GENERANT

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

VRV SERIES

Description

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

VRV
Vent to Atmosphere

Features

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

Technical Data

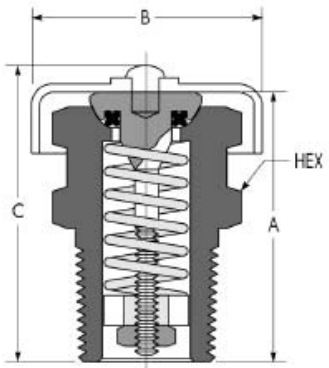
- Set Pressure Range: 0.5 to 150 Psig (0.03 to 10.34 bar)
- Inline Valves (Series VRVI):
  Proof Pressure: 400 Psig (28 bar)
  Burst Pressure: >500 Psig (34 bar)
- Set Pressure Tolerance: Factory preset
  < 2 Psig (0.14 bar): +/-10%
  2 to 150 Psig (0.14 to 10.3 bar): +/- 5%
  (on increasing pressure)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

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

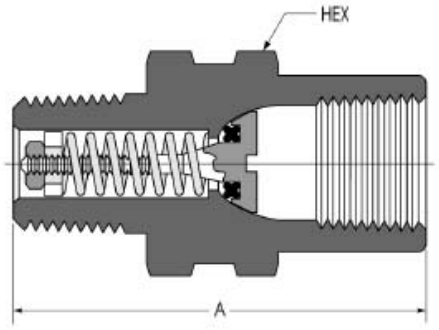
(based on sealing selection, see ordering information)

VRVI
Inline

SERIES VRV
VENT RELIEF VALVE



VRV & VRVD
Vent to Atmosphere



VRVI
Inline

Dimensional Data

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

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

Materials of Construction

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

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

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SERIES VRV
VENT RELIEF VALVE

Flow Data, Series VRV (Vent to Atmosphere)

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

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

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

Flow Data, Series VRVI (Inline)

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

Notes to Flow Data

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

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SERIES VRV
VENT RELIEF VALVE

Ordering Information

VRV - 125 B - V - 15

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

PORT SIZE

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

Material Code

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

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

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

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

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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Valves & BI-Lok Fittings

VENT RELIEF VALVE
1/8” – 1/4” NPT
150 – 600 Psig

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.

VRVH
Vent to Atmosphere

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

VRVHI
Inline

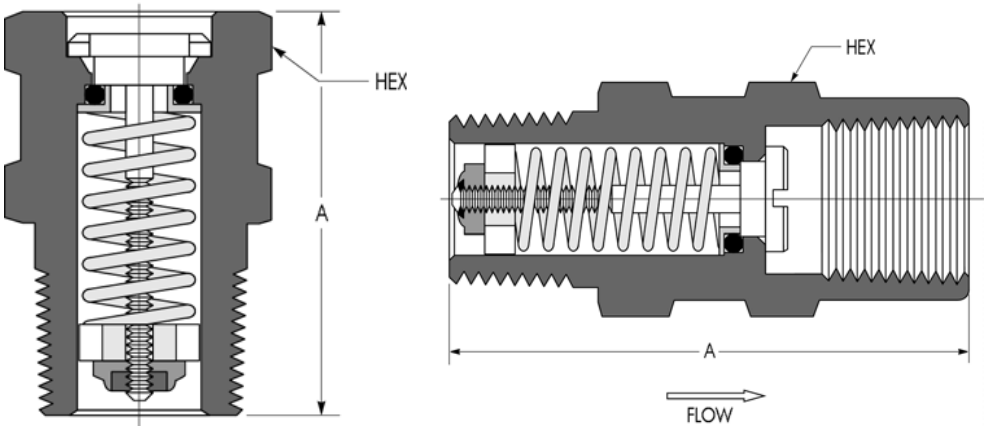
Technical Data
- Set Pressure Range: 150 to 600 Psig (10.3 to 42 bar)
- Inline Valves *(Series VRVHI):*
  Proof Pressure: 750 Psig (52 bar)
  Burst Pressure: >1000 Psig (69 bar)
- Set Pressure Tolerance: Factory preset +/- 5% on increasing pressure:
- Reseal: 90% of Set Pressure
- Temperature Range:
  -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[1]	As specified, see ordering information
Spring	302 SS/17-7 PH, ASTM A313
Locknut	18-8 SS

1 Lubricated with Krytox™

SERIES VRVH
VENT RELIEF VALVE



Dimensional Data

Pipe Size	VRVH		VRVHI	
NPT	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.

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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GENERANT

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

HPRV SERIES

Description

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

HPRV
Inline

Features

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

Technical Data

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

HPRVA
Vent to Atmosphere

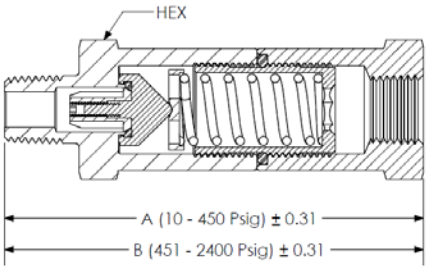
Materials of Construction

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

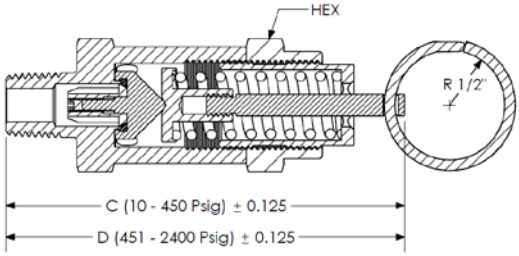
*Lubricated with Krytox ™

HPRVM
Vent to Atmosphere
(Manual Override)

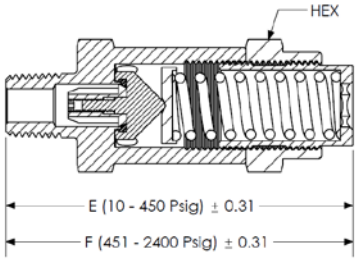
HIGH PRESSURE RELIEF VALVE



HPRV
Inline



HPRVM
Discharge to Atmosphere
(Manual Override)



HPRVA
Discharge to Atmosphere

Dimensional Data

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

Dimensional data is stated in inches.

Flow Data

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

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

Ordering Information

HPRV - 250 SS - V - 450

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

STANDARD PORTING CONNECTION

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

OPTIONAL PORTING CONNECTION
Consult factory

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

NOMINAL SET PRESSURE
Specify 10 - 2400 Psig

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

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

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

Viton, Krytox, and Teflon are trademarks of DuPont.

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

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

SERIES CRV BRASS

Description

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

Features

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

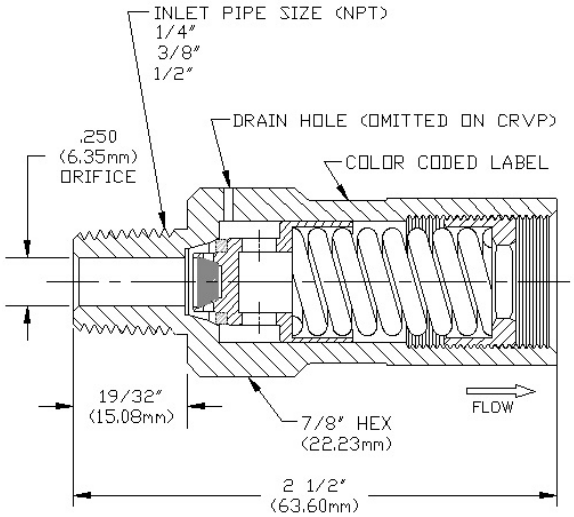
Technical Data

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

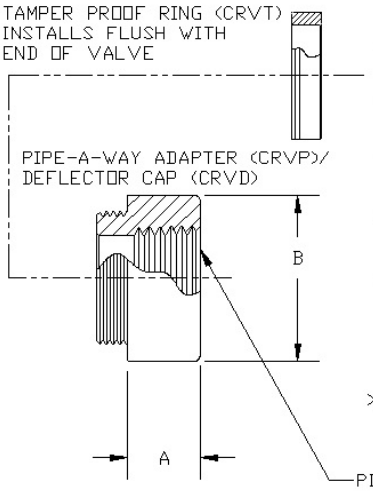
Materials of Construction

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

CRYOGENIC RELIEF VALVE (BRASS)



CRV SHOWN WITH "DIRT GUARD" POPPET



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

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

OPTIONAL CONFIGURATIONS (SEE HOW TO ORDER)

Flow Data

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

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

*Flow Coefficient Kd is stated at 110% accumulation

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

How To Order

CRV - 250B - K - 350

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

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

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

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

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

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GENERANT
Valves & Bi-Lok Fittings

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

SERIES STAINLESS CRV

Description

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

Features

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

Technical Data

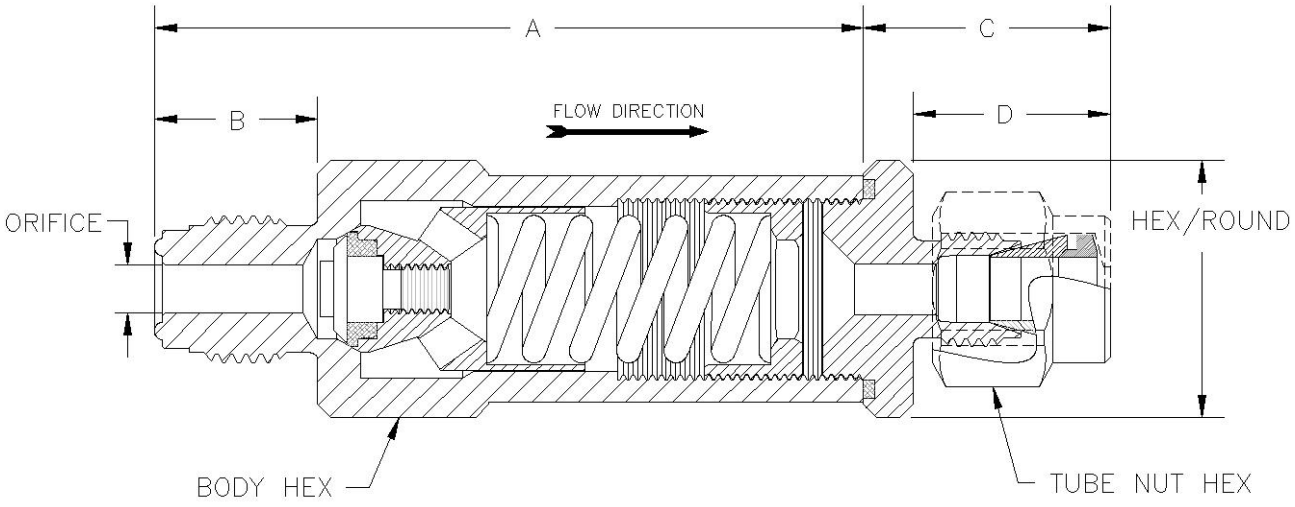
Nominal Set Pressure Range: 10 – 750 Psig (0.69 to 51.7 Bar)
Factory Set Tolerance: +/- 5% of Specified Pressure
Zero Leakage to 95% of Set Pressure
Full Rated Flow @ 110% of Set Pressure
Reseal: 90% (80% for PCTFE seals set below 100 psig (6.9 Bar))
Unaffected by up to 10% Back Pressure
Temperature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

Materials of Construction

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

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

CRYOGENIC RELIEF VALVE (STAINLESS)



Configuration Shown CRV4T-4V

Dimensional Data

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

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

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

Flow Data

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

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How To Order

CRV4 - 4 - K - 350

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

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

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

Specify Set Pressure
- 10-750 Psig

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

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GENERANT
Valves & BI-LOK Fittings

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

LCV SERIES

Description

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

Features

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

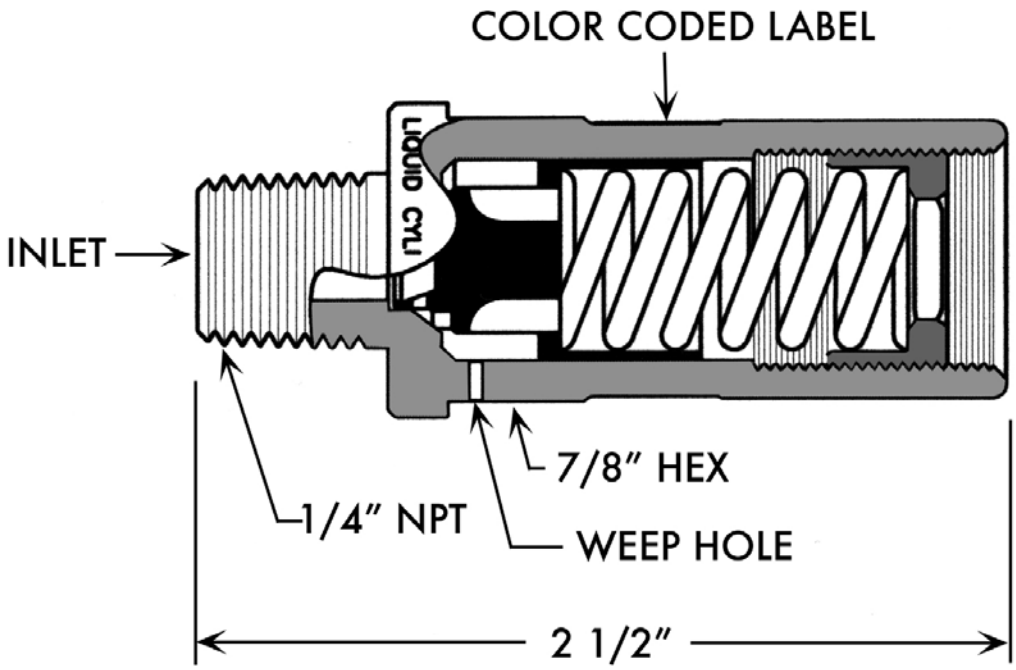
Technical Data

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

Materials of Construction

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

LIQUID CYLINDER VALVE



Flow Data

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

How To Order

LCV - 250B - K - 230

SERIES
LCV - Vent to Atmosphere

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

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

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

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

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GENERANT

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

IRV

STAINLESS

SERIES

Description

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

Features

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

Technical Data

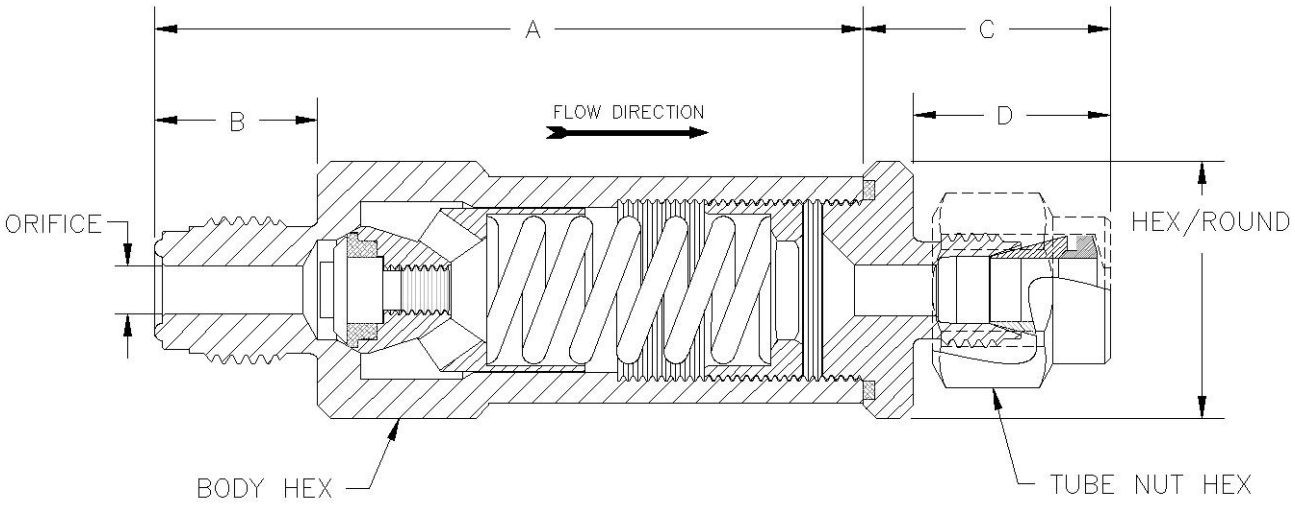
Set Pressure Range:
FKM: 10 - 750 Psig (0.69 to 51.7 Bar)
PTFE: 50 - 750 Psig (3.45 to 51.7 Bar)
Factory Set Tolerance: +/- 5% of Specified Pressure
Zero Leakage to 95% of Set Pressure
Full Rated Flow @ 110% of Set Pressure, unaffected by up to 10% Back Pressure
Reseal: FKM seals 90% of Set Pressure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

Materials of Construction

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

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

INDUSTRIAL RELIEF VALVE (STAINLESS)



Configuration Shown IRV4T-4V

Dimensional Data

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

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

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

Flow Data

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

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How To Order

IRV4 - 4V - V - 300 - X

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

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

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

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

Cleaning Option
X - Clean and Packaged for Oxygen Service

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

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GENERANT

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

SERIES IRV BRASS

Description

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

Series IRV

Features

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

Technical Data

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

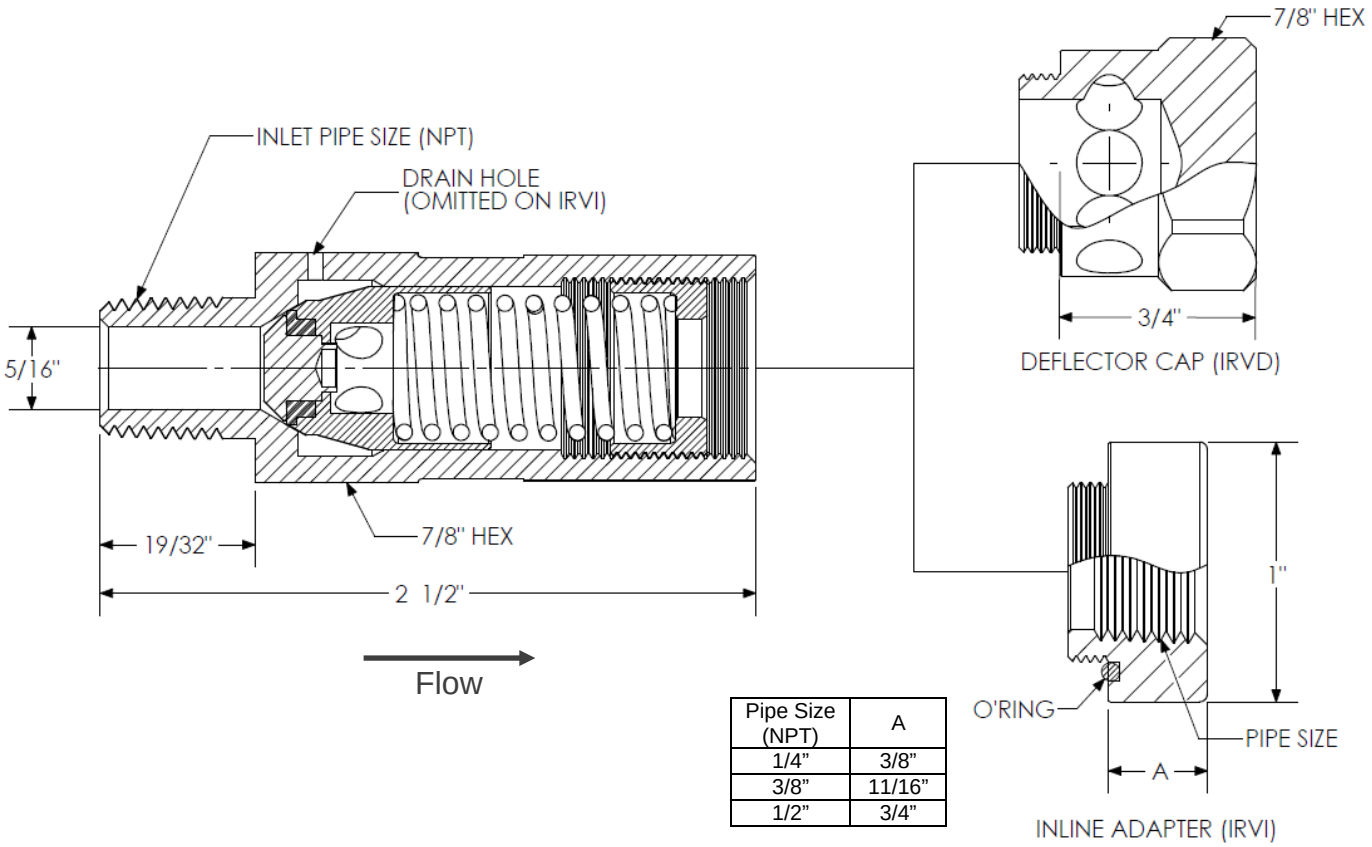
Series IRVI

Materials of Construction

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

*In-line Adapters Utilize FKM O'Ring Seals

INDUSTRIAL RELIEF VALVE (BRASS)



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

Flow Data

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

How To Order

IRV - 250B - V - 300 - X

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

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

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

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

Cleaning Option
X - Clean and Packaged for Oxygen Service

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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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