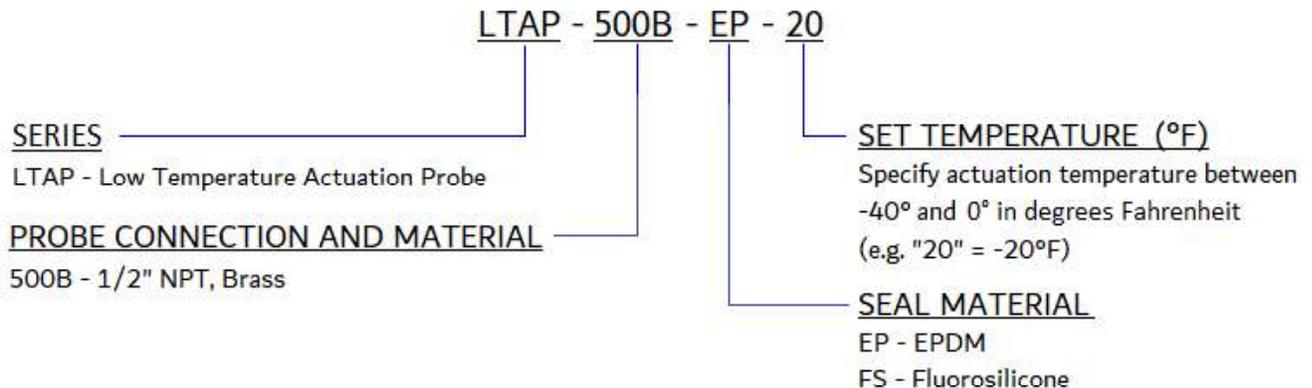
## DIMENSIONAL DATA



All LTAP probes are supplied with a sintered breather installed in the control head outlet port. A fitting for the control head inlet (1/4 tube x 1/8 NPT) is supplied loose for easy retro-fit into existing installations.

LTAP Probes are factory pre-set at the desired set temperature and cannot be adjusted in the field. Probes utilize a pressurized fixed volume for temperature sensing. Do not attempt to disassemble.

## HOW TO ORDER



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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# CHECK VALVES

Generant check valve products are offered in several series ranging from ultra-low cracking pressures used in medical devices, products optimized for cryogenic applications and severe service designs.

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**SERIES CV** - High-flow, bubble-tight with minimal pressure drop - ideal for a wide range of fluid and gas applications. The fully guided poppet and free-floating O'ring design handles particulate contamination with ease.

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**SERIES ICV** - Compact, inline, direct-acting poppet check valve for pressure and vacuum applications. Bubble-tight sealing is achieved with minimal differential pressure through a precision-machined seat and standard elastomer O'ring.

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**SERIES HPCV** - High pressure, one-piece body check valve designed for zero leakage in severe service applications. Its fully retained, encapsulated O'ring seal with metal-to-metal backup ensures long service life.

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CHECK VALVES (cont.)



**GENERANT**

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# CHECK VALVES (cont.)

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**SERIES ACV** - One-piece body adjustable check valve. Can be factory preset and locked or adjustable in several ranges between 3 and 600 Psig.

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**SERIES KCV** - High pressure cryogenic liquid service check valve. MAWP of 7000 Psi, suitable for cryogenic service -420° F to 200°F.

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**SERIES OPC** - Compact, one-piece body poppet check valve with a fully retained O'ring seal. Suitable for working pressures up to 3000 Psi, it is a reliable, cost effective solution.

---

CHECK VALVE PRODUCT LITERATURE



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CV

SERIES

**Description**

High flow, bubble-tight, low pressure drop check valve suitable for many 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 the O-ring and spring from over-stress fatigue. External body seal is achieved by the utilization of a static elastomer O-ring seal with PTFE backup ring.

NOTE: For Cryogenic Liquid service, see Generant's CV-XX3 Product Offering.

**Technical Data**

- Nominal Crack Pressures: .15, 1, 3 & 8 PSIG (0.01, 0.07, 0.21 & 0.55 bar)
- Leakage: Bubble-tight to max. operating pressure. PTFE seals may require back pressure.  
Temperature Rating:  
-80°F to 400°F (-62°C to 204°C)  
based on seal material

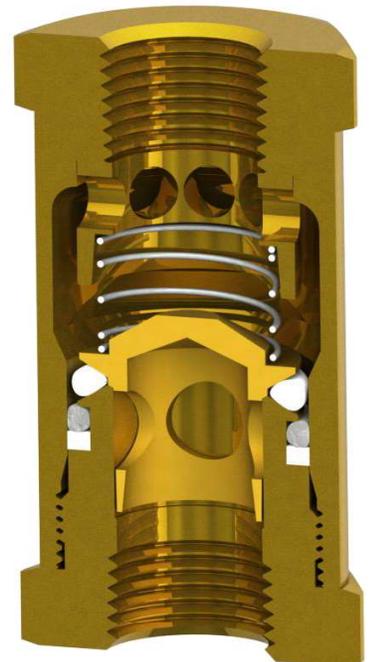
Maximum Operating Pressures to 300°F (149°C):

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)			

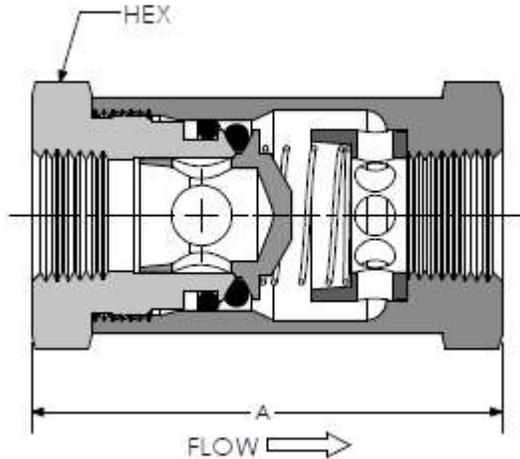
**Materials of Construction**

Component	Valve Body Material			
	Brass	Carbon	303 SS	316 SS
Inlet Cap, Outlet Body, Poppet, Spring Retainer	Brass ASTM B16	Carbon Steel ASTM A108 <sup>3</sup>	303 SS ASTM A582	316 SS ASTM A479
Dynamic O-Ring <sup>1</sup>	See Ordering Information for Available Seal Options			
Static O-Ring <sup>2</sup>				
Backup Ring	PTFE, ASTM D1710			
Spring	302 SS, ASTM A313			

- 1 Lubricated with Krytox™
- 2 Valves supplied with Teflon Seal Option are supplied with Neoprene Static O-Ring.
- 3 Zinc & Black Plated per ASTM B633



# 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 <sup>1</sup>	51.0	1200

<sup>1</sup>. 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 400°F (-56°C to 204°C)  
T - PTFE, -40°F to 300°F (-40°C to 148°C)\*

\* Temperature Rating due to Neoprene static o-ring  
For true cryogenic service, see CV-XX3 Product Offering  
PTFE Dynamic Seal may require back pressure to seal bubble tight

### OPTIONS

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

Note: Viton™ and Krytox™ 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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**ICV**  
**SERIES**

**Description**

A compact, inline, direct acting poppet check valve suitable for pressure and vacuum applications. Bubble tight sealing is achieved by a line of contact between a precision machined seat and a standard elastomer O-ring with minimum differential pressure, regardless of mounting attitude. Floating poppet and fluted retainer design provides laminar flow. Metal to metal positive stop ensures long service life.

**Technical Data**

- Nominal Crack Pressures: .15, 1 & 3 Psig (0.01, 0.07 & 0.21 bar)
- Proof Pressure: 1200 Psig (83 bar)
- Operating Pressure Range: Vacuum - 800 Psig (55 bar)
- Leakage: Zero @ > 0.5 Psig Back Pressure (0.03 bar)
- Temperature Rating: -80°F to 375°F (-62°C to 190°C)  
based on seal material



**Materials of Construction**

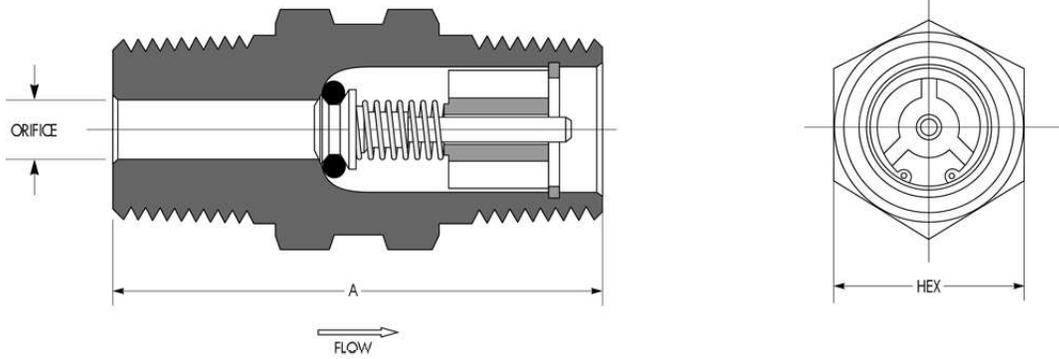
Component	Valve Body Material	
	Brass	Stainless Steel <sup>1</sup>
Body, Poppet	Brass, ASTM B16	316 SS, ASTM A479
Spring Retainer	Brass, ASTM B16 <sup>2</sup>	316 SS, ASTM A479
Spring	302 SS, ASTM A313	
O'Ring <sup>3</sup>	Buna-N	Viton™
Retaining Ring	Zinc Plated Carbon Steel	Stainless Steel

1 Stainless Steel available in 1/8", 1/4", 3/8" & 1/2" Male x Male only

2 1/8" & 1/4" Brass valves have 316SS retainer

3 Lubricated with Krytox™

# SERIES ICV INLINE CHECK VALVE



## Dimensional/Flow Data

Pipe Size (NPT)	Port Configuration		A (inches)	HEX	Orifice (inches)	Cv	Flow at Max Psid <sup>1</sup> (SCFM)
	Inlet	Outlet					
1/8"	Male	Male	1.312	1/2"	.140	0.4	7.2
	Female	Female	1.687				
	Female	Male	1.437				
1/4"	Male	Male	1.592	5/8"	.193	0.8	14.3
	Female	Female	1.937	3/4"			
	Female	Male	1.500				
3/8"	Male	Male	1.610	3/4"	.270	1.2	21.5
1/2"	Male	Male	2.140	7/8"	.327	2.0	35.5
3/4"	Male	Male	2.160	1 - 1/8"	.467	5.0	90.0

1. Maximum allowable pressure drop 15 Psid.

Flow tested in accordance with ISA S75.02 with air. Restrictions in the inlet or outlet piping may reduce flow.

## Ordering Information

ICV - FF - 250 B - V - 1

SERIES  
ICV - Inline Check Valve

PORT CONFIGURATION  
MM - Male x Male (Standard/Omit)  
FF - Female x Female (1/8" & 1/4" brass only)  
FM - Female x Male (1/8" & 1/4" brass only)

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

CRACK PRESSURE  
.15 - (.1-4 Psig) (0.01 bar)  
1 - (.5 - 1 Psig) (0.07 bar)  
3 - (2-4 Psig) (0.21 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 250° F (-40° C to 121° 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, -65° F to 400° F (-54° C to 205° C)

MATERIAL CODE  
B - Brass  
SS - 316 SS

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

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

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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**HIGH PRESSURE CHECK VALVE**  
**1/4" and 1/2" NPT**  
**10,000 Psig (690 Bar)**

HPCV

SERIES

**Description**

Series HPCV is a High Pressure, One-Piece Body, Zero Leak, Check Valve for High Pressure and Severe Service applications. The unique design features a fully retained encapsulated O-ring seal with metal to metal backup for long service life. Available in Brass, 316 and 17-4 PH Stainless Steel to 10,000 psig.

**Features**

- One-Piece Body Design
- Encapsulated Seal with Metal Backup
- Self Purging Design prevents leakage
- Increasing Pressure Increases Sealing Efficiency

**Technical Data**

Maximum Operating Pressure @ 100° F

Body Material	Operating Pressure Psig (Bar)	Proof Pressure Psig (Bar)
Brass	5000 (345)	7500 (517)
316 Stainless	6000 (413)	10000 (690)
17-4 PH Stainless	10000 (690)	15000 (1034)

Minimum Burst Pressure: Greater than 3 times Operating Pressure

Leakage:

Elastomeric Seals: Zero @ 1.0 Psig (0.07 Bar) to Proof  
 Teflon Seals: Zero @ 75 Psig (5.2 Bar) to Proof

Nominal Crack Pressure: 2 - 5 Psig (0.14 - 0.34 Bar)

Temperature Range:

Seal Dependent (see How to Order)

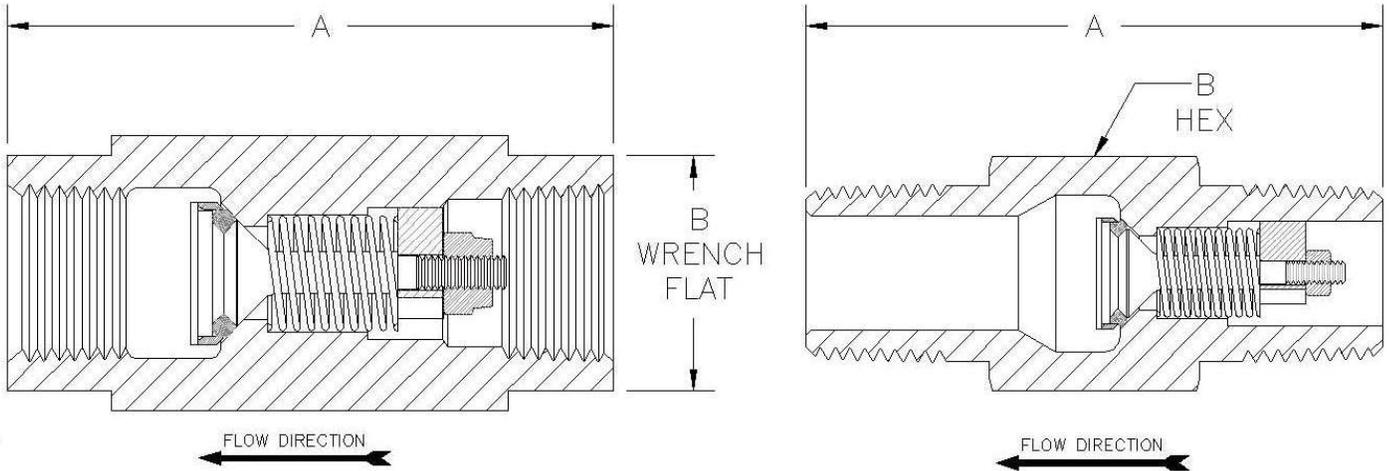
**Materials of Construction**

Component	Valve Body Materials		
	Brass	316 Stainless Steel	17-4 PH Stainless Steel
Valve Body	Brass, ASTM B16	316SS, ASTM A479	17-4 PH SS, ASTM A564, Heat Treated to H1150D
Stem			17-4 PH SS, ASTM A564
Spring Retainer			303 SS, ASTM A582
O-Ring Shroud	303 SS, ASTM A582		
Spring	302 SS, ASTM A313		
Locknut	Corrosion Resistant Austenitic Steel (CRES)		
O-Ring	Buna-N, Teflon® or Viton®		

O-rings are lubricated with Krytox®



# HIGH PRESSURE CHECK VALVE

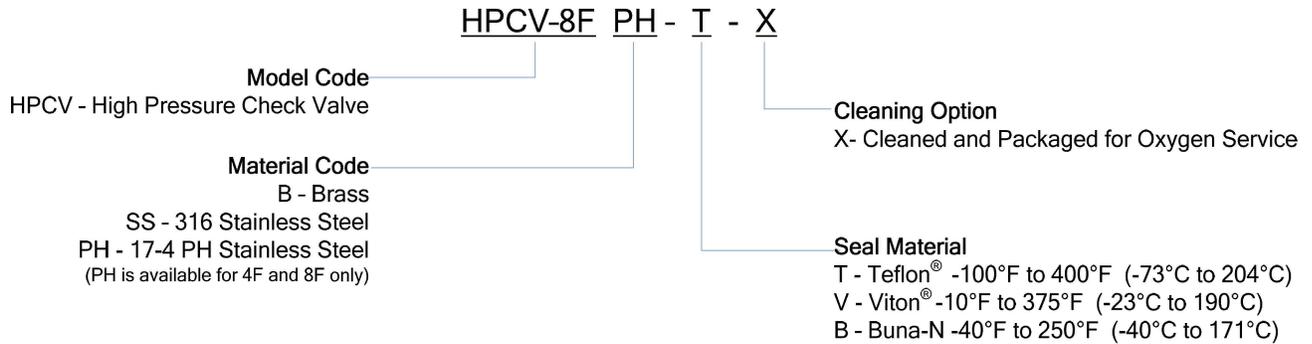


## Dimensional Data

Model Code	Port Configuration		Flow Coefficient, Cv	Dimensions in inches (mm)	
	Inlet	Outlet		OAL	Hex Size <sup>1</sup>
HPCV-4F	1/4" Female NPT		0.69	2.00 (50.8)	3/4 (19.05)
HPCV-8F	1/2" Female NPT		2.63	2.89 (73.4)	1-1/8 (28.58)
HPCV-4P	1/4" Male NPT		0.32	1.82 (46.23)	5/8 (15.88)
HPCV-8P	1/2" Male NPT		1.83	2.75 (69.85)	1 (25.4)

**Note:** Dimensions are in inches (millimeters), for reference only and subject to change.  
 Flow Coefficient stated with Nitrogen and 2 - 5 Psig Nominal Spring.  
<sup>1</sup> Female x Female Configuration made from Round Stock with Wrench Flats.  
 NPT Threads per ASME B1.20.1

## How To Order



For additional configurations consult factory.

Krytox<sup>®</sup>, Teflon<sup>®</sup> and Viton<sup>®</sup> are registered trade marks 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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# ACV SERIES

### Description

Compact one piece body, adjustable check/relief valves are available in Brass or 316 Stainless Steel. Available in 1/4" and 1/2" NPT with a wide selection of seal materials. Series ACV valves can be ordered factory "preset and locked" in crack pressures up to 600 Psig. All valves are 100% factory tested and available cleaned & packaged for Oxygen service.

### Features

- Compact One Piece Body Construction
- Working Pressures to 3000 Psig (206 bar)
- Adjustable Cracking Pressures from 3 to 600 Psig (0.2 bar to 41.3 bar)
- Fully retained O-Ring Seal
- Full Back Pressure Rating
- Factory Presetting Available
- 100% Factory Tested for Leakage, Crack and Reseal Performance

### Technical Data

Cracking Pressure Ranges:

3 to 20 Psig (0.2 to 1.4 bar)

20 to 65 Psig (1.4 to 4.5 bar)

65 to 175 Psig (4.5 to 12.1 bar)

175 to 350 Psig (12.1 to 24.1 bar)

350 to 600 Psig (24.1 to 41.3 bar)

Maximum Pressure: 3000 Psig @ 100°F (206 bar @ 40°C)

Temperature Rating: -80°F to 450°F (-65°C to 232°C)

(based on seal selection, see ordering information)

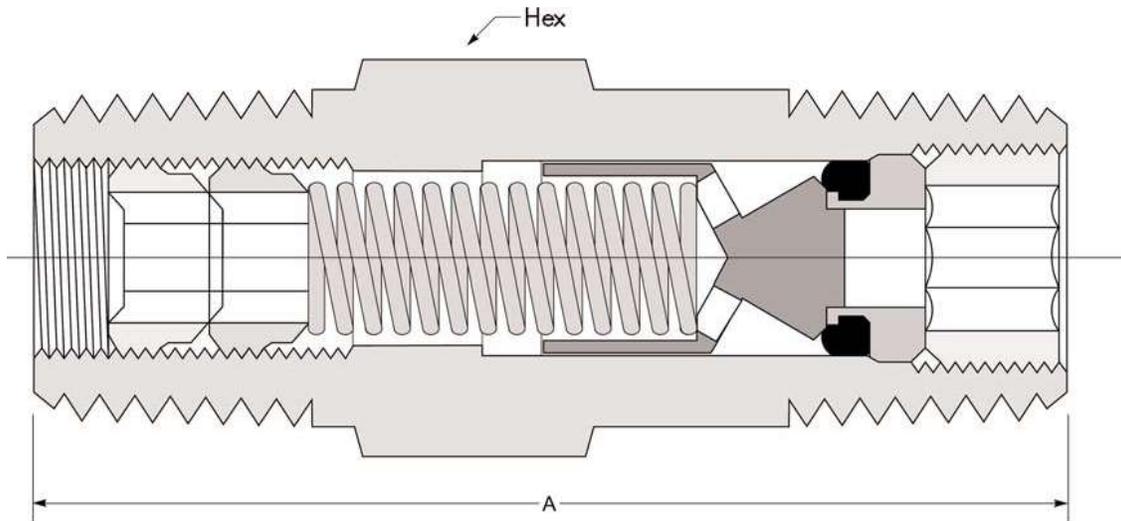
### Materials of Construction

Component	Valve Body Material	
	Brass	Stainless Steel
Body, Poppet, Seat Locking Screw, Adjustment Screw, Pressure Locking Screw	Brass, ASTM B16	316 SS, ASTM A479
Spring	302 SS, ASTM A313	
O-Ring Seal <sup>1</sup>	Buna-N	Viton™

<sup>1</sup> Lubricated with Krytox™



# SERIES ACV ADJUSTABLE CHECK VALVE



## Dimensions

Model Code	Connection Inlet & Outlet	Dimensions		
		A	Hex	Cv
ACV-4P	1/4" Male NPT	1.62"	9/16"	0.35
ACV-4FF*	1/4" Female NPT	2.98"	3/4"	
ACV-8P	1/2" Male NPT	2.56"	7/8"	1.20

\*Only available in Brass

Flow tested in accordance with ISA S75.21 with air. Restrictions in the inlet or outlet piping may reduce flow. NPT Threads per ASME B1.20.1.

## Ordering Information

**ACV - 4P B - V - 125**

### SERIES

ACV - Adjustable Check Valve

### PORT CONFIGURATION

4P - 1/4" Male NPT x 1/4" Male NPT

4FF - 1/4" Female NPT x 1/4" Female NPT (Brass Only)

8P - 1/2" Male NPT x 1/2" Male NPT

### MATERIAL CODE

B - Brass

SS - 316 SS

### CRACK PRESSURE

(standard pressure ranges)  
 3 to 20 Psig (0.2 bar to 1.4 bar)  
 20 to 65 Psig (1.4 bar to 4.5 bar)  
 65 to 175 Psig (4.5 bar to 12.1 bar)  
 175 to 350 Psig (12.1 bar to 24.1 bar)  
 350 to 600 Psig (24.1 bar to 41.3 bar)  
 May be ordered factory preset to your specifications  
 Specify Cracking Pressure, Example ACV-4PB-V-125

### 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)  
 \* - EP has a max set pressure of 400 Psig (27.6 bar)

### OPTIONS

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

Note: Viton™ and Krytox™ 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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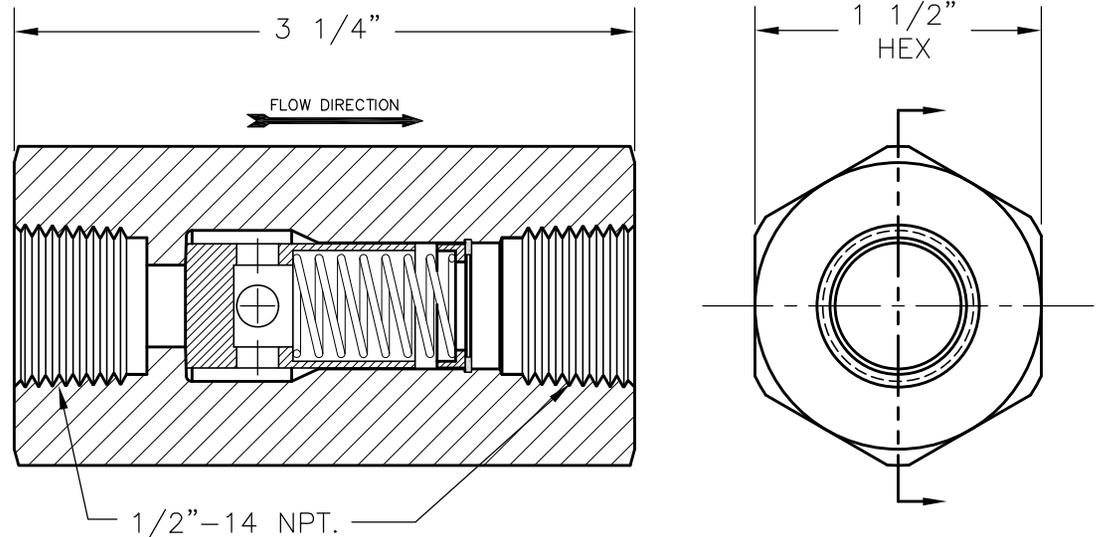
REVISIONS			
ECO	DESCRIPTION	DATE	REV.
DFE	CONVERTED TO ACAD	4-20-07	A
DCR	DESCRIPTION	DATE	REV.
0589	UPDATED MATERIAL OF SPRING	1-26-10	B

MATERIALS OF CONSTRUCTION

DESCRIPTION	PART NUMBER	MATERIAL
1/2" PUMP CHECK BODY	PCH-1-500	CDA 360 BRASS, ASTM B16
1/2" PUMP CHECK POPPET	PCH-2-500	NEOFLON CTFE GRADE M-400-H
1/2" PUMP CHECK RETAINER	PCH-3-500	CDA 360 BRASS, ASTM B16
PUMP CHECK VALVE SPRING	PCH-4-500	PHOSPHOR BRONZE, ASTM B159
SPIRAL RETAINING RING	WH-65-S02	302 STAINLESS STEEL ASTM A313

SPECIFICATION

MAX ALLOWABLE WORKING PRESSURE: 7,000 PSI  
 PROOF PRESSURE: 10,500 PSI  
 BURST PRESSURE: > 25,000 PSI  
 NOMINAL CRACK PRESSURE: 5 PSI  
 LEAKAGE: < 10cc PER MIN. @ 50 AND 100 PSI BACK PRESSURE.  
 SUITABLE FOR CRYOGENIC SERVICE -420°F TO 200°F.  
 FLOW COEFFICIENT  $C_v = 3.2$   
 ENGRAVE: GENERANT, P/N MAWP 7000 PSI  
 -420°F TO 200°F AND FLOW ARROW  
 OPTIONS- CLEANED AND BAGGED FOR O<sub>2</sub> SERVICE  
 SPECIFY P/N KCV-500B-X



MATL. AS SPECIFIED	APPROVALS	 <b>1/2" CRYOGENIC CHECK VALVE</b>					
TOLERANCE SCHEDULE UNLESS OTHERWISE SPECIFIED	DRAWN H.H.						
FRACTIONAL: ± 1/64" ANGLES: ± 1/2" XX ± .010 XXX ± .005 CONCENTRICITY: .005 T.I.R. FINISHED SURFACES: 63 Ra BREAK CORNERS/EDGES: .016 MAX.	PROD. M.G.					TITLE:	
	ENG. B.B.					SIZE: A	
	MFG. M.G.	DWG. NO.	KCV-500B	REV. B			
	Q.A. S.K.	SCALE: 1:1	SHEET: 1 OF 1				

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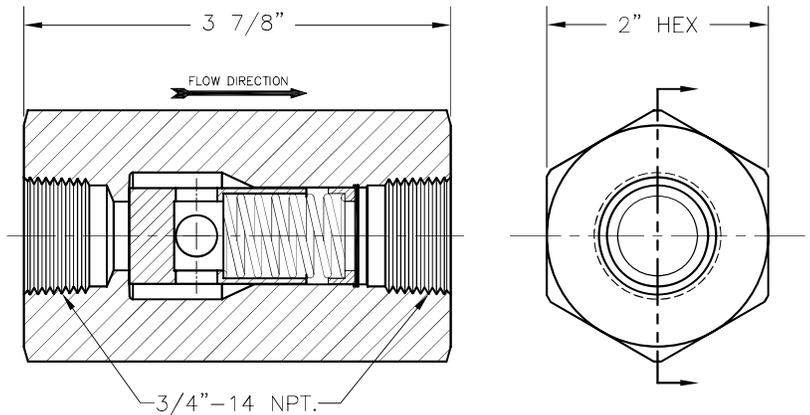
REVISIONS			
DCR	DESCRIPTION	DATE	REV.
0566	NEW RELEASE	1-26-10	A

**MATERIALS OF CONSTRUCTION**

DESCRIPTION	PART NUMBER	MATERIAL
3/4" CRYOGENIC CHECK VALVE, BODY	KCV-1-750	CDA 360 BRASS, ASTM B16
3/4" CRYOGENIC CHECK VALVE, POPPET	KCV-2-750	NEOFLON PCTFE ASTM D1430
3/4" CRYOGENIC CHECK VALVE, RETAINER	KCV-3-750	CDA 360 BRASS, ASTM B16
CRYOGENIC CHECK VALVE SPRING	KCV-4-750	PHOSPHOR BRONZE, ASTM B159
SPIRAL RETAINING RING	WH-87-S02	302 STAINLESS STEEL ASTM A313

**SPECIFICATION**

MAX ALLOWABLE WORKING PRESSURE: 7,000 PSI  
 PROOF PRESSURE: 10,500 PSI  
 BURST PRESSURE: > 25,000 PSI  
 NOMINAL CRACK PRESSURE: 5 PSI  
 LEAKAGE: < 10cc PER MIN. @ 50 AND 100 PSI BACK PRESSURE.  
 SUITABLE FOR CRYOGENIC SERVICE -420°F TO 200°F.  
 FLOW COEFFICIENT Cv = 4.75  
 ENGRAVE: GENERANT, PART NUMBER, MAWP 7000 PSI -420°F TO 200°F AND FLOW ARROW  
 OPTIONS- CLEANED AND BAGGED FOR O<sub>2</sub> SERVICE



MATL:	AS SPECIFIED	APPROVALS	<b>GENERANT</b>		
TOLERANCE SCHEDULE	UNLESS OTHERWISE SPECIFIED	DRAWN			
FRACTIONAL: ± 1/64"	ANGLES: ± 1/2'	PROD.	M.G.	TITLE: 3/4" CRYOGENIC CHECK VALVE	
XX ± .010	XXX ± .005	ENG.	B.B.	SIZE: A	DATE: 5-4-09
CONCENTRICITY: .005 T.I.R.	FINISHED SURFACES: 63 Ra	MFG.	M.G.	DWG. NO.	KCV-750B
BREAK CORNERS/EDGES: .016 MAX.		Q.A.	C.G.	SCALE: .75:1	REV. A
					SHEET: 1 OF 1

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**OPC**  
**POP**  
**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 Leakage

**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)

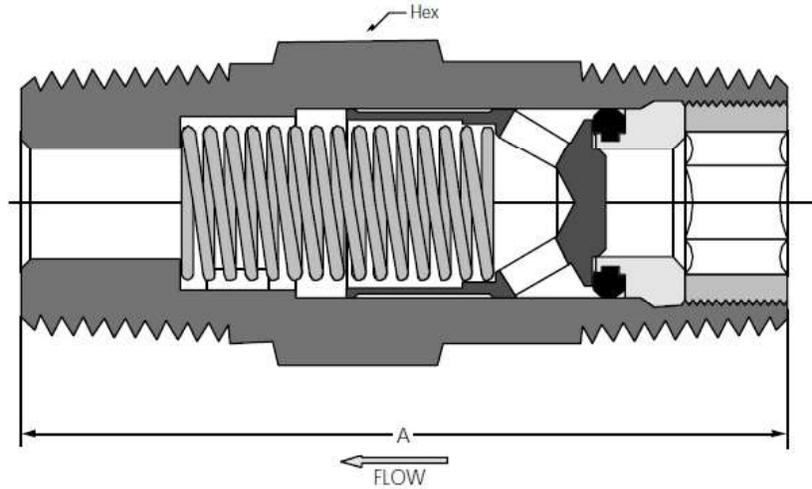
**Materials of Construction**

Component	Valve Body Material	
	Brass	Stainless Steel
Body, Poppet, Seat Insert, Locking Screw <sup>1</sup>	Brass, ASTM B16	316 SS, ASTM A479
Spring	302 SS, ASTM A313	
O-Ring Seal <sup>2</sup>	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"	

\*Only available in Brass

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 (Brass Only)

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)

### OPTIONS

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

Note: Viton™ and Krytox™ 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.



Valves & **BI-Lok** Fittings

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# NEEDLE VALVES

Generant needle valves are designed for accurate flow regulation and dependable shut-off across a wide range of industrial applications. They perform in both standard and demanding service conditions.

---



**SERIES FNV** - Features a forged body with an integral bonnet and PTFE/metallic wafer stem packing for leak-tight performance from vacuum to full operating pressure .

---



Globe  
(Panel Mount Option Shown)

Block

**SERIES 3000** - A bar stock, screwed bonnet needle valve. It's externally adjustable, wear-compensating PTFE stem packing ensures long service life in liquid or gas applications.

---



**SERIES PMV** - Designed for accurate, repeatable control of fluids and gases. It features a one-piece forged body, screwed bonnet, and 3 degree tapered stainless steel stem that seals bubble-tight into an Acetal soft seat.

---

NEEDLE VALVES PRODUCT LITERATURE



**GENERANT**

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**FORGED NEEDLE VALVE**  
**1/8" - 3/8" NPT**  
**1/8" and 1/4" Dual Ferrule Tube**  
**Vacuum - 5000 Psig (345 Bar)**

**FNV**

**SERIES**

**Description**

Series FNV Needle Valves feature a forged body, integral bonnet design with PTFE and metallic wafer stem packing. This provides leak-tite service from vacuum to the maximum operating pressure. Series FNV are available in Straight and Angle configurations, with NPT and Dual Ferrule Tube connections. The industry standard panel mounting allows the FNV to be a cost effective solution to many applications. Standard metal to metal stem and optional Soft Tip stem provide accurate metering over a wide range of pressures. The Series FNV can be ordered Cleaned for Oxygen Service.

**Features**

- Metallic and PTFE Wafer Stem Packing provides low operating torque
- Panel Mounting Standard
- Metal to Metal Standard, Optional Soft Stem Tip (PCTFE)
- Straight or Angle Body Configurations
- Male and Female NPT or Dual Ferrule Tube Connections
- Suitable For Cryogenic Service
- 100% Factory Tested

**Technical Data**

Maximum Operating Pressure @ 100° F  
Brass: 3000 Psig (207 Bar)  
Stainless: 5000 Psig (345 Bar)

**Temperature/Pressure Ratings**

Temperature, °F (°C)	Max. Working Pressure, Psig (Bar)	
	Brass	316 SS
- 320 (-195) to 100 (38)	3000 (207)	5000 (345)
100 (38) to 250 (121)	2200 (151)	4085 (282)
250 (121) to 350 (177)	1470 (101)	3715 (256)
350 (177) to 450 (232)	-	3435 (237)

Temperature Range:

Metal to Metal Stem: -320° to 450° F (-195°C to 232°C)  
PCTFE Soft Stem Tip: -65° to 200°F (-54° to 93°C)  
NOTE: Stem Packing may begin to bind up, making valve adjustment difficult or impossible, at temperatures below -65°F.

Orifice: 0.17" (4.32 mm)

Flow Coefficient (Cv): 0.37

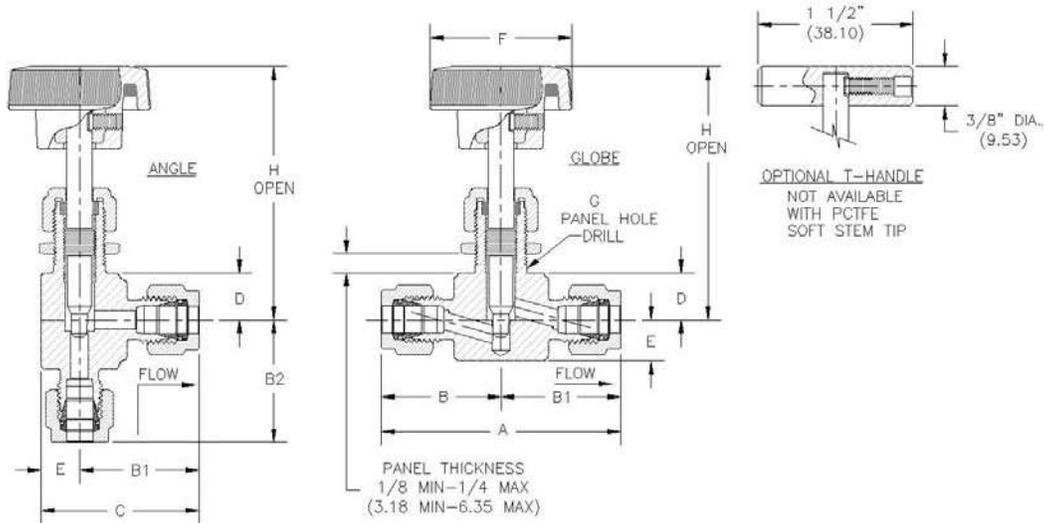
Internal and External Leakage:  
0.1 cc/min max at 1000 PSI (69 bar).

**Materials of Construction**

Component	Brass	Stainless
Valve Body	Brass, ASTM 377	316 SS, ASTM A182
Packing Nut	Brass, ASTM B16	316 SS, ASTM A479
Regulating Stem	316 SS, ASTM A479	
Packing Washers	Brass, ASTM B36	316 SS, ASTM A479
Packing	PTFE, ASTM D1710	
Soft Stem Tip	PCTFE (Neoflon® M400), ASTM D1430	
Panel Nut	Brass, ASTM B16	303 SS, ASTM A582
Round Handle	Nylon 6/6 (Zytel®) with Brass Insert	
"T" Handle	303 SS, ASTM A582	
Handle Set Screw	304 SS, ASTM A182	
Lubricant	Oxygen Compatible Perfluoropolyether (PFPE) Grease	



# FORGED NEEDLE VALVE

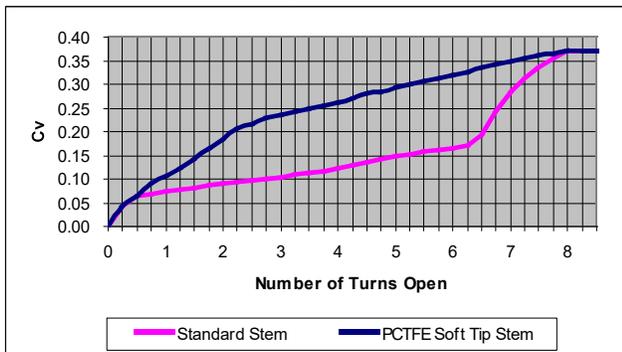


## Dimensional Data

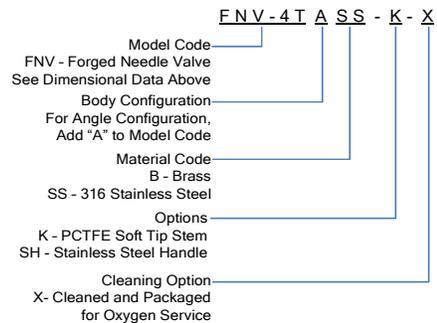
MODEL CODE	PORT CONFIGURATION		Dimension in inches (mm)										
	INLET	OUTLET	A	B	B1	B2	C	D	E	F	G	H (open)	Orifice
FNV-2T	1/8" Tube		2.07 (52.58)	1.04 (26.42)	1.04 (26.42)	1.04 (26.42)	1.42 (36.07)	0.44 (11.18)	0.38 (9.65)	1.34 (34.04)	0.53 (13.46)	2.34 (59.44)	.08 (2.03)
FNV-2F	1/8" Female NPT		1.62 (41.15)	.81 (20.57)	.81 (20.57)	.81 (20.57)	1.19 (30.23)						0.17 (4.32)
FNV-2M	1/8" Male NPT		1.70 (43.18)	.85 (21.59)	.85 (21.59)	.85 (21.59)	1.24 (31.50)						
FNV-2MF	1/8" Male NPT	1/8" Female NPT	1.67 (42.42)		.81 (20.57)	.85 (21.59)	1.19 (30.23)						
FNV-2MT	1/8" Male NPT	1/8" Tube	1.89 (48.01)		1.02 (25.91)		1.41 (35.81)						
FNV-2M4T	1/8" Male NPT	1/4" Tube	2.01 (51.05)		1.15 (29.21)	1.15 (29.21)	1.54 (39.12)						
FNV-4T	1/4" Tube		2.31 (58.67)	1.15 (29.21)	1.06 (26.92)	1.11 (28.19)	1.45 (36.83)						
FNV-4F	1/4" Female NPT		2.12 (53.85)	1.06 (26.92)	1.06 (26.92)	1.02 (25.91)	1.40 (35.56)						
FNV-4M	1/4" Male NPT		2.04 (51.82)	1.02 (25.91)	1.06 (26.92)	1.02 (25.91)	1.45 (36.83)						
FNV-4MF	1/4" Male NPT	1/4" Female NPT	2.08 (52.83)		1.15 (29.21)		1.54 (39.12)						
FNV-4MT	1/4" Male NPT	1/4" Tube	2.17 (55.12)		1.12 (28.45)	1.12 (28.45)	1.51 (38.35)						
FNV-6M	3/8" Male NPT		2.25 (57.15)	1.12 (28.45)	1.12 (28.45)	1.12 (28.45)	1.51 (38.35)						

Note: Dimensions are shown with Bi-Lok nuts finger-tight. Dimensions are in inches (millimeters), for reference only and subject to change. All valve bodies are 3/4" (19 mm) wide. NPT Threads per ASME B1.20.1

## Flow Coefficient (Cv) @ Turns Open



## How To Order



Neoflon® is a registered trademark of Daikin Industries of Japan. Zytel® is a registered trademark 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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**FORGED NEEDLE VALVE, ML STAINLESS**  
**1/4" to 1/2" NPT**  
**3/8" to 3/4" Dual Ferrule Tube Connection**  
**Vacuum - 6000 Psig (414 Bar)**

**FNV ML STAINLESS SERIES**

**Description**

Series FNV ML Stainless Forged Needle Valves feature a forged body, integral bonnet design with spring loaded PTFE and stainless steel wafer stem packing. Valves provide long life, leak-tight service from vacuum to the maximum operating pressure. Series FNV ML Stainless Forged Needle Valves are available in Straight and Angle configurations and with NPT and Dual Ferrule Tube connections. Valves come ready to panel mount and with stainless steel stem tip standard for a metal to metal internal seal but user can specify Soft Tip (PCTFE) stem. Both provide accurate metering over a wide range of pressures. All valves can be ordered Cleaned for Oxygen Service.

**Features**

- Spring Loaded Stainless Steel / PTFE Wafer Stem Packing provides low operating torque and long lasting stem seal.
- Panel Mounting Standard
- Metal to Metal Standard, Optional Soft Stem Tip (PCTFE)
- Straight or Angle Body Configurations
- Male NPT, Female NPT, or Dual Ferrule Tube Connections
- Suitable For Cryogenic Service
- 100% Factory Tested

**Technical Data**

Max Working Pressure (Temperature Dependent):

Temperature	Max. Working Pressure, Psig (Bar)
- 320°F to 300°F (-196°C to 149°C)	6000 (413.7)
300°F to 400°F (149°C to 204°C)	5640 (388.9)
400°F to 450°F (204°C to 232°C)	5480 (377.9)

Usable Temperature per Stem Type:

Metal Stem Tip: -320° to 450° F (-195°C to 232°C)

PCTFE Soft Stem Tip: -65° to 200°F (-54° to 93°C)

NOTE: Stem Packing may begin to bind up, making valve adjustment difficult or impossible, at temperatures below -65°F.

Maximum Flow Coefficient:

Dependent on Orifice Size, see Dimensional Data.

Orifice Size	Cv
0.250"	0.65
0.375"	1.60

Additional Flow Information provided in chart on next page.

Internal and External Leakage:

0.1 cc/min max at 1000 PSI (69 Bar).

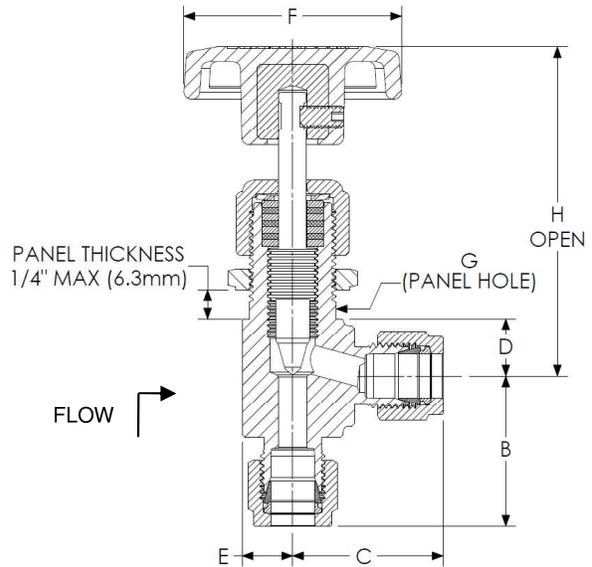
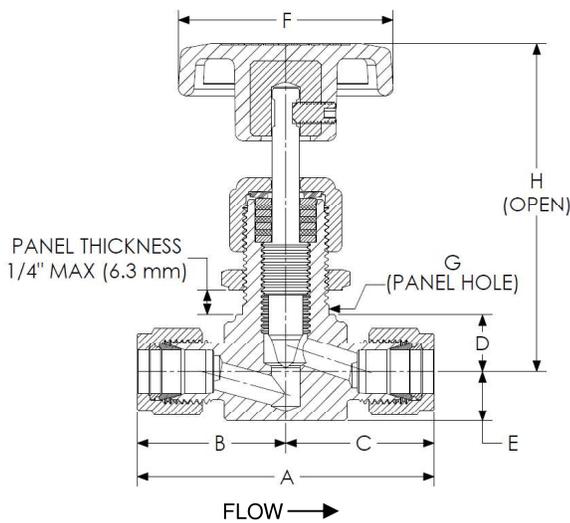
**Materials of Construction**

Component	Material
Valve Body	316 SS, ASTM A182
Packing Nut	316 SS, ASTM A479
Regulating Stem	
Packing Washers	
Packing	PTFE, ASTM D1710
Spring Washer	302 Stainless Steel
Soft Stem Tip	PCTFE, ASTM D1430
Panel Nut	303 SS, ASTM A582
Round Handle*	Anodized Aluminum
T-Handle*	303 SS, ASTM A582
Handle Set Screw	304 SS, ASTM A182
Lubricant	Oxygen Compatible Perfluoropolyether (PFPE) Grease

\*0.250" orifice valves supplied with round handle standard, T-Handle option is available. 0.375" orifice valves supplied with T-Handle standard.



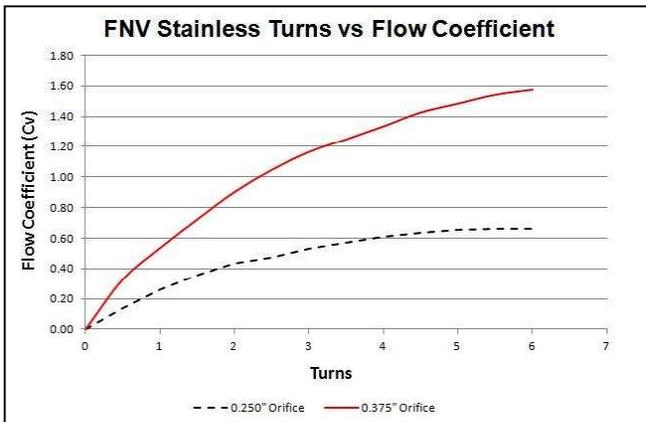
# FORGED NEEDLE VALVE



## Dimensional Data

MODEL CODE	PORT CONFIGURATION		Dimension in inches (mm)									Orifice	Handle
	INLET	OUTLET	A	B	C	D	E	F	G	H			
FNV-6TSSM	3/8" Dual Ferrule Tube		2.58 (65.5)	1.29 (32.8)		0.50 (12.7)	0.44 (11.2)	1.87 (47.5) OR 2.20 (55.9) (SH Option)	0.78 (19.8)	2.86 (72.6)	0.25 (6.4)	Round Knob OR Optional T-Handle (SH Option)	
FNV-8TSSM	1/2" Dual Ferrule Tube		2.76 (70.1)	1.38 (35.1)									
FNV-4FSSM	1/4" NPT Female		2.12 (53.8)	1.06 (26.9)									
FNV-6MSSM	3/8" NPT Male		2.26 (57.4)	1.13 (28.7)									
FNV-4M6TSSM	1/4" NPT Male	3/8" Tube	2.42 (61.5)	1.13 (28.7)	1.29 (32.8)								
FNV-6MTSSM	3/8" NPT Male	3/8" Tube	2.19 (55.6)	1.13 (28.7)	1.06 (26.9)								
FNV-6M8TSSM	3/8" NPT Male	1/2" Tube	2.51 (63.8)	1.13 (28.7)	1.38 (35.1)								
FNV-4MFSSM	1/4" NPT Male	1/4" NPT Female	2.19 (55.6)	1.13 (28.7)	1.06 (26.9)								
FNV-8TSSL	1/2" Dual Ferrule Tube		3.80 (96.5)	1.90 (48.3)		0.75 (19.0)	0.60 (15.2)	3.00 (76.2)	1.03 (26.2)	3.82 (97.0)	0.38 (9.5)	T-Handle	
FNV-12TSSL	3/4" Dual Ferrule Tube												
FNV-6FSSL	3/8" NPT Female		3.00 (76.2)	1.50 (38.1)									
FNV-8FSSL	1/2" NPT Female												
FNV-8MSSL	1/2" NPT Male												
FNV-8MFSSL	1/2" NPT Male	1/2" NPT Female											

Note: Dimensions are 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



## How To Order

**FNV-6TSSM - K - X**

**MODEL CODE** — FNV-\_\_\_ - Forged Needle Valve  
See Dimensional Data Above.  
For Angle Configuration, Insert "A"  
before "SS" material code.  
E.G. "FNV-6TASSM"

**OXYGEN CLEAN**  
X - Cleaned and Packaged  
for Oxygen Service

**OPTIONS**  
K - PCTFE Soft Tip Stem  
SH - T-Handle

**PROPER COMPONENT SELECTION:** When specifying a component, 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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**SCREWED BONNET NEEDLE VALVE**  
**1/8" - 1/2" NPT**  
**Globe and Block Configuration**  
**Brass, 303 and 316 Stainless Steel**

3000

SERIES

**Description**

Series 3000 bar stock, screwed bonnet type needle valves are available in brass, 303 and 316 stainless steel with working pressures to 5000 Psig in 1/8" to 1/2" sizes. The unique, externally adjustable, wear compensating, virgin PTFE stem packing offers long trouble free service life in most liquid or gas applications. A wide variety of options including panel mounting, metal to metal seat, soft stem tip and taper proof cap, the Series 3000 provides economical, quality solutions for the most demanding applications. Valves can be ordered cleaned and packaged for oxygen service.

**Features**

- Adjustable PTFE Stem Packing
- Excellent Gauge Isolation Valve
- Wide variety of options to suit many diverse applications
- Available in 303 SS as an economical alternative to 316 SS (where applicable)
- 100% factory tested

**Technical Data**

Maximum Operating Pressure @ 100° F (38 ° C)  
 Brass: 3000 Psig (207 Bar)  
 Stainless: 5000 Psig (345 Bar)  
 Flow Coefficient  
 Globe (.187" Orifice): 0.40 Cv  
 Block (.312" Orifice): 0.90 Cv

**Temperature Ratings**

Metal to Metal Stem: -320° F to 400°F (-195° C to 204°C)  
 Kel-F Tip Stem: -65° F to 200°F (-54° C to 93°C)

**Leakage**

External leakage – zero.  
 Maximum allowable seat leakage – 0.1 cc/min @ 3000 psig (207 Bar) Nitrogen

**Materials of Construction**

Component	Valve Body Material		
	Brass	303 Stainless	316 Stainless
Valve Body, Bonnet Packing Nut	Brass, ASTM B16	303 SS, ASTM A582	316 SS, ASTM A479
Stem <sup>1</sup>		303 SS, ASTM A582/Kel-F (CTFE)	316 SS, ASTM A479/Kel-F (CTFE)
Handle <sup>2</sup>		Brass, ASTM B16, (Nickel Plated, ASTM 689)	
Set Screw	ANSI B18.3 (Alloy Steel)		
Packing	Virgin TFE		
Panel Nut	Brass, ASTM B16	Brass, ASTM B16, (Nickel Plated, ASTM 689)	
Tamper Proof Cap		N/A	

1. Stainless valves supplied with Kel-F stem, optional metal to metal stem, option code "Q", see ordering information. Block valves not available with soft stem tip option.  
 2. Optional black phenolic knob, option code "M"



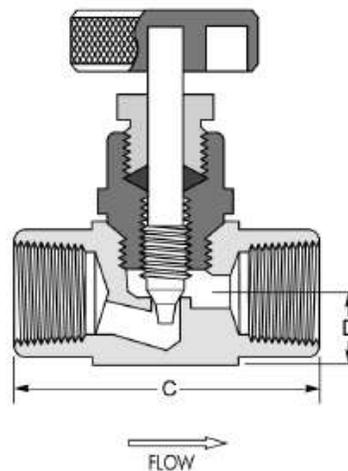
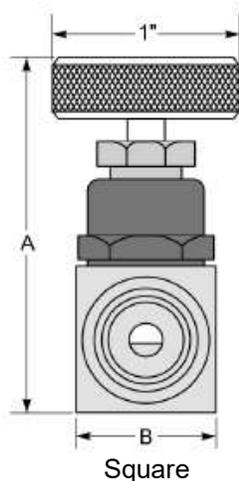
Globe

(Panel Mount Option Shown)



Block

# SCREWED BONNET NEEDLE VALVE



## Dimensional Data

Valve Number	Pipe Size (NPT)	PORT CONFIGURATION		Orifice	Cv	A (Open)	B (Square)	C	D
		INLET	OULET						
1	1/8"	Female		.187"	0.40	2-1/4"	3/4"	1-5/8"	3/8"
2		Male							
3		Male	Female						
4	1/4"	Female						1-13/16"	
5		Male							
6		Male	Female						
7	3/8"	Male		.312"	0.90	2-7/16"	1"	2-3/16"	1/2"
8		Female							
9		Male	Female						
10	1/2"	Female						2-3/16"	
11		Male							
12		Male	Female						

## Ordering Information

3000 - 4SS - X

Part Number

Valve Number	Port Configuration	Part Number
1	1/8" Female x 1/8" Female	3000-1
2	1/8" Male x 1/8" Male	3000-2
3	1/8" Male x 1/8" Female	3000-3
4	1/4" Female x 1/4" Female	3000-4
5	1/4" Male x 1/4" Male	3000-5
6	1/4" Male x 1/4" Female	3000-6
7	3/8" Male x 3/8" Male	3000-7
8	3/8" Female x 3/8" Female	3000-8
9	3/8" Male x 3/8" Female	3000-9
10	1/2" Female x 1/2" Female	3000-10
11	1/2" Male x 1/2" Male	3000-11
12	1/2" Male x 1/2" Female	3000-12

NPT threads per ANSIA/SME B1.20.1. For other thread configurations, consult factory.

Material Code

B - Brass  
 SS - 303 Stainless Steel  
 SSS - 316 Stainless Steel

Options

P - Panel Mount (9/16" Hole, 3/16" Max. Panel Thickness)  
 M - Plastic Knob (1-3/8" Diameter)

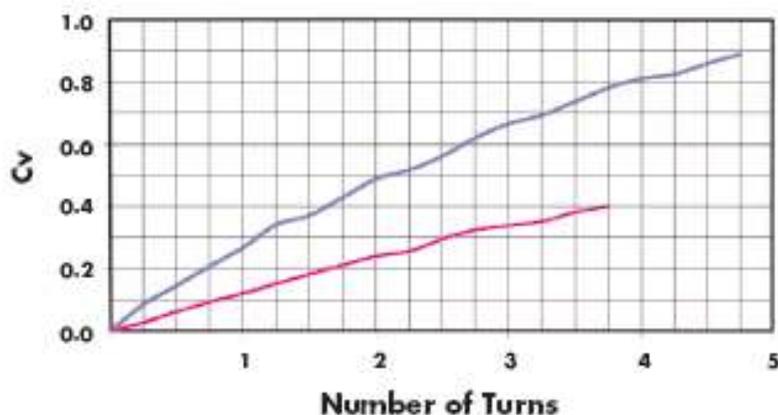
N - Kel-F Soft Stem Tip (Standard with SS valves)  
 T - PTFE Soft Stem Tip

Q - Stainless Steel Stem  
 QN - Stainless Steel Stem with Kel-F Soft Stem Tip

C - Screw Driver Slotted Stem  
 QC - Stainless Steel Screw Driver Slotted Stem  
 X - Cleaned and Packaged for Oxygen Service

Shaded Options are available for Globe Valves Only (1-7)

## Flow Coefficient (Cv) @ Turns Open



3/16" Orifice, Valves 1-7

5/16" Orifice, Valves 8-12

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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**PRECISION METERING VALVE**  
**1/8" and 1/4" NPT**  
**1/8" and 1/4" Dual Ferrule Tube**  
**Vacuum - 1000 Psig (68.9 Bar)**

PMV  
 P

SERIES

**Description**

Series PMV Precision Metering Valves are designed for accurate and repeatable flow control of fluids and gases. Valves feature a one-piece forged body and a screwed bonnet design. Stainless steel 3 degree tapered stem seals bubble tight into an Acetal soft seat. With panel mounting and lockable adjustment standard, these valves offer cost effective solutions for precise metering.

**Features**

- Straight or Angle Flow Patterns
- Forged Body Brass or Stainless Steel Construction
- NPT or Dual Ferrule Tube Connections
- Unique Soft Seat Provides Positive Shut Off
- Wear Compensating Knob Adjustment
- Locking Screw Prevents Inadvertent Flow Changes
- Stem Threads are isolated from System Fluid
- 100% Factory Tested for Leakage

**Technical Data**

Maximum Operating Pressure @ 100° F  
 Brass and Stainless: 1000 Psig (68.9 Bar)  
 Stem Taper: 3 Degree (included angle)  
 Stem Pitch: 40 Threads per inch  
 Orifice: 0.055" (1.4 mm)  
 Flow Coefficient (Cv): 0.04  
 Panel Mounting  
 Panel Mount Hole: 9/16" (14.3 mm)  
 Max Panel Mount Thickness: 1/8" (3.3 mm)  
 Factory Preset for zero flow at positive stop with 150 Psig (10.34 Bar)  
 Temperature Range:  
 Seal Dependent (See How To Order)

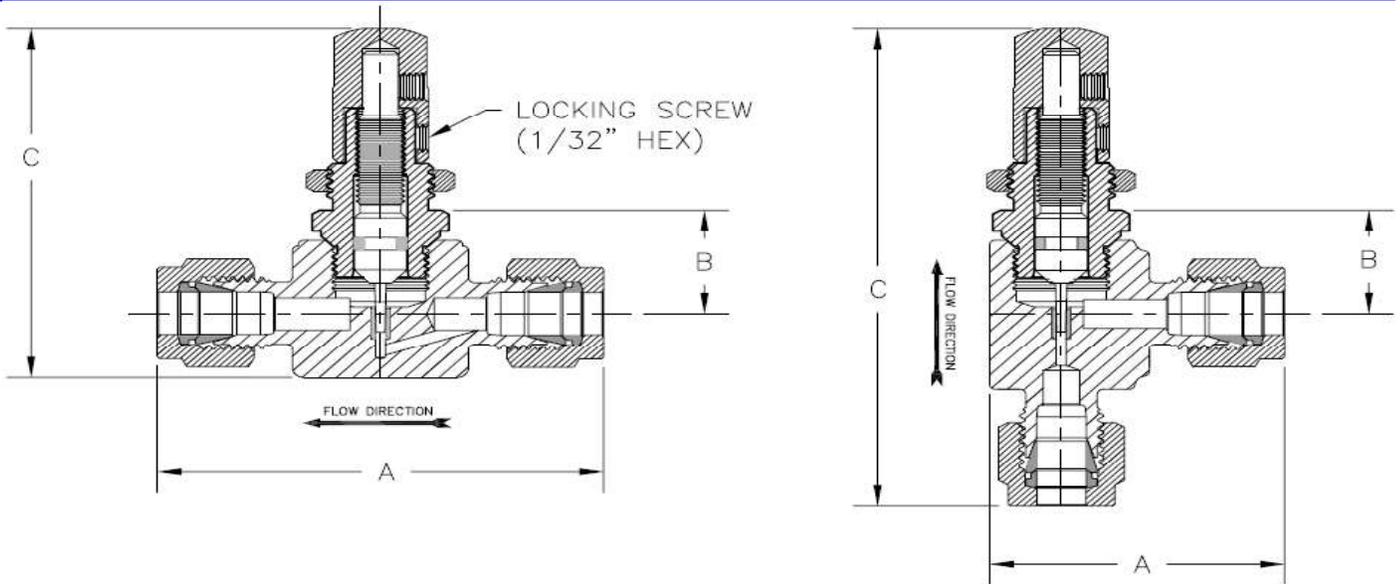
**Materials of Construction**

Component	Valve Body Material	
	Brass	Stainless Steel
Body	Forged Brass, ASTM 377	Forged 316 SS, ASTM A182
Bonnet	Brass, ASTM B16, Nickel Plated	316 SS, ASTM A479
Stem	316 SS, ASTM A479	
Knob and Panel Nut	Brass, ASTM B16, Nickel Plated	
Seat Insert	Acetal CoPolymer, ASTM D4181	
O-Ring	Buna-N, Neoprene, Ethylene Propylene or Viton®	
Set Screw (2)	18-8 SS, ASTM A182	

Nickel Plating per ASTM B689  
 Stem Threads and O-Rings are lubricated with Krytox®



# PRECISION METERING VALVE

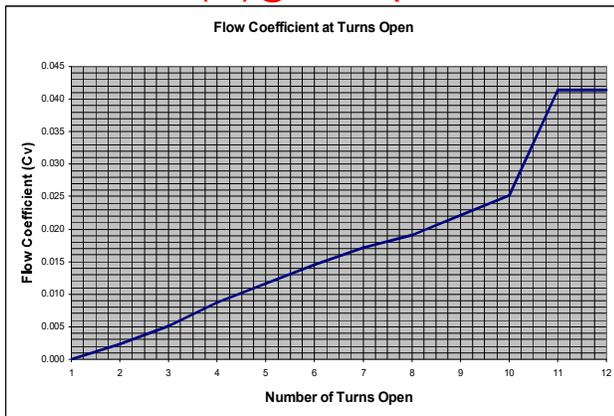


## Dimensional Data

Model Code	Port Configuration			Dimensions in inches (mm)				
	Inlet	Outlet	Configuration	Orifice	OAL "A"	Panel To C/L "B"	Height "C"	Knob Diameter
PMV-2T	1/8" Tube		Straight	0.055 (1.4)	2.07 (52.58)	.62 (15.75)	2.10 (53.34)	0.50 (12.7)
PMV-4T	1/4" Tube				2.31 (58.70)		2.10 (53.34)	
PMV-2TA	1/8" Tube		Angle		1.43 (36.20)		2.75 (69.72)	
PMV-4TA	1/4" Tube				1.53 (38.74)		2.89 (73.30)	
PMV-2F	1/8" Female NPT		Straight		1.63 (41.28)		2.10 (53.34)	
PMV-2FA			Angle		1.19 (30.15)		2.50 (63.50)	
PMV-2PTA	1/8" Male NPT	1/8" Tube	Angle		1.43 (36.20)		2.53 (64.14)	
PMV-2P	1/8" Male NPT		Straight		1.63 (41.28)		2.10 (53.34)	
PMV-2PA			Angle		1.19 (30.15)		2.53 (64.14)	
PMV-4P	1/4" Male NPT		Straight		1.96 (49.78)		2.10 (53.34)	
PMV-4PA			Angle		1.35 (34.37)		2.71 (68.83)	

**Note:** Dimensions shown with Bi-Lok nuts finger-tight. Dimensions are in inches (millimeters), for reference only and subject to change. All valve bodies are 3/4" (19 mm) wide. NPT Threads per ASME B1.20.1

## Flow Coefficient (Cv) @ Turns Open



**Note:** Valves may require up to one full turn before flow is evident.

## How To Order

PMV - 4 T SS - V - X

Model Code PMV - 4 T SS - V - X  
 PMV - Precision Metering Valve  
 See Dimensional Data Above

Material Code SS - 316 Stainless Steel  
 B - Brass

Seal Material V - Viton  
 B - Buna-N, -40° F to 180° F (-40° C to 82° C)  
 V - Viton, -10° F to 180° F (-23° C to 82° C)  
 N - Neoprene, -40° F to 180° F (-40° C to 82° C)  
 EP - Ethylene Propylene, -50° F to 180° F (-46° C to 82° C)

Cleaning Option X  
 X - Cleaned and Packaged for Oxygen Service

Viton® and Krytox® are registered trade marks 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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# SERIES SDC

The SDC Series connection system is supplied for installation into the ports of most gas use, vent and fill valves on a cryogenic liquid cylinder. A one-piece assembly consisting of a CGA fitting/clutch mechanism permanently mounted in a stainless steel locking bracket.

---



- 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 & packaged for Oxygen service
- Optional integral anti-back-flow check valve
- OEM endorsed

---

SERIES SDC PRODUCT LITERATURE



**GENERANT**

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**SDC**  
**SERIES**

**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**

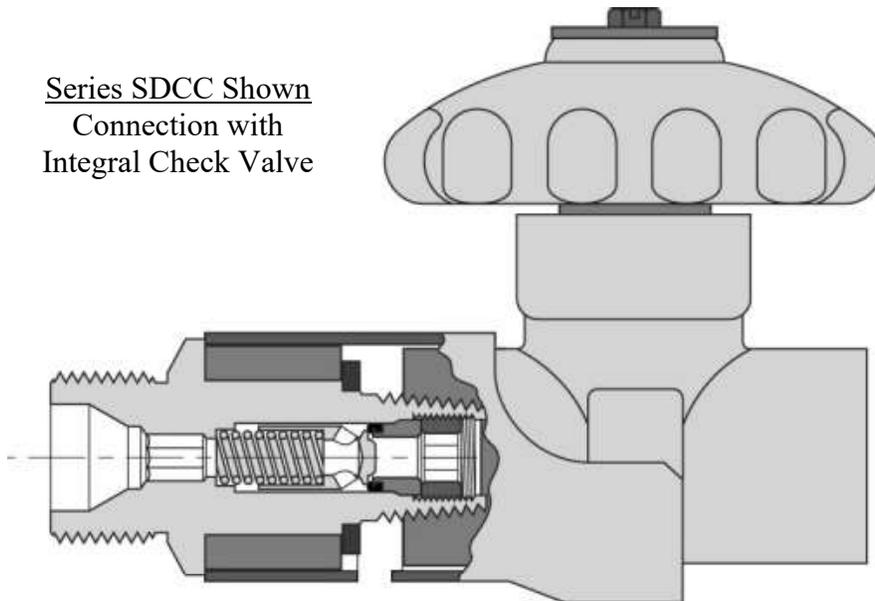
- Easily installs on most existing threaded cylinder valves using standard hex wrench.
- NPT Male connection supplied with factory applied PTFE thread sealant tape
- Suitable for both Industrial and Medical Applications
- CGA connections manufactured to industry standards
- Zero external leakage
- Cleaned 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.

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.



Valves & *BI-Lok* Fittings

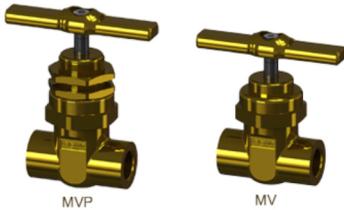
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# CONTROL VALVES

Generant control valves are designed for precise, reliable regulation of flow and pressure in a wide range of applications. Ideal for use in instrumentation, process control and specialty gas systems.

---



**SERIES MV** - Designed specifically to address problems associated with other devices currently used in gas fill plants. Provides consistent, low operating torque throughout the entire operating pressure range of the valve.

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**SERIES MVA** - Pneumatically actuated version of Series MV utilizing a minimum of 85 Psi actuation pressure to operate the valve. Offered in both normally open and normally closed configurations.

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**SERIES OFS** - Bubble-tight, zero clearance fittings used in gas fill plant manifolds up to 6000 Psi. Constructed of high strength naval brass for high pressure service to allow for continuous remakes of the face seal connection.

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CONTROL VALVES (cont.)



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# CONTROL VALVES (cont.)

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**SERIES 4000** - Quick opening valve provides fast, in-line ON/OFF control, ideal for instrumentation control panel applications. Full-open to full-closed with 60 degree turn. Available in 2-way and 3-way configurations.

---



**SERIES SOV** - Low-torque, quarter-turn control with positive shut-off of forward flow up to 3000 Psi. Featuring a one-piece body and machined, metallic, replaceable plug stem.

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CONTROL VALVE PRODUCT LITERATURE



**GENERANT**

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MV

SERIES

**Description**

The Series MV High Pressure Gas Control Valve is optimized for the demanding requirements of Gas Cylinder Fill Plants, Manifold, and Piping System applications. The High Pressure Oxygen Service Valve Configuration (Material Code “C”) was third party tested per ISO 7291 (O2 Surge) and ASTM G175 (Promoted Ignition). The valve is also available with a PCTFE seal (Material Code “K”) for positive sealing in non-oxygen applications. The Series MV is available in a variety of porting and mounting configurations. The panel mount configuration is supplied with two panel nuts for easy retro-fitting to existing panel mount installations.

**Features**

- **OXYGEN SAFE:** Copper Valve (Material Code “C”) Configuration Third Party Tested per ISO 7291 (O2 Surge) and ASTM G175 (Promoted Ignition)
- **LOW TORQUE:** Needle Thrust Bearing Maintains Low Operating Torque (< 10 in-lbs) Throughout Full Pressure Range
- **FLOW CONTROL:** Unique Valve Geometry Allows User to Meter Flow on Initial Opening and Minimizes Initial Pressure Surges
- **LONG SERVICE LIFE:** Optimized Material and Component Selection for Long Service Life; Non-Rotating Poppet and Non-Rising Stem Maintain Seat and Seal Integrity, Needle Thrust Bearing Efficiently Minimizes Wear Effects of Mechanical Load
- **FAST OPENING:** 2.5 turns from Closed to Full-Open
- **HIGH FLOW:** Large Orifices and Internal Flow Paths for Maximum Flow Efficiency
- **FIELD RE-BUILDABLE:** All Valves are Fully Field Re-Buildable
- **ADAPTABLE TO EXISTING INSTALLATIONS:** Panel mount version supplied with two panel nuts for easy retro-fitting to existing installations

**Technical Data**

- Operating Pressure Range: Vacuum to 5500 Psig (380 Bar) @ 70°F (MAWP Rating per ASME BPVC Section VIII Division 1)  
Note: Valves with NPSM Connections (1” - 11.5 NPSM) are de-rated to 3500 Psig (242 bar) due to the connection’s maximum pressure rating.
- Operating Temperature Range: -40° to 165°F (-40° to 74°C)
- Flow Coefficient: C<sub>v</sub> is 2.5 for all valve configurations
- Valves are 100% Factory Tested for Internal and External Leakage  
No bubbles visible for 10 seconds with N2 gas at 2500 PSI.

**Materials of Construction**

Component	Material Code	
	“C” (Copper)	“K” (PCTFE)
Body	CW617N Forged Brass, EN 12420	
Handle, Bonnet, Poppet, Panel Nut, Inner Bonnet, Washer	Brass, ASTM B16	
Needle Bearing, Bearing Washer (Both Non-Wetted)	ANSI 52100 Bearing Steel 58-62 HRc	
Stem Seal	FKM	Molythane
Poppet Insert (Seal)	Copper, ASTM B152	PCTFE, ASTM D1430
Replaceable Seat and Stem	Monel® 400	303 SS
O-Rings (2)	FKM	
Replaceable Seat Crush Washer	Copper, ASTM B152	
Seal Washer, Backup Rings (2)	PTFE, ASTM D1710	
Handle Nut and Washer	Zinc Plated Steel	

Valve is lubricated with Dupont Krytox®.  
 Monel® is a registered trademark of Special Metals Corporation.



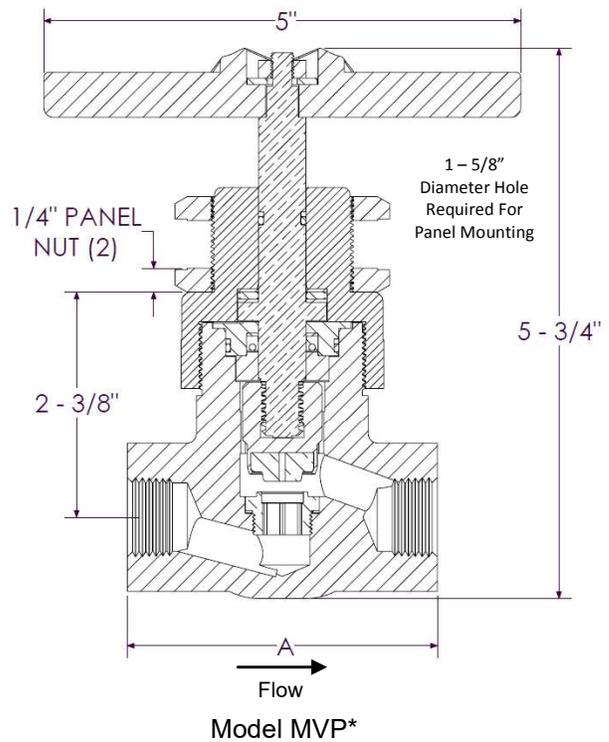
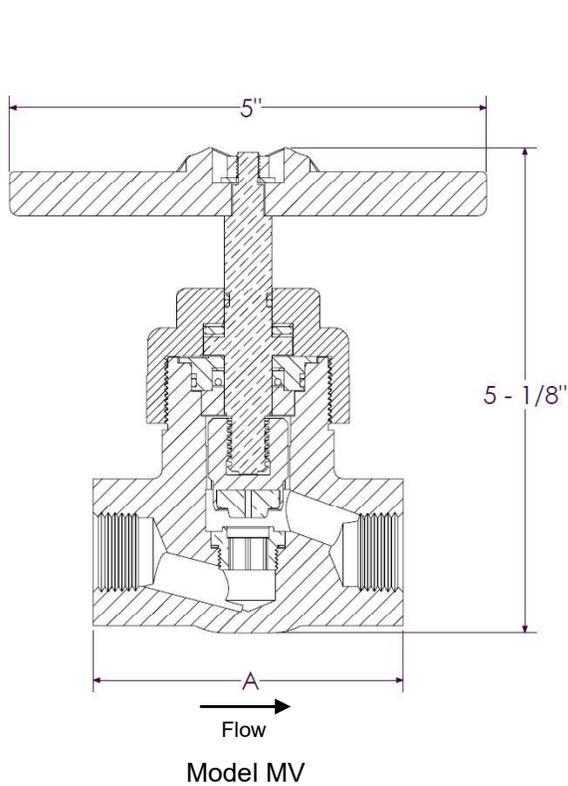
**Model MV**

Series MV Copper Seal Valves now feature **45% more** poppet thread engagement to resist wear and provide a longer service life.



**Model MVP**

# HIGH PRESSURE GAS CONTROL VALVE



\*Model MVP Valves are supplied with two panel nuts to allow for variable depth panel mounting (back of panel to port centerline: 2-3/8" to 3").

## Dimensional Data

PORT SIZE	PORT CONFIGURATION	Dimensions: inches (millimeters)	
		Valve Orifice	Dimension A
4F	1/2" NPT Female	0.406 (10.3)	3.25 (82.5)
6F	3/4" NPT Female		
8NR	1" 11.5 NPSM Right Hand		3.80 (96.5)
8NL	1" 11.5 NPSM Left Hand		
2FS	1-3/8"-12 O-Ring Seal Union		

**Notes:** Dimensions are in inches (millimeters), for reference only and subject to change. Restrictions in inlet or outlet piping may reduce flow. NPT Threads per ASME B1.20.1.

## How To Order

**MV - 8NR - C**

**SERIES**

MV - High Pressure Gas Control Valve  
MVP - Panel Mount High Pressure Gas Control Valve

**PORT SIZE AND CONFIGURATION**

4F - 1/2" NPT Female Ports  
6F - 3/4" NPT Female Ports  
8NR - 1" - 11.5 NPSM Right Hand Ports  
8NL - 1" - 11.5 NPSM Left Hand Ports  
2FS - 1-3/8"-12 O-Ring Seal Union\*

\*-Compatible with Soft-Seal™, O-Seal™, Tech-O-Seal™

**MATERIAL CODE**

C - Copper (Cleaned for O<sub>2</sub> Service, Standard)  
K - PCTFE

Generant does not recommend the use of PCTFE Material Code in Oxygen Service.

## Repair Kits

Kits can be ordered as assembled cartridges that simply plug into the valve body or as loose replacement parts. Repair Kit MV2-C may require a replacement stem. Our "Series MV Repair Kit Selection Guide" provides detailed information on how to specify and order repair kits.

Part Number	Description
MV2-C	Copper Seal Repair Kit
MV-K	PCTFE Seal Repair Kit
MVP2-CART-C	Copper Panel Mount Repair Cartridge
MV2-CART-C	Copper Non-Panel Mount Repair Cartridge
MVP-CART-K	PCTFE Panel Mount Repair Cartridge
MV-CART-K	PCTFE Non-Panel Mount Repair Cartridge

Repair Kits come with Replacement Seat, Poppet, and all seals. Repair Cartridges come already assembled with all repair parts.

**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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# MVA

### Description

The Series MVA Pneumatically Actuated High Pressure Gas Control Valve is optimized for the demanding requirements of Automated Gas Cylinder Fill Plants, Manifold, and Piping System applications. The High Pressure Oxygen Service Valve Configuration (Seal Option C) was third party tested per ISO 7291 (O2 Surge) and ASTM G175 (Promoted Ignition). The valve is also available with a PCTFE seal (Seal Option K) for positive sealing in non-oxygen applications. Series MVA valves can be specified Normally Open (-NO) or Normally Closed (-NC) and are available in a variety of porting configurations. Normally closed version seals bubble-tight up to an inlet pressure of 5500 PSI with only 85 PSI required to open valve to full orifice.

### Features

- **OXYGEN SAFE:** Copper Valve (Seal Option C) Configuration Third Party Tested per ISO 7291 (O2 Surge) and ASTM G175 (Promoted Ignition)
- **LOW ACTUATION PRESSURE:** 85 PSI Required to Actuate Valve
- **FLOW CONTROL:** Unique Valve Geometry Allows User to Meter Flow on Initial Opening and Minimizes Initial Pressure Surges
- **LONG SERVICE LIFE:** Extensive Life Cycle Testing Performed to Ensure Reliable Performance
- **HIGH FLOW:** Large Orifices and Internal Flow Paths for Maximum Flow Efficiency
- **FIELD RE-BUILDABLE:** All Seat / Seal Configurations Fully Field Re-Buildable

### Technical Data

- Valve Operating Pressure: Vacuum to 5500 Psig (380 Bar) @ 70°F (MAWP Rating per ASME BPVC Section VIII Division 1)  
Note: Valves with NPSM Connections (1" - 11.5 NPSM) are de-rated to 3500 Psig (242 bar) due to the connection's maximum pressure rating.
- Cylinder Operating Pressure: 85-125 PSIG
- Operating Temperature Range: -40° to 165°F (-40° to 74°C)
- Flow Coefficient: C<sub>v</sub> is 2.5 for all valve configurations
- Valves are 100% Factory Tested for Internal and External Leakage  
No bubbles visible for 10 seconds with N2 gas at 2500 PSI.

### Materials of Construction

Component	Material	
	Copper Seat	PCTFE Seat
Body	CW617N Forged Brass, EN 12420	
Bonnet, Poppet, Panel Nut, Inner Bonnet, Washer	Brass, ASTM B16	
Valve Adapter (Non-Wetted)	303 SS, ASTM A582	
Stem Seal	FKM	Molythane
Poppet Insert (Seal)	Copper, ASTM B152	PCTFE, ASTM D1430
Replaceable Seat and Stem	Monel® 400	303 SS
O'Rings (2)	FKM	
Replaceable Seat Crush Washer	Copper, ASTM B152	
Seal Washer, Backup Rings (2)	PTFE, ASTM D1710	
Mounting Bracket	A500 Structural Steel, Zinc Plated	
Valve Actuator	Anodized Aluminum, Stainless Steel, Nitrile Seals	
Mounting Nuts and Washers	Zinc Plated Steel	

Valve is lubricated with Dupont Krytox®.  
 Monel® is a registered trademark of Special Metals Corporation.



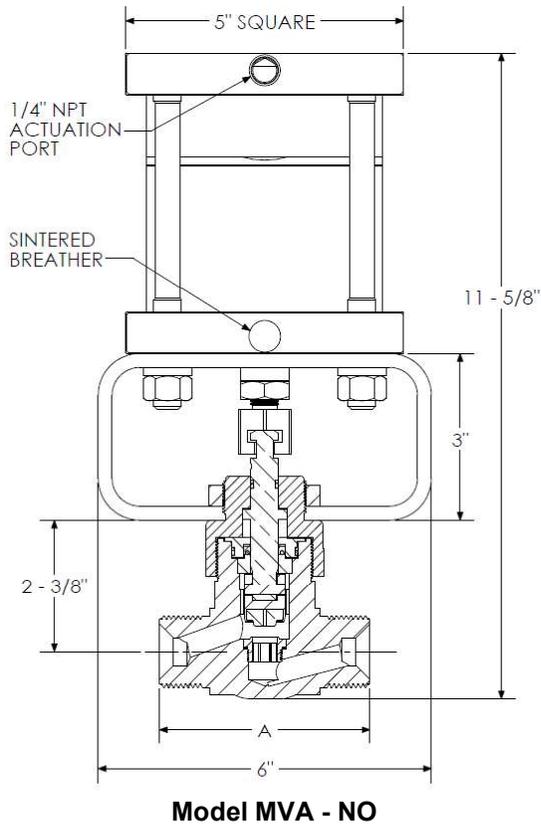
MVA - NC



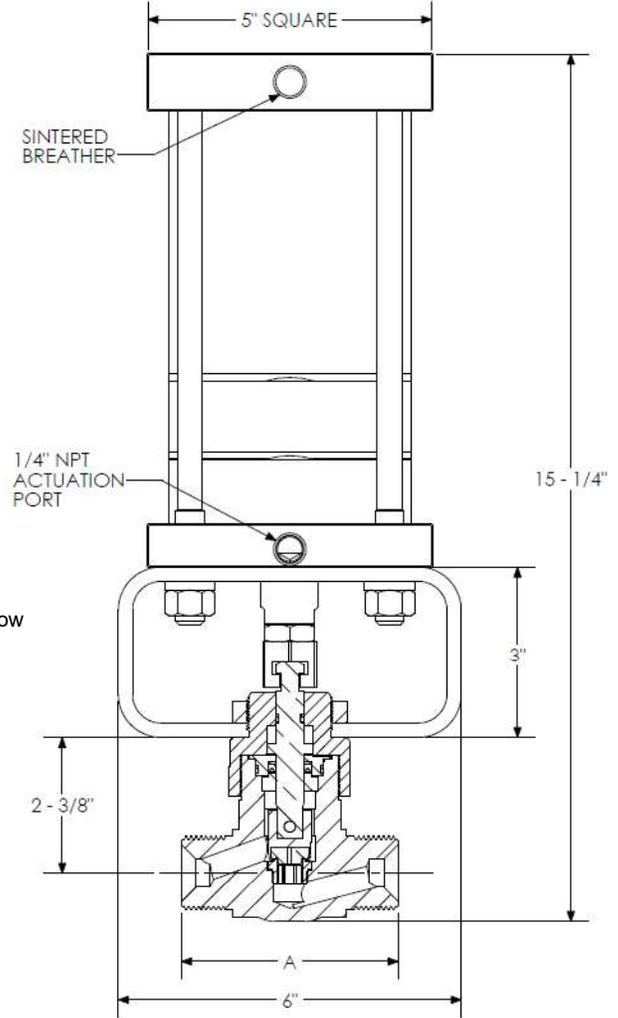
MVA - NO

# SERIES

# PNEUMATICALLY ACTUATED HIGH PRESSURE GAS CONTROL VALVE



**Model MVA - NO**



**Model MVA - NC**

**CAUTION:** Valve Actuators are Spring Loaded Devices and are extremely dangerous if improperly disassembled.

## Dimensional Data

MODEL CODE	PORT CONFIGURATION	Dimensions: inches (mm)	
		Valve Orifice	Dim A
MVA-4F	1/2" NPT Female	0.406 (10.3)	3.25 (82.5)
MVA-6F	3/4" NPT Female		
MVA-8NR	1" 11.5 NPSM Right Hand		3.80 (96.5)
MVA-8NL	1" 11.5 NPSM Left Hand		
MVA-2FS	1-3/8"-12 O'Ring Seal Union		

**Notes:** Dimensions are in inches (millimeters), for reference only and subject to change. Restrictions in inlet or outlet piping may reduce flow. NPT Threads per ASME B1.20.1.

## How To Order

**MVA - 8NR - C - NC**

### SERIES

MVA - Pneumatically Actuated High Pressure Gas Control Valve

### PORT SIZE AND CONFIGURATION

4F - 1/2" NPT Female Ports  
 6F - 3/4" NPT Female Ports  
 8NR - 1" - 11.5 NPSM Right Hand Ports  
 8NL - 1" - 11.5 NPSM Left Hand Ports  
 2FS - 1-3/8"-12 O'Ring Seal Union\*

\*-Compatible with Soft-Seal™, O-Seal™, Tech-O-Seal™

### ACTUATOR OPTION

NC - Normally Closed  
 NO - Normally Open

### MATERIAL CODE

C - Copper (Cleaned for O<sub>2</sub> Service, Standard)  
 K - PCTFE

**Generant does not recommend the use of PCTFE Material Code in Oxygen Service.**

## Repair Kits

Seal Material	Specify	Kit Includes
Copper (Cleaned for O <sub>2</sub> Service, Standard)	MVA-C	Copper Poppet Assembly, Poppet Pin, Replaceable Seat Insert, Replaceable Crush Washer, U-Cup Stem Seal, Teflon Backup Washer, O'rings (2) and Teflon Backup Rings(2)
PCTFE	MVA-K	PCTFE Poppet Assembly, Poppet Pin, Replaceable Seat Insert, Replaceable Crush Washer, U-Cup Stem Seal, Teflon Backup Washer, O'rings (2) and Teflon Backup Rings(2)

**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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**O'RING FACE SEAL FITTINGS**  
**-2 and -3 Face Seal Connections**  
**1/2" NPT and Pipe Connections**  
**Vacuum - 6000 Psig (413.7 Bar)**

**S**  
**F**  
**O**  
**SERIES**

**Description**

Series OFS O'Ring Face Seal Fittings are bubble tight, zero clearance fittings designed specifically for use in gas fill plant manifolds up to 6,000 PSI. The fittings are constructed of high strength naval brass for high pressure service and to allow for continuous remakes of the Face Seal connection. The fittings use an o'ring face seal connection to provide continuous leak-free operation through a wide range of pressure and temperature conditions. The zero-clearance fitting design allows for easy removal and replacement of system components without the need to disassemble other connections on the line.

**Features**

- O'Ring Face Seal for reliable, leak-free connection
- Naval Brass construction
- Various Port Configurations offered
- Zero-clearance design for easy system maintenance
- Rated to 6,000 PSI
- Supplied Cleaned For Oxygen Service
- Compatible with other O'Ring Face Seal Type Fittings

**Technical Data**

Maximum Operating Pressure @ 100° F: 6,000 PSI

Temperature Rating: -65° to 375°F (-54° to 190°C)

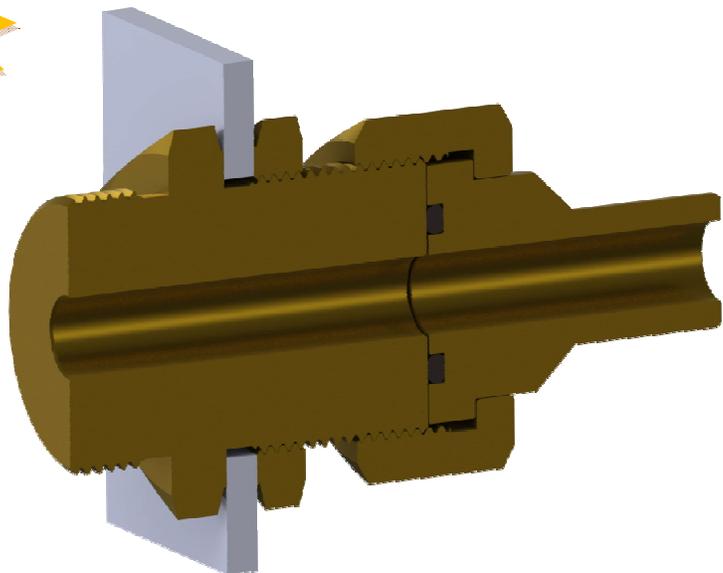
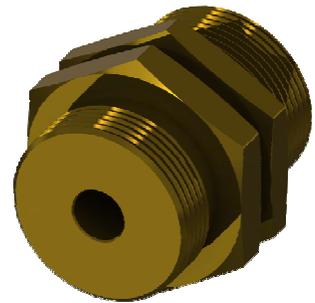
Seal Material Dependent, see next page

Leakage: < 0.01 SCCM Helium at 6,000 PSI

**Materials of Construction**

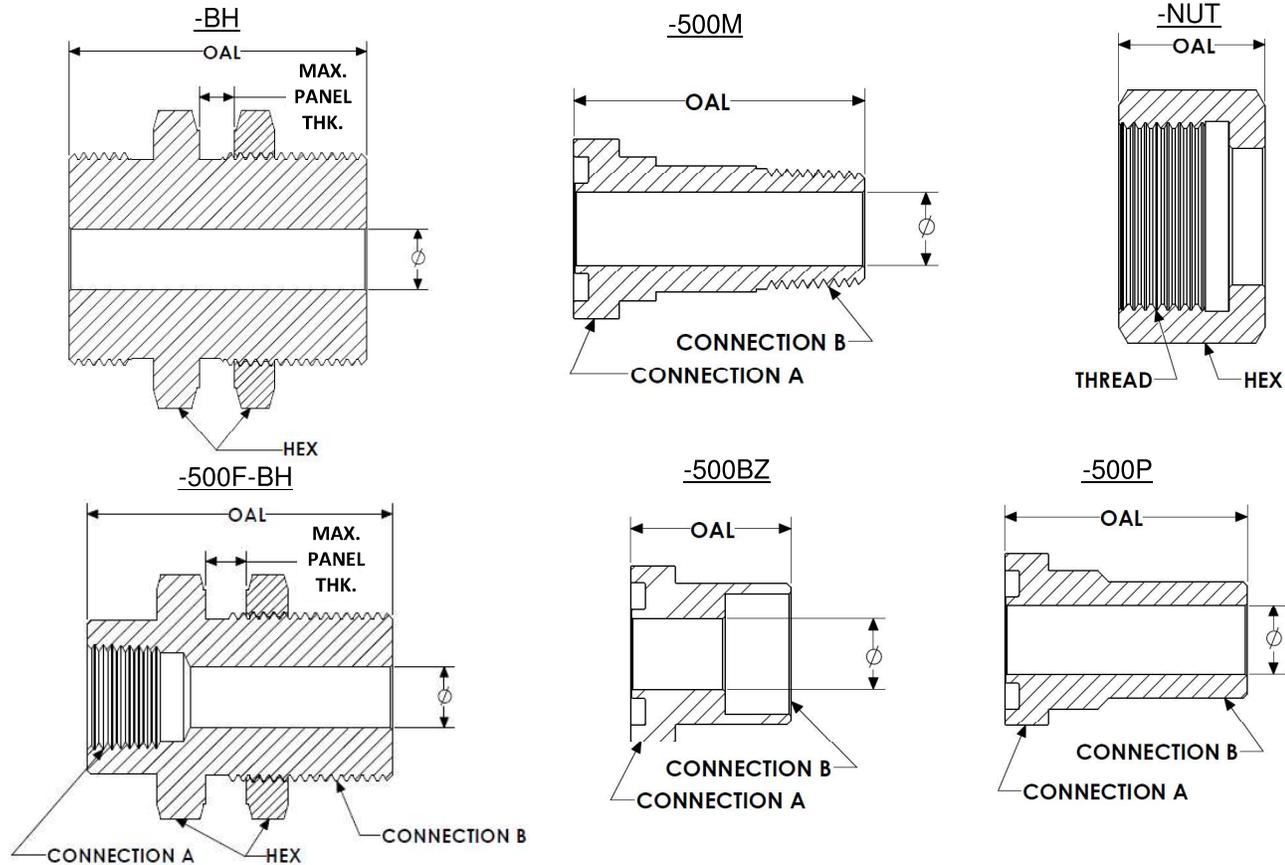
All fittings constructed of Half-Hard Naval Brass, ASTM B21 (other materials available, consult factory).

Tail-pieces are supplied with o'ring installed in groove. The following o'ring materials can be specified (See How to Order): EPDM, Viton, Buna-N, Neoprene.



# O'RING FACE SEAL FITTINGS

## Dimensional Information / How to Order



Part Number	Overall Length (OAL)	Connection A	Connection B	Orifice Diameter	Thread	Hex Size	Max. Panel Thickness
OFS-2-500M*	2"	-2 Face Seal	1/2" NPT Male	0.500"	N/A	N/A	N/A
OFS-2-500P*	1-3/4"	-2 Face Seal	0.840" Diameter Pipe	0.500"	N/A	N/A	N/A
OFS-3-500P*	2"	-3 Face Seal	0.840" Diameter Pipe	0.500"	N/A	N/A	N/A
OFS-3-500BZ*	1-1/8"	-3 Face Seal	0.855" Diam. Socket	0.500"	N/A	N/A	N/A
OFS-2-NUT	1-1/16"	N/A	N/A	N/A	1-3/8" – 12 UNF 2B	1-5/8"	N/A
OFS-3-NUT	1-1/16"	N/A	N/A	N/A	1-3/4" – 12 UN 2B	2"	N/A
OFS-3-BH**	2-7/16"	-3 Face Seal	-3 FS (Panel Mount)	0.500"	1-3/4" – 12 UN 2A	2-1/8"	1/2"
OFS-2-500F-BH**	2-15/32"	1/2" NPT Female	-2 FS (Panel Mount)	0.500"	1-3/8" – 12 UNF 2A	1-3/4"	5/16"

\* Denotes tail-piece. Specify o'ring material after part number using material codes below (e.g. OFS-2-500M-EP)

\*\* Bulkhead fittings come with bulkhead nut installed (part number OFS-2-BH-NUT or OFS-3-BH-NUT)

OTHER PORT CONFIGURATIONS AVAILABLE, CONSULT FACTORY.

## Temperature Ratings (Seal Material Dependent)

Seal Material	Material Code	Temperature Rating
EPDM	EP	-65° to 300°F (-54° to 148°C)
Viton	V	-10° to 375°F (-23° to 190°C)
Buna-N**	B	-40° to 250°F (-40° to 121°C)
Neoprene	N	-40° to 300°F (-40° to 148°C)

\* Other seal materials available, consult factory.

\*\* Not recommended for Oxygen Service.

## O'Ring Sizing Information

Connection Size	O'Ring Size
-2	210
-3	212

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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**4000**  
**SERIES**

**Description**

The Series 4000 Quick Opening Valve functions as in-line on-off switch particularly suited to applications in Instrumentation and Control Panels to open and close circuits or isolate gauges. The unique design of these valves permits full-closed to full-open operation quickly with a 60° turn of the knob. Standard units will detent in the selected position or, if desired, can be spring loaded (Option R) to return to the off position when released. The Series 4000 is offered in 2-way and 3-way designs. The 2-way design is a snap action on-off control, while the 3-way design offers the same snap on-off action while venting the downstream pressure to atmosphere when in the off position. These valves are compact in size and can be utilized for in-line and panel mount applications. Valves can be ordered Cleaned and Packaged for Oxygen service.



**Model Q-44**

**Technical Data**

- Max Operating Pressure: 125 Psig (8.6 Bar)
- Temperature Range: -20°F to 300°F (-29°C to 149°C)
- Flow Coefficient (C<sub>v</sub>): 0.5
- 2-Way or 3-Way (vents downstream to atmosphere thru 3/32" orifice) Configurations
- 100% Factory Tested for Bubble Tight Shut Off
- Optional Spring Return to Close
- Standard Panel Mount:
  - Supplied with "Off – On" Aluminum Indicator Plate (1/16" thick, 1-5/8" diameter) and Panel Nut
  - 5/8" Panel Hole
  - 5/32" Maximum Panel Thickness



**Model Q-45**

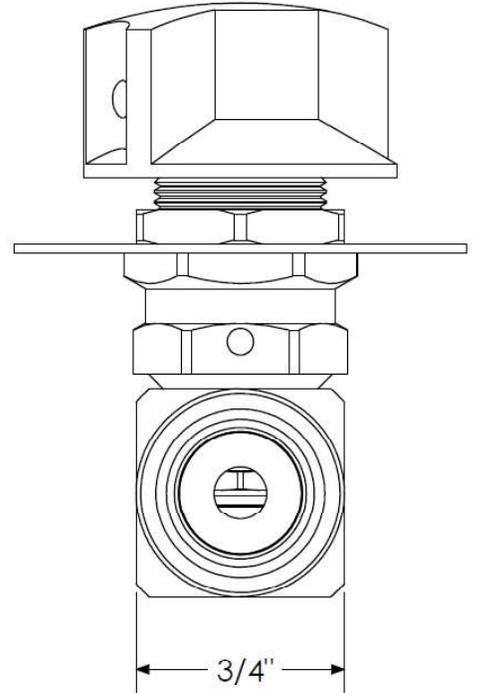
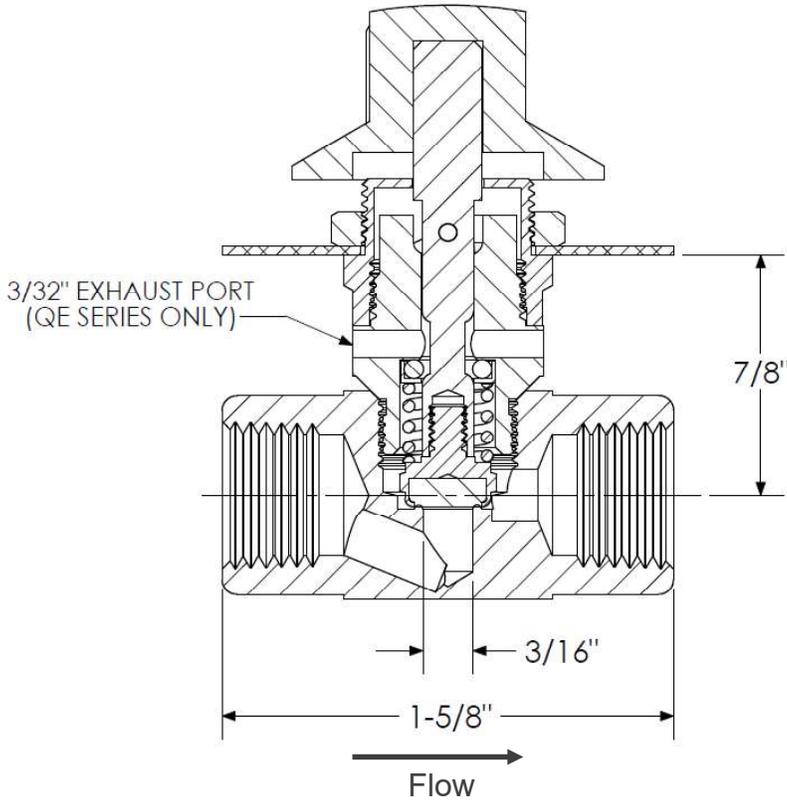
**Materials of Construction**

Component	Material
Body, Stem, Housing, Bonnet, Valve Seat, Valve Cup, Rollers, Locknut	Brass, ASTM B16
Knob	Thermosetting Phenolic
Indicator Plate	Aluminum
Spring	17-7 SS, ASTM A313
Roller Pin	Hardened Steel
Set Screw	Steel (Black Oxide)
Valve Seal, O-Ring	FKM

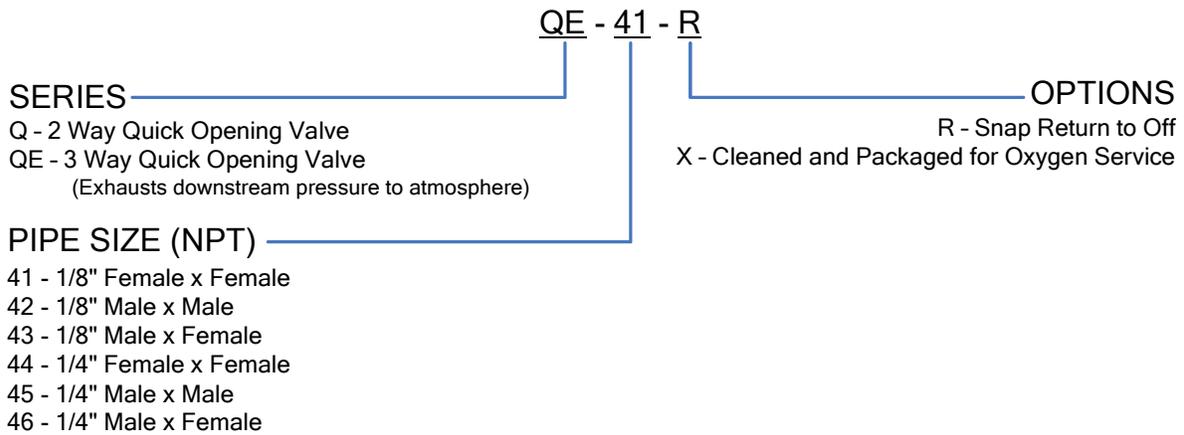


**Model QE-44**

# QUICK OPENING VALVE



## How To Order



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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**SHUT OFF VALVE**  
**1/8" - 1/2" NPT**  
**1/8" - 1/2" Dual Ferrule Tube**  
**0 - 3000 Psig (207 Bar)**

**SOV**

**SERIES**

**Description**

Series SOV Shut Off Valves offers low torque, quarter turn, positive shut off of forward flow up to 3000 Psig (207 Bar). These valves feature a one piece body construction with a machined metallic replaceable plug Stem. Sealing is accomplished with a standard elastomeric O-Ring seal. Larger size valves utilize Teflon Backup Rings to reduce operating torque and provide long service life. The Series SOV can be ordered Cleaned for Oxygen Service.

**Features**

- Straight-Through Flow Path
- Large Orifices Provide Higher Flows
- Handle Orientation Indicates Flow
- Optional Downstream Vent
- Unique Soft Open Plug Stem
- NPT or Dual Ferrule Tube Connections
- 100% Factory Tested for Leakage

**Technical Data**

Maximum Operating Pressure @ 100° F

Brass and Stainless: 3000 Psig (207 Bar)

Notes: 1-1/8" (28.6 mm) Square Brass Body Valves downgraded to 2000 Psig (137 Bar) Max. If reverse flow occurs, differential pressure is limited to 150 Psid (10.3 Bar) Max. Attempting to meter flow in the reverse flow direction may damage O-Ring.

Leakage: Zero both Internal and External

100% Factory tested for leakage at 150 Psig (10.3 Bar)

Downstream Vent Option - Downstream pressure is relieved to atmosphere when valve is in the closed position. Maximum operating pressure is downgraded to 150 Psig (10.3 Bar).

Downstream Vent Orifice:

5/8" (15.9 mm) and 3/4" (19.1 mm) Square Body Valves: 0.04" (1.0 mm)

1-1/8" (28.6 mm) Square Body Valves: 0.09" (2.3 mm)

Temperature Range:

Seal Dependent (See How To Order)

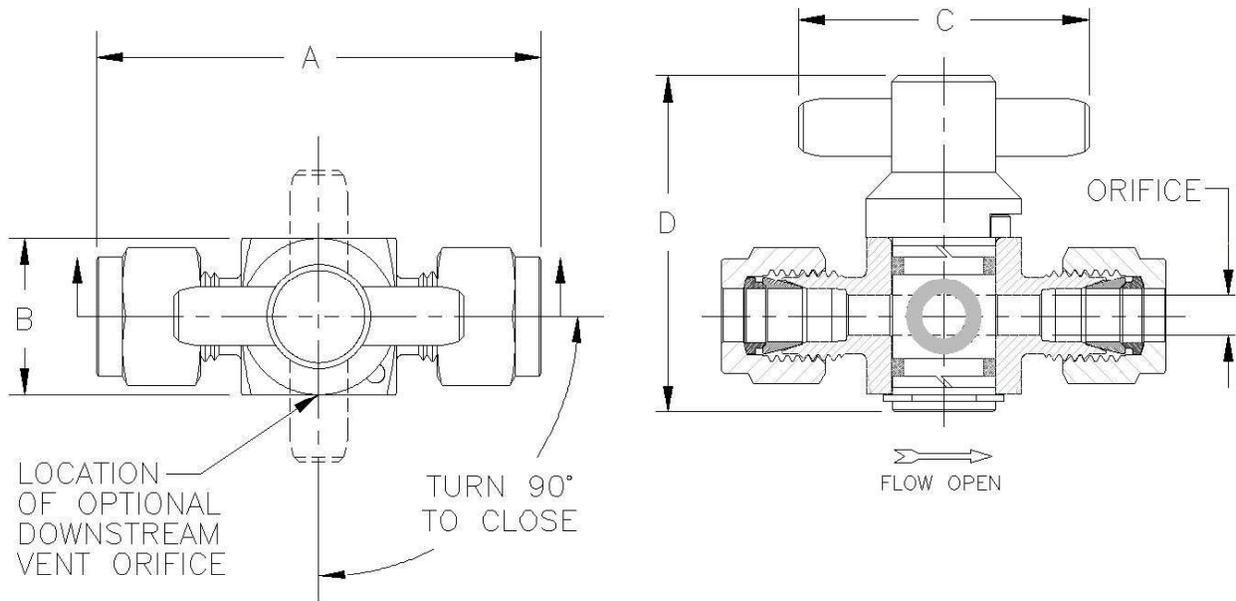
**Materials of Construction**

Component	Brass	Stainless Steel
Body, Plug Stem, Nuts and Ferrules	Brass, ASTM B16	316SS, ASTM A479
Handle	6061 Aluminum, ASTM B211, Anodized per Mil-A-8625	
Orifice/Body Seals	Buna-N, Neoprene, Ethylene Propylene, or Viton®	
Backup Ring <sup>1</sup>	PTFE	
Retaining Ring	PH 15-7 Mo SS, AISI 632	
Stop Pin	18-8 SS	

<sup>1</sup> 5/8" Square Body Valves are not supplied with PTFE Backup Rings  
Plug Stem and O-Rings are lubricated with Krytox®.



# SHUT OFF VALVE



## Dimensional Data

MODEL CODE	PORT CONFIGURATION		FLOW COEFFICIENT Cv	Dimensions in inches (mm)				
	INLET	OUTLET		VALVE ORIFICE	A OVERALL LENGTH	B BODY (SQ)	C HANDLE	D HEIGHT
SOV-2T	1/8" Tube		0.05	0.093 (2.4)	1.89 (48.0)	0.625 (15.9)	1.19 (30.2)	1.41 (35.8)
SOV-4T	1/4" Tube		0.72	0.187 (4.7)	2.15 (54.6)	0.75 (19.1)	1.40 (35.6)	1.63 (41.3)
SOV-6T	3/8" Tube		1.45	0.281 (7.2)	2.68 (68.1)	1.125* (28.6)	2.50 (63.5)	2.14 (54.4)
SOV-8T	1/2" Tube		2.34	0.343 (8.71)	2.88 (73.2)	1.125* (28.6)	2.50 (63.5)	2.14 (54.4)
SOV-2F	1/8" Female NPT		0.30	0.125 (3.2)	1.69 (42.9)	0.625 (15.9)	1.19 (30.2)	1.41 (35.8)
SOV-4F	1/4" Female NPT		0.72	0.187 (4.7)	1.87 (47.5)	0.75 (19.1)	1.40 (35.6)	1.63 (41.3)
SOV-6F	3/8" Female NPT		2.34	0.343 (8.71)	2.75 (69.9)	1.125* (28.6)	2.50 (63.5)	2.14 (54.4)
SOV-8F	1/2" Female NPT		2.34	0.343 (8.71)	2.88 (73.2)	1.125 (28.6)	2.50 (63.5)	2.14 (54.4)
SOV-2P	1/8" Male NPT		0.30	0.125 (3.2)	1.5 (38.1)	0.625 (15.9)	1.19 (30.2)	1.41 (35.8)
SOV-4P	1/4" Male NPT		0.30	0.125 (3.2)	1.69 (42.9)	0.625 (15.9)	1.19 (30.2)	1.41 (35.8)
SOV-8P	1/2" Male NPT		2.34	0.343 (8.71)	2.64 (67.1)	1.125* (28.6)	2.50 (63.5)	2.14 (54.4)
SOV-4PT	1/4" Male NPT	1/4" Tube	0.72	0.187 (4.7)	2.00 (50.8)	0.75 (19.1)	1.40 (35.6)	1.63 (41.3)
SOV-4PF	1/4" Male NPT	1/4" Female NPT	0.72	0.187 (4.7)	1.84 (46.7)	0.75 (19.1)	1.40 (35.6)	1.63 (41.3)
SOV-4FP	1/4" Female NPT	1/4" Male NPT	0.72	0.187 (4.7)	1.84 (46.7)	0.75 (19.1)	1.40 (35.6)	1.63 (41.3)

**Notes:** Dimensions shown with Bi-Lok nuts finger-tight. Dimensions are in inches (millimeters), for reference only and subject to change. Restrictions in inlet or outlet piping may reduce flow. NPT Threads per ASME B1.20.1  
 \* 1-1/8" Brass body valves have a maximum operating pressure of 2000 psig (137 Bar).

## How to Order

**SOV-4T SS - V - X**

**Model Code**  
SOV - Shut Off Valve

**Material Code**  
B - Brass  
SS - 316 Stainless Steel

**Options**  
X- Cleaned and Packaged for Oxygen Service  
E - Downstream Vent - Downstream pressure is relieved to atmosphere when valve is in the closed position

**Seal Material**  
B - Buna-N, -40° F to 250° F (-40° C to 121° C)  
V - Viton®, -10° F to 375° F (-23° C to 190° 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)

Krytox® and Viton® are registered trademarks of DuPont.

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# THANK YOU FOR CHOOSING GENERANT!

We value your partnership



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