GENTEC®

www.genstartech.com

VALVES *International Edition*

(Needle Valve, Metering Valve, Ball Valve, Diaphragm Valve, Gauge Valve, Check Valve, Excess Flow Valve, Relief Valve, Cylinder Valve)

Technology for a Better Future

QMS REGISTERED 0541

API Spec Q1 Registered Q1-0274

PROFILE

GENTEC® Company Overview

Company Overview

Genstar Technologies is a global leader in Gas Flow Control Systems for the industrial, specialty gas and medical sectors. We pride ourselves in our ability to provide our customers with high quality, value-added products and services that go beyond the industry standards. As a result, we have a global network of thousands of satisfied customers in over 60 countries.

Our Team

Our highly educated team of engineers, salespeople, technicians, managers, and customer service personnel are dedicated to providing you with products with the highest quality, reliability and performance. We hold the highest standards to our manufacturing processes; our total process management maximizes our production efficiency while ensuring product quality.

We work closely with all of our customers to design products specific to your needs. This includes developing new products, redesigning existing products, and customizing configuration / packaging. It is our priority to foster a strong relationship with each and every customer.

Quality Assurance

All of our products are manufactured under stringent quality control. We are ISO 9001:2001, ISO13485, and API certified. Our products meet UL, CE, SEMI, and various international standards and certifications.

Manufacturing Capabilities

The manufacturing facility is equipped with CNC machines, electro-polishing equipment, and precision automated orbital welding systems, among other features, to ensure the production of the highest quality products.

Clean Room Facilities

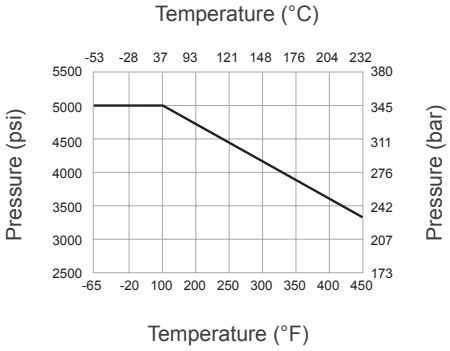
Our class 10/100/1000 clean rooms are designed for Ultra High Purity (UHP) products. UHP products undergo precision machining, surface finishing, electro-polishing and passivation. All UHP products are cleaned by 18MΩ DI water in a cascade ultrasonic tank. To ensure the highest UHP product quality, they are then vacuum-dried and double-bagged.

TABLE OF CONTENTS

GENTEC® Valves

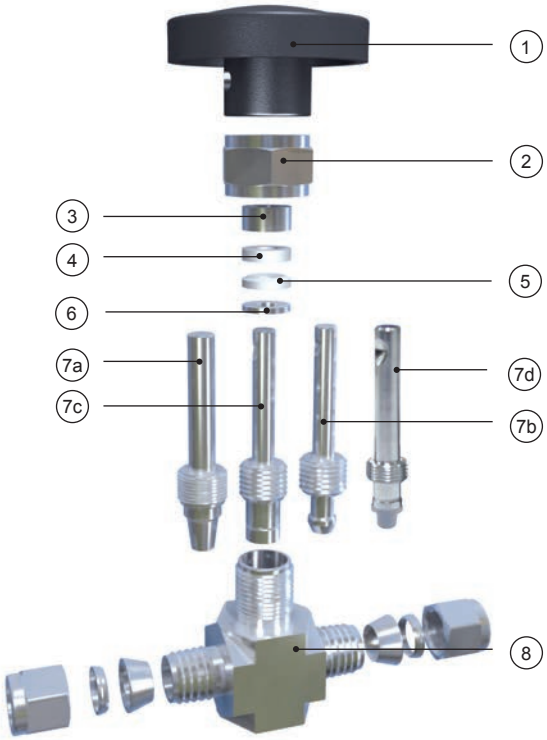
Product Features

- Maximum operating pressure: 5000 psi (345 bar)
  (For pressure limitations under high temperature conditions, refer to pressure-temperature table)
- V type stem is standard; R, K, and N type stem are also available
- End connections: GENLOK and NPT
  (please refer to the specification tables for available dimensions)
- Straight pattern is standard, angle pattern is optional
- Panel mounting available
- Cleaned and degreased for oxygen service according to CGA G-4.1 and ASTM G93 Class C, respectively
- Every valve is factory tested for leakage at 1000 psi (69 bar)
  Adjust packing nut when working pressure is higher than 1000 psi to prevent leakage.



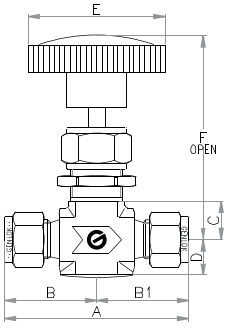
Materials of Construction

Components	Material
1 Round Handle / Bar Handle	ABS with brass inset / Aluminium
2 Packing Nut	316 SS
3 Gland	316 SS
4 Upper Packing	PTFE
5 Lower Packing	PTFE
6 Lower Gland	316 SS
7a R-TYPE Valve Stem	316 SS
7b V-TYPE Valve Stem	316 SS
7c K-TYPE Valve Stem	PCTFE
7d N-TYPE Valve Stem	PTFE
8 Body	316 SS

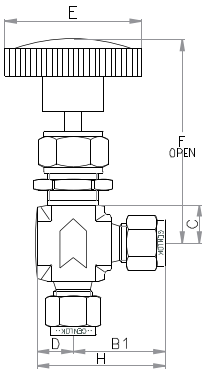


Dimensions

Straight Pattern



Angle Pattern



Fractional and Metric Tube Fittings

Model	Orifice (in.)	CV	Connection Type		Dimension (in.)								Panel Mounting Hole Diameter (in.)
			Inlet	Outlet	A	B	B1	H	C	D	E	F Open	
SS-NV11-TF2	0.080	0.09	1/8" GENLOK		2.00	1.00	1.00	1.31	0.44	0.31	1.00	2.29	0.47
SS-NV12-TF4	0.172	0.37	1/4" GENLOK		2.31	1.16	1.16	1.51	0.44	0.38	1.38	2.34	0.61
SS-NV13-TF6	0.250	0.73	3/8" GENLOK		2.60	1.30	1.30	1.79	0.56	0.50	1.96	2.81	0.79
SS-NV13-TF8	0.250	0.73	1/2" GENLOK		2.82	1.41	1.41	1.90	0.56	0.50	1.96	2.81	0.79
SS-NV14-TF2	0.375	1.80	3/4" GENLOK		3.82	1.91	1.91	2.66	0.75	0.75	3.00	3.91	1.04
SS-NV11-TF3M	0.079	0.09	3 mm GENLOK		1.94	0.97	0.97	1.23	0.44	0.31	1.00	2.29	0.47
SS-NV12-TF6M	0.172	0.37	6 mm GENLOK		2.31	1.16	1.16	1.51	0.44	0.38	1.38	2.34	0.61
SS-NV12-TF8M	0.172	0.37	8 mm GENLOK		2.31	1.16	1.16	1.51	0.44	0.38	1.38	2.34	0.61
SS-NV13-TF10M	0.250	0.73	10 mm GENLOK		2.60	1.30	1.30	1.79	0.56	0.50	1.96	2.81	0.79
SS-NV13-TF12M	0.250	0.73	12 mm GENLOK		2.82	1.41	1.41	1.90	0.56	0.50	1.96	2.81	0.79

NPT Fittings

Model	Orifice (in.)	CV	Connection Type		Dimension (in.)								Panel Mounting Hole Diameter (in.)
			Inlet	Outlet	A	B	B1	H	C	D	E	F Open	
SS-NV12-FNT2	0.172	0.37	1/8" Female NPT		1.62	0.81	0.81	1.19	0.44	0.38	1.38	2.34	0.61
SS-NV12-NT2	0.172	0.37	1/8" Male NPT		2.00	1.00	1.00	1.19	0.44	0.38	1.38	2.34	0.61
SS-NV12-NT4	0.172	0.37	1/4" Male NPT		2.00	1.00	1.00	1.36	0.44	0.38	1.38	2.34	0.61
SS-NV13-FNT4	0.250	0.73	1/4" Female NPT		2.12	1.06	1.06	1.56	0.56	0.50	1.96	2.81	0.79
SS-NV13-NT6	0.250	0.73	3/8" Male NPT		2.24	1.12	1.12	1.62	0.56	0.50	1.96	2.81	0.79
SS-NV14-FNT6	0.375	1.80	3/8" Female NPT		3.00	1.50	1.50	2.25	0.75	0.75	3.00	3.91	1.04
SS-NV14-FNT8	0.375	1.80	1/2" Female NPT		3.00	1.50	1.50	2.25	0.75	0.75	3.00	3.91	1.04
SS-NV14-NT8	0.375	1.80	1/2" Male NPT		3.00	1.50	1.50	2.25	0.75	0.75	3.00	3.91	1.04
SS-NV11-NT2-TF2	0.080	0.09	1/8" Male NPT	1/8" GENLOK	1.75	0.75	1.00	1.31	0.44	0.31	1.00	2.29	0.47
SS-NV12-NT4-TF4	0.172	0.37	1/4" Male NPT	1/4" GENLOK	2.16	1.00	1.16	1.51	0.44	0.38	1.38	2.34	0.61
SS-NV12-NT4-TF6M	0.172	0.37	1/4" Male NPT	6 mm GENLOK	2.16	1.00	1.16	1.51	0.44	0.38"	1.38	2.34	0.61
SS-NV13-NT4-TF6	0.250	0.73	1/4" Male NPT	3/8" GENLOK	2.42	1.12	1.30	1.79	0.56	0.50	1.96	2.81	0.79
SS-NV13-NT4-FNT4	0.250	0.73	1/4" Male NPT	1/4" Female NPT	2.18	1.12	1.06	1.56	0.56	0.50	1.96	2.81	0.79
SS-NV13-NT6-TF6	0.250	0.73	3/8" Male NPT	3/8" GENLOK	2.42	1.12	1.30	1.79	0.56	0.50	1.96	2.81	0.79
SS-NV13-NT6-FNT6	0.250	0.73	3/8" Male NPT	3/8" Female NPT	2.22	1.12	1.10	1.60	0.56	0.50	1.96	2.81	0.79
SS-NV13-NT6-TF8	0.250	0.73	1/2" Male NPT	1/2" GENLOK	2.53	1.12	1.41	1.90	0.56	0.50	1.96	2.81	0.79
SS-NV14-NT8-FNT8	0.375	1.80	1/2" Male NPT	1/2" Female NPT	3.00	1.50	1.50	2.25	0.75	0.75	3.00	3.91	1.04

Ordering Information

EX: SS -	NV12 -	NT4 -	TF4 -	V -	A -	B
Body Material	**Series**	**Inlet Connection***	**Outlet Connection***	**Valve Stem Type**	**Options**	**Handle Options****
SS: 316 SS	**NV11** **NV12** **NV13** **NV14**	NT4: 1/4" Male NPT	TF4: 1/4" GENLOK	V: V Type R: R Type K: K Type N: N Type	A: Angle Pattern Blank: Straight Pattern	Blank: Standard B: Other option

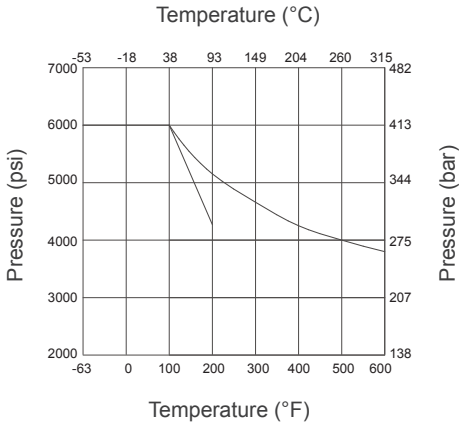
* Specifications listed in table above change to. Please refer to the chart above for the available specifications for the desired connection type.
** Round Handle is standard for NV11, NV12 and NV13 series. Select -B for alternative Bar handle. For NV14, Bar Handle is the standard, please select -B for alternative Round Handle.

Straight Pattern

Angle Pattern

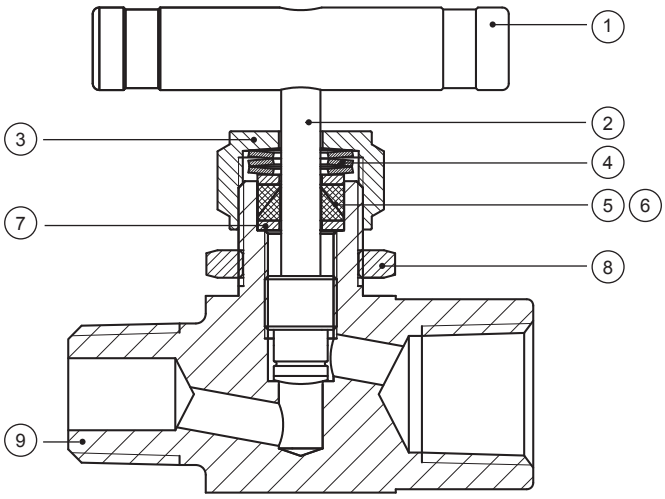
Product Features

- Maximum operating pressure: 6000 psi (413 bar)
  (For pressure limitations under high temperature conditions, refer to pressure-temperature table)
- Operating temperature:
  -65ºF ~ 200ºF (-53ºC ~ 93ºC), with PCTFE packing
  -65ºF ~ 600ºF (-53ºC ~ 315ºC), with PEEK packing
- Nominal diameter: 3.5 mm, 6.5 mm
- Panel mounting available
- Straight pattern is standard, angle pattern is also available
- Connections: 1/4'' NPT, 3/8'' NPT and 1/2'' NPT
- Cleaned and degreased for oxygen service according to CGA G-4.1 and ASTM G93 Class C, respectively
- Every valve is factory tested for leakage with Nitrogen at 6000 psi
- N type stem is available for moderate flow control

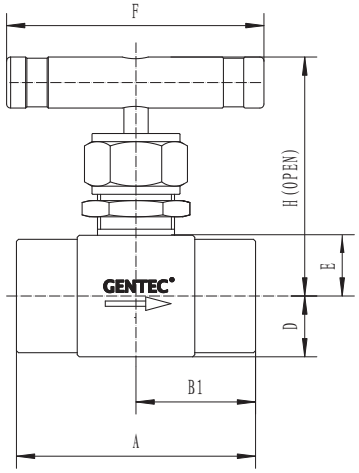


Materials of Construction

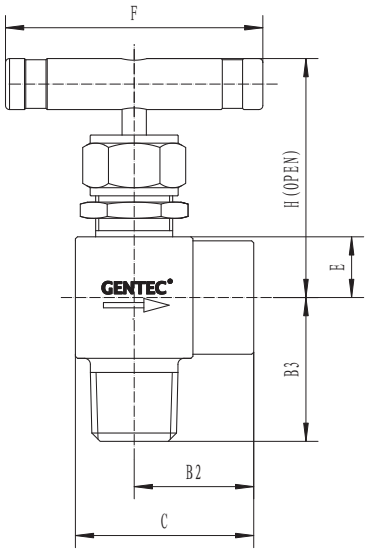
Components	Material
1 Handle	316
2 Valve Stem	PCTFE
3 Lock Nut	316
4 Disc Spring	304
5 Upper Sealing Gasket	PCTFE
6 Bottom Sealing Gasket	PCTFE
7 Packing Gasket	316
8 Mounting Nut	316
9 Body	316



Dimensions



Straight Pattern



Angle Pattern

Fractional Tube Fittings

Model	Orifice (in.)	CV	Connection Type		Dimension (in.)									Panel Mounting Hole Diameter (in.)
			Inlet	Outlet	A	B1	B2	B3	C	D	E	F	H	
SS-NV42-TF4-K	0.14	0.23	1/4" GENLOK		1.95	0.98	-	-	-	0.53	0.59	2.50	2.44	0.76

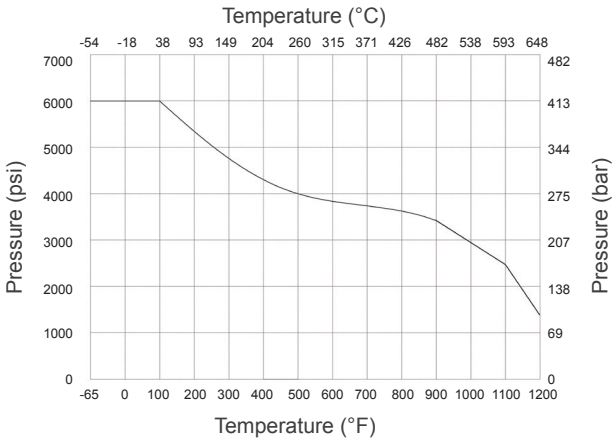
NPT Fittings

Model	Orifice (in.)	CV	Connection Type		Dimension (in.)									Panel Mounting Hole Diameter (in.)
			Inlet	Outlet	A	B1	B2	B3	C	D	E	F	H	
SS-NV42-NT4-K	0.14	0.23	1/4" Male NPT		2.24	1.12	-	-	-	0.53	0.59	2.50	2.44	0.76
SS-NV42-FNT4-K	0.14	0.23	1/4" Female NPT		2.24	1.12	-	-	-	0.53	0.59	2.50	2.44	
SS-NV42-NT6-K	0.14	0.23	3/8" Male NPT		2.32	1.16	-	-	-	0.53	0.59	2.50	2.44	
SS-NV43-FNT6-K	0.26	0.73	3/8" Female NPT		2.32	1.16	-	-	-	0.59	0.59	2.50	2.44	
SS-NV43-NT8-K	0.26	0.73	1/2" Male NPT		2.80	1.40	-	-	-	0.59	0.59	2.50	2.44	
SS-NV43-FNT8-K	0.26	0.73	1/2" Female NPT		2.80	1.40	-	-	-	0.59	0.59	2.50	2.44	
SS-NV42-NT4-FNT4-K	0.14	0.23	1/4" Male NPT	1/4" Female NPT	2.24	1.12	-	-	-	0.53	0.59	2.50	2.44	
SS-NV43-NT6-FNT6-K	0.26	0.73	3/8" Male NPT	3/8" Female NPT	2.32	1.16	-	-	-	0.59	0.59	2.50	2.44	
SS-NV43-NT8-FNT8-K	0.26	0.73	1/2" Male NPT	1/2" Female NPT	2.80	1.40	-	-	-	0.59	0.59	2.50	2.44	
SS-NV43-NT8-FNT8-K-A	0.26	0.73	1/2" Male NPT	1/2" Female NPT	-	-	1.40	1.40	1.97	0.59	0.59	2.50	2.44	

Ordering Information

EX: SS -	NV43 -	NT8 -	FNT8 -	K -	A
Body Material	**Series**	**Inlet Connection***	**Outlet Connection***	**Valve Stem Type**	**Options**
SS: 316 SS	**NV42** **NV43**	NT8: 1/2" Male NPT	FNT8: 1/2" Female NPT	K: K Type N: N Type	A: Angle Pattern E: PEEK Packing Blank: Straight Pattern

* Specifications listed in table above change to. Please refer to the chart above for the available specifications for the desired connection type.

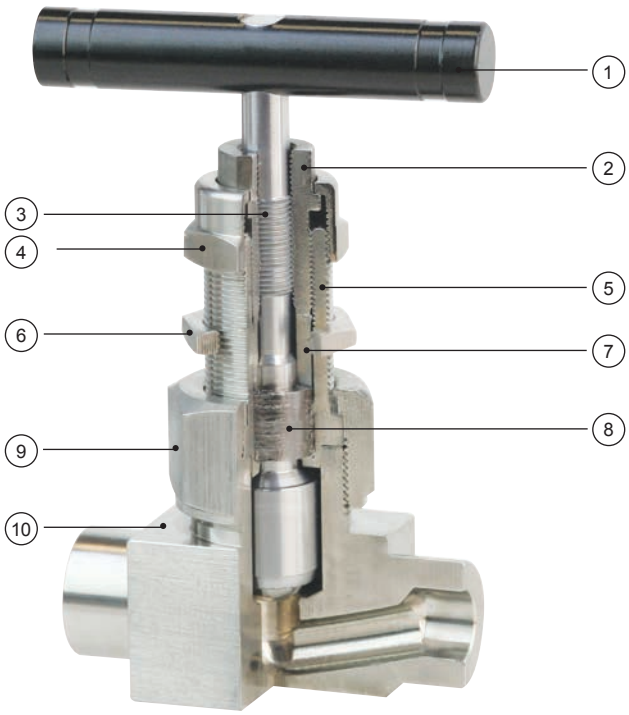


Product Features

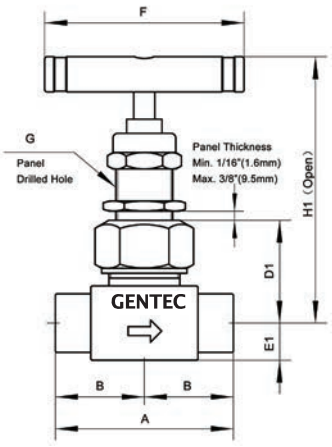
- Maximum operating pressure: 6000 psi (413 bar)
  (For pressure limitations under high temperature conditions, refer to pressure-temperature table)
- Operating temperature: -65ºF ~ 1200ºF (-53ºC ~ 648ºC)
- Nominal diameter: 11.1 mm
- Flexible graphite packing
- Panel mounting available
- End connections: socket welded, GENLOK and NPT
- Straight pattern is standard, angle pattern is also available
- Factory tested to withstand pressure and temperature of 7200 psi and 600˚C respectively
- Every valve is tested for leakage with nitrogen at 6000 psi
  (Please provide us with specific instructions should you have specific request/requirements regarding leakage testing)

Materials of Construction

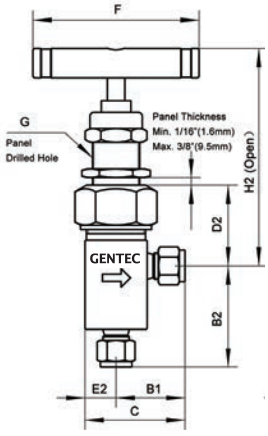
Components	Material
1 T-handle	Aluminium
2 Packing Nut	416
3 Regulating Valve Stem	316 SS
4 Lock Nut	316 SS
5 Bonnet	316 SS
6 Panel Nut	316 SS
7 Adapter	316 SS
8 Sealing Gasket	Flexible graphite
9 Joint Nut	316 SS
10 Body	316 SS



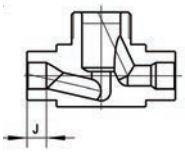
Dimensions



Straight Pattern



Angle Pattern



Socket Welded

Fractional and Metric Tube Fittings

Model	CV	Connection Type		Dimension (in.)													
		Inlet	Outlet	A	B	B1	B2	C	D1	D2	E1	E2	F	G	H1	H2	J
SS-NV53-TF8-A	2.1	1/2" GENLOK		3.92	-	1.68	2.08	2.37	1.82	1.88	0.62	0.69	3.50	1.03	4.76	4.84	-
SS-NV53-TF12	2.4	3/4" GENLOK		3.92	1.96	-	-	-	1.82	-	0.62	-	3.50	1.03	4.76	4.84	-
SS-NV53-TF16	2.4	1" GENLOK		4.09	2.04	-	-	-	1.88	-	0.69	-	3.50	1.03	4.76	4.84	-
SS-NV53-TF25M-A	1.9	25mm GENLOK		3.92	-	1.68	2.08	2.37	1.82	1.88	0.62	0.69	3.50	1.03	4.76	4.84	-

NPT and Weld Fittings

Model	CV	Connection Type		Dimension (in.)													
		Inlet	Outlet	A	B	B1	B2	C	D1	D2	E1	E2	F	G	H1	H2	J
SS-NV53-FNT8-A	2.4	1/2" Female NPT		3.12	-	1.31	1.56	2.00	1.82	2.00	0.62	0.69	3.50	1.03	4.76	4.96	-
SS-NV53-FNT12	2.4	3/4" Female NPT		3.25	1.63	-	-	-	1.91	-	0.68	-	3.50	1.03	4.88	-	-
SS-NV53-FNT16	2.4	1" Female NPT		3.62	1.81	-	-	-	2.13	-	1.00	-	3.50	1.03	5.08	-	-
SS-NV53-SW8-A	2.2	1/2" Socket Weld		3.12	-	1.31	1.69	2.00	1.82	1.88	0.68	0.69	3.50	1.03	4.76	4.84	0.38
SS-NV53-SW12	2.2	3/4" Socket Weld		3.12	1.56	-	-	-	1.82	-	0.68	-	3.50	1.03	4.76	-	0.44
SS-NV53-SW14M	2.2	14mm Socket Weld		3.12	1.56	-	-	-	1.82	-	0.68	-	3.50	1.03	4.76	-	0.44
SS-NV53-SW25M	2.2	25mm Socket Weld		3.12	1.56	-	-	-	1.82	-	0.68	-	3.50	1.03	4.76	-	0.44
SS-NV53-NT8-FNT8-A	1.9	1/2" Male NPT	1/2" Female NPT	3.12	-	1.31	1.56	2.00	1.82	2.00	0.62	0.69	3.50	1.03	4.76	5.08	-
SS-NV53-NT12-FNT12	1.9	3/4" Male NPT	3/4" Female NPT	3.25	1.63	-	-	-	1.91	-	0.68	-	3.50	1.03	124	-	-
SS-NV53-NT16-FNT16	1.9	1" Male NPT	1" Female NPT	3.62	1.81	-	-	-	2.13	-	1.00	-	3.50	1.03	129	-	-

Ordering Information

EX: SS -	NV53 -	NT12 -	FNT12 -	A
Body Material	**Series**	**Inlet Connection***	**Outlet Connection***	**Options**
SS: 316 SS	**NV53**	NT12: 3/4" Male NPT	FNT12: 3/4" Female NPT	A: Angle Pattern Blank: Straight Pattern

* Specifications listed in table above change to. Please refer to the chart above for the available specifications for the desired connection type.

Slotted Handle

Vernier Handle

Product Features

- Maximum operating pressure

  MV21: 2000 psi (138 bar)

  MV22, MV23: 1000 psi (69 bar)
- End connections: GENLOK and NPT

  (please refer to the specification tables for available dimensions)
- Panel mounting available
- Cleaned and degreased for oxygen service according to CGA

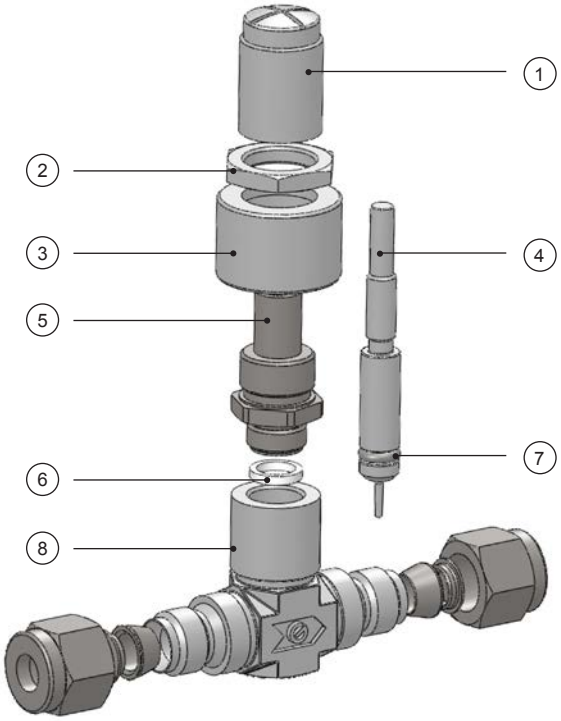
  G-4.1 and ASTM G93 Class C, respectively

Pressure-Temperature Rating

Series	Pressure-Temperature Ratings		Orifice in.(mm)	Shutoff	Stem Taper
	Temperature °F(°C)	Working Pressure psi (bar)			
MV21	-10 ~ 400 (-23 ~ 204)*	2000 (138)	0.032 (0.8)	No	1°
MV22		1000 (69)**	0.06 (1.5)	No	3°
MV23		1000 (69)**	0.13 (3.3)	Yes***	5°

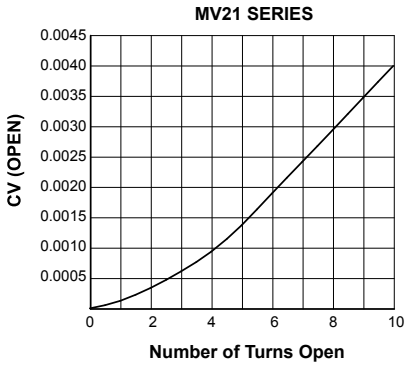
*: –10 to 300°F (–23 to 148°C) for Buna N
**: Downstream pressure 500 psig (34.4 bar) max when valve requires adjustment at pressure due to strength limitations of the fine-pitch threads and high operating torque.
***: NV23 series valves are not recommended for shutoff in vacuum or gas service, or for repetitive shutoff in liquid service.

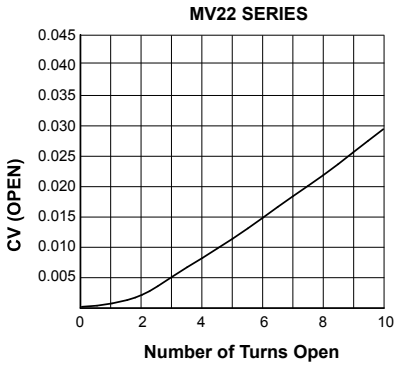
Materials of Construction

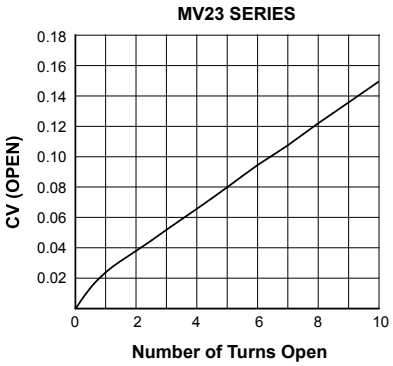


Components	Material
1 Handle	316 SS
2 Panel Nut	316 SS
3 Bonnet Sleeve	316 SS
4 Valve Stem	316 SS
5 Bonnet	316 SS
6 Lower Gland	PTEF
7 O-ring	Fluorine rubber
8 Body	316 SS

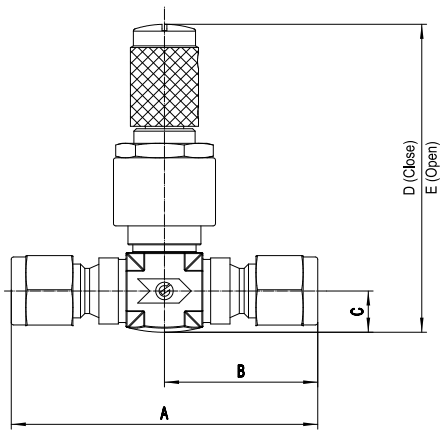
CV-Number of Turns Open







Dimensions



Fractional Tube Fittings

Model	Orifice (mm)	CV	Connection Type		Dimension (in.)				
			Inlet	Outlet	A	B	C	D Close	E Open
SS-MV21-TF2	0.8	0.004	1/8" GENLOK		2.09	1.04	0.33	2.58	3.00
SS-MV21-TF4			1/4" GENLOK		2.31	1.15	0.33	2.58	3.00
SS-MV22-TF2	1.5	0.03	1/8" GENLOK		2.52	1.24	0.33	2.69	3.11
SS-MV22-TF4			1/4" GENLOK		2.52	1.24	0.33	2.69	3.11
SS-MV23-TF2	3.3	0.15	1/8" GENLOK		2.52	1.24	0.33	2.69	3.11
SS-MV23-TF4			1/4" GENLOK		2.52	1.24	0.33	2.69	3.11

NPT Fittings

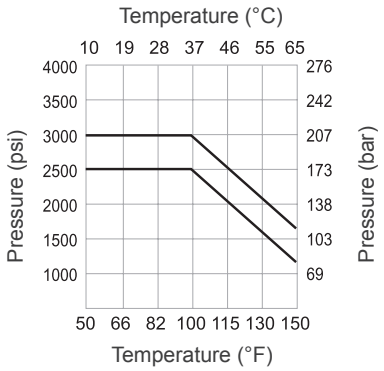
Model	Orifice (mm)	CV	Connection Type		Dimension (in.)				
			Inlet	Outlet	A	B	C	D Close	E Open
SS-MV21-NT2	0.8	0.004	1/8" Male NPT		2.31	1.15	0.33	2.58	3.00
SS-MV21-NT4			1/4" Male NPT		2.44	1.22	0.33	2.58	3.00
SS-MV21-FNT2			1/4" Female NPT		2.44	1.22	0.33	2.58	3.00
SS-MV22-NT2	1.5	0.03	1/8" Male NPT		2.52	1.24	0.33	2.69	3.11
SS-MV22-NT4			1/4" Male NPT		2.52	1.24	0.33	2.69	3.11
SS-MV22-FNT2			1/4" Female NPT		2.52	1.24	0.33	2.69	3.11
SS-MV22-NT2	3.3	0.15	1/8" Male NPT		2.52	1.24	0.33	2.69	3.11
SS-MV22-NT4			1/4" Male NPT		2.52	1.24	0.33	2.69	3.11
SS-MV22-FNT2			1/4" Female NPT		2.52	1.24	0.33	2.69	3.11

Ordering Information

EX: SS -	MV22	M -	TF4 -	B
Body Material	**Series**	**Knob**	**Inlet \ Outlet Connection**	**O-ring**
SS: 316 SS	**MV21** **MV22** **MV23**	Blank: Slotted Handle M: Vemier Handle	TF4: 1/4" GENLOK TF2: 1/8" GENLOK NT4: 1/4" NPT NT2: 1/8" NPT FNT2: 1/8" NPT(F)	Blank: Standard B: Nitrile Butadiene Rubber A: Angle Pattern (MV22, MV23 availabel)

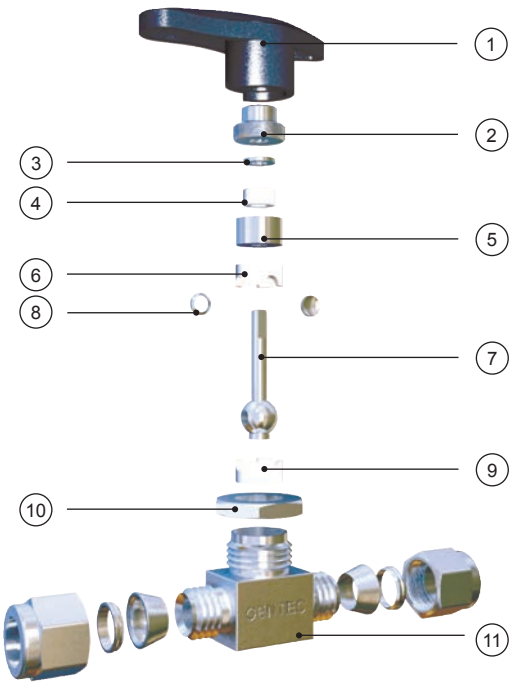
Product Features

- Maximum operating pressure: 3000 psi (207 bar)- BV15
  2500 psi (172 bar)- others
  (For pressure limitations under high temperature conditions, refer to pressure-temperature table)
- Operating temperature: 50°F ~ 150°F (10°C ~ 65°C)
- Handle indicates the flow direction
- End connections: GENLOK, NPT and FSR
  (please refer to the tables on next page for the specifications)
- Straight pattern is standard, angle pattern is also available
- Panel mounting available
- Cleaned and degreased for oxygen service according to CGA G-4.1 and ASTM G93 Class C, respectively
- Every valve is factory tested for leakage at 1000 psi
  Adjust packing nut when the working pressure is higher than 1000 psi to prevent leakage.

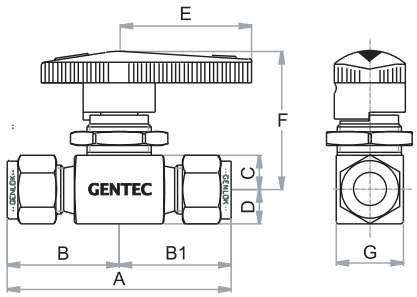


Materials of Construction

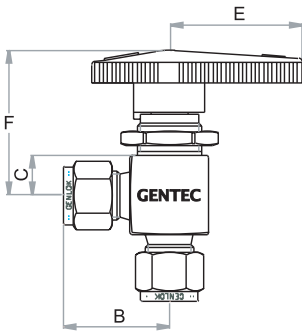
Components	Material
1 Handle	Nylon
2 Packing Bolt	316 SS
3 Upper Gland	316 SS
4 Bushing	PTFE
5 Lower Gland	316 SS
6 Upper Packing	PTFE
7 Ball Stem	316 SS
8 Side Rings	316 SS
9 Lower Packing	PTFE
10 Pannel Nut	316 SS
11 Body	316 SS



Dimensions



Straight Pattern



Angle Pattern

Fractional and Metric Tube Fittings

Model	Orifice (in.)	CV	CV (Right-angle Type)	Connection Type		Dimension (mm)								Panel Mounting Hole Diameter (in.)
				Inlet	Outlet	A	B	B1	C	D	E	F	G	
SS-BV13-TF2	0.093	0.20	0.15	1/8" GENLOK		2.00	1.00	1.00	0.34	0.28	1.12	1.34	0.67	0.61
SS-BV14-TF4	0.125	0.60	0.35	1/4" GENLOK		2.18	1.09	1.09	0.34	0.28	1.12	1.34	0.67	0.61
SS-BV15-TF4	0.187	2.40	0.90	1/4" GENLOK		2.38	1.19	1.19	0.44	0.37	1.53	1.53	0.78	0.79
SS-BV15-TF6	0.187	2.40	0.90	3/8" GENLOK		2.56	1.28	1.28	0.44	0.37	1.53	1.53	0.78	0.79
SS-BV16-TF6	0.281	6.00	2.0	3/8" GENLOK		3.06	1.53	1.53	0.56	0.56	2.00	2.06	1.12	1.10
SS-BV18-TF8	0.406	12.0	4.6	1/2" GENLOK		3.94	1.97	1.97	0.69	0.69	3.00	2.44	1.50	1.56
SS-BV18-TF12	0.406	12.0	3.8	3/4" GENLOK		3.94	1.97	1.97	0.69	0.69	3.00	2.44	1.50	1.56
SS-BV13-TF3M	0.09	0.2	0.15	3 mm GENLOK		2.01	1.01	1.01	0.34	0.28	1.12	1.36	0.58	0.61
SS-BV14-TF6M	0.13	0.6	0.35	6 mm GENLOK		2.21	1.10	1.10	0.34	0.28	1.12	1.36	0.58	0.61
SS-BV15-TF6M	0.19	2.4	0.90	6 mm GENLOK		2.39	1.20	1.20	0.44	0.38	1.53	1.56	0.78	0.79
SS-BV15-TF8M	0.19	1.5	0.90	8 mm GENLOK		2.46	1.23	1.23	0.44	0.38	1.53	1.56	0.78	0.79
SS-BV16-TF10M	0.28	6.0	2.0	10 mm GENLOK		3.07	1.53	1.53	0.56	0.56	2.00	2.07	1.12	1.10
SS-BV18-TF12M	0.37	12.0	4.6	12 mm GENLOK		3.92	1.96	1.96	0.69	0.69	3.00	2.43	1.50	1.56

NPT and FSR Fittings

Model	Orifice (in.)	CV	CV (Right-angle Type)	Connection Type		Dimension (in.)								Panel Mounting Hole Diameter (in.)
				Inlet	Outlet	A	B	B1	C	D	E	F	G	
SS-BV14-FNT2	0.125	0.50	0.30	1/8" Female NPT		1.62	0.81	0.81	0.34	0.28	1.12	1.34	0.67	0.61
SS-BV14-VM4	0.125	0.60	0.35	1/4" Male FSR		2.12	1.06	1.06	0.44	0.37	1.12	1.34	0.78	0.61
SS-BV15-FNT2	0.187	1.20	0.50	1/8" Female NPT		2.00	1.00	1.00	0.44	0.37	1.53	1.53	0.78	0.79
SS-BV15-FNT4	0.187	1.20	0.75	1/4" Female NPT		2.06	1.03	1.03	0.44	0.37	1.53	1.53	0.78	0.79
SS-BV15-NT4	0.187	1.20	0.75	1/4" Male NPT		2.00	1.00	1.00	0.44	0.37	1.53	1.53	0.78	0.79
SS-BV15-VM4	0.187	2.40	0.90	1/4" Male FSR		2.12	1.06	1.06	0.44	0.37	1.53	1.53	0.78	0.79
SS-BV16-FNT4	0.281	3.00	1.7	1/4" Female NPT		2.50	1.25	1.25	0.56	0.56	2.00	2.06	1.12	1.10
SS-BV16-FNT6	0.281	3.00	1.5	3/8" Female NPT		2.50	1.25	1.25	0.56	0.56	2.00	2.06	1.12	1.10
SS-BV16-VM8	0.281	6.00	1.5	1/2" Male FSR		2.88	1.44	1.44	0.56	0.56	2.00	2.06	1.12	1.10
SS-BV18-FNT8	0.406	6.30	3.5	1/2" Female NPT		3.12	1.56	1.56	0.69	0.69	3.00	2.44	1.50	1.56
SS-BV15-NT4-TF4	0.187	1.60	0.75	1/4" Male NPT	1/4" GENLOK	2.19	1.00	1.19	0.44	0.37	1.53	1.53	0.78	0.79

Ordering Information

EX: SS -	BV15 -	TF4 -	A
Body Material	**Series**	**Inlet / Outlet Connection***	**Options**
SS: 316 SS	**BV13, BV14, BV15, BV16, BV18**	TF4: 1/4" GENLOK	A: Angle Pattern Blank: Straight Pattern

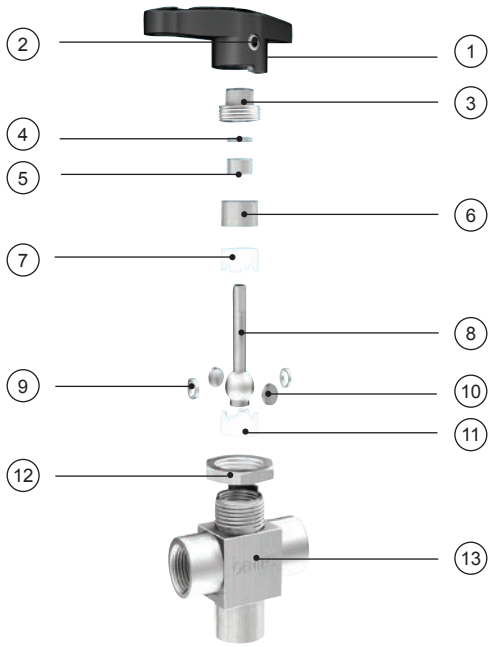
* Specifications listed in table above change to. Please refer to the chart above for the available specifications for the desired connection type.

Product Features

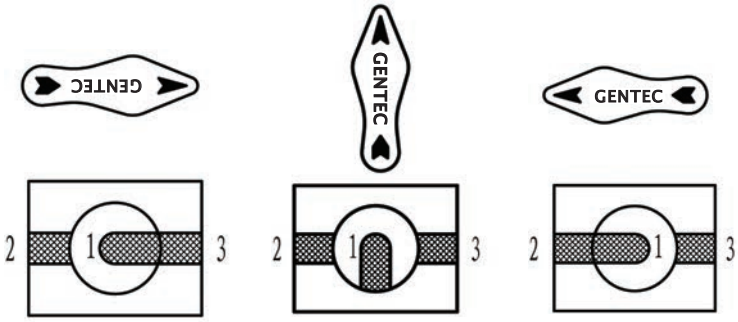
- 3-Way valve
- Maximum operating pressure: 2500 psi (172 bar)
  (For pressure limitations under high temperature conditions, refer to pressure-temperature table)
- Operating temperature: 50°F ~ 150°F (10°C ~ 65°C)
- Handle indicates the flow direction
- End connections: GENLOK and NPT
  (Gas enters from the bottom port, and exits to either the left or right port)
- Switchable flow paths
- Panel mounting available
- Top-loaded design allows in-line valve adjustment
- Bidirectional flow allows easy cleaning and purging
- Cleaned and degreased for oxygen service according to CGA G-4.1 and ASTM G93 Class C, respectively
- Every valve is factory tested for leakage at 1000 psi
  Adjust packing nut when the working pressure is higher than 1000 psi to prevent leakage.

Components	Material
1 Handle	Nylon
2 Set Screw	Stainless Steel
3 Packing Bolt	316 SS
4 Upper Giand	316 SS
5 Bushing	PTFE
6 Lower Gland	316 SS
7 Upper Packing	PTFE
8 Ball Stem	316 SS
9 Side Rings	316 SS
10 Side Discs	316 SS
11 Lower Gland	PTFE
12 Pannel Nut	316 SS
13 Body	316 SS

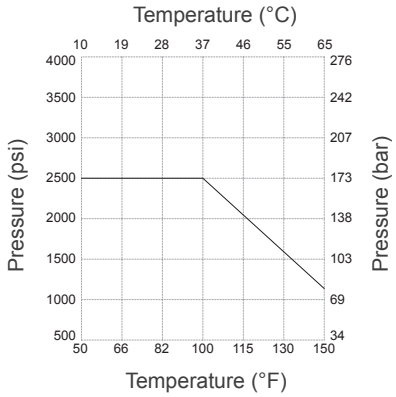
Materials of Construction



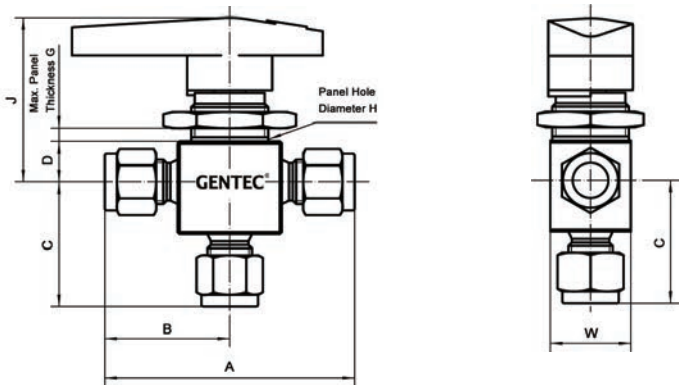
Flow Path Designator



Pressure-Temperature



Dimensions



Fractional Tube Fittings

Model	Orifice (in.)	CV	Connection Type Inlet/Outlet	Dimension (in.)								
				A	B	C	D	F	G	H	J	w
SS-BV33-TF2	0.093	0.15	1/8" GENLOK	2.01	1.01	0.97	0.34	0.13	1/4	19/32	1.36	0.58
SS-BV35-TF4	0.187	0.90	1/4" GENLOK	2.39	1.20	1.17	0.44	1.53	3/16	25/32	1.56	0.78

NPT Fittings

Model	Orifice (in.)	CV	Connection Type Inlet/Outlet	Dimension (in.)								
				A	B	C	D	F	G	H	J	w
SS-BV34-FNT2	0.125	0.30	1/8" Female NPT	1.63	0.81	0.81	0.34	0.13	1/4	19/32	1.36	0.58
SS-BV35-FNT4	0.187	0.75	1/4" Female NPT	2.06	1.03	1.03	0.44	1.53	3/16	25/32	1.56	0.78

Ordering Information

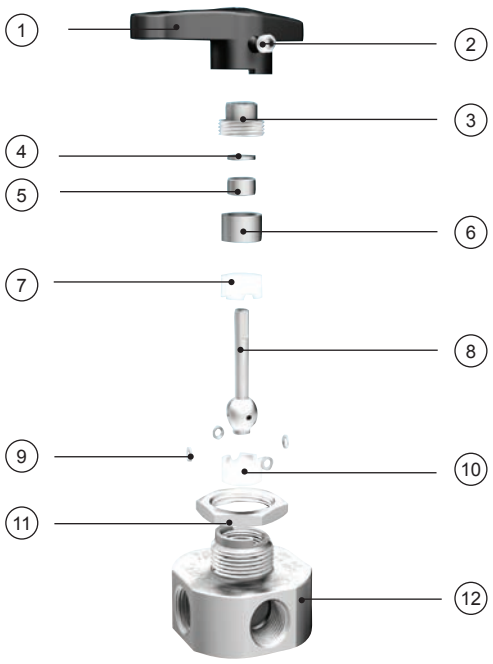
EX: SS -	BV34 -	FNT4
Body Material	**Series**	**Inlet / Outlet Connection**
SS: 316 SS	**BV33** **BV34** **BV35**	TF2: 1/8" GENLOK TF4: 1/4" GENLOK FNT2: 1/8" Female NPT FNT4: 1/4" Female NPT

Product Features

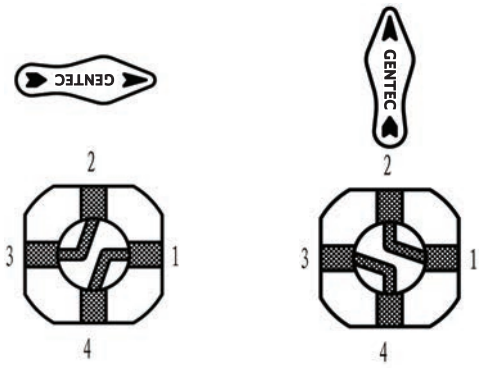
- 4-Way valve
- Maximum operating pressure: 2500 psi (172bar)
  (For pressure limitations under high temperature conditions, refer to pressure-temperature table)
- Operating temperature: 50°F ~ 150°F (10°C ~ 65°C)
- End connection: NPT
- Capsule packing allows crossover of two streams
- Panel mounting available
- Top-loaded design allows in-line adjustment
- Multi-directional flow allows easy cleaning and purging
- Cleaned and degreased for oxygen service according to CGA G-4.1 and ASTM G93 Class C, respectively
- Every valve is factory tested for leakage at 1000 psi
  Adjust packing nut when working pressure is higher than 1000 psi to prevent leakage.

Materials of Construction

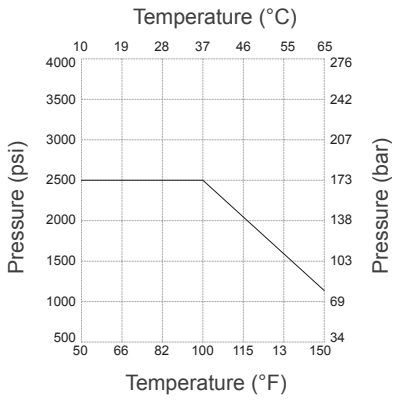
Components	Material
1 Handle	Nylon
2 Set Screw	Stainless steel
3 Packing Bolt	316 SS
4 Upper Giand	316 SS
5 Bushing	PTFE
6 Lower Gland	316 SS
7 Upper Packing	PTFE
8 Ball Stem	316 SS
9 Side Rings	316 SS
10 Lower Gland	PTFE
11 Pannel Nut	316 SS
12 Body	316 SS



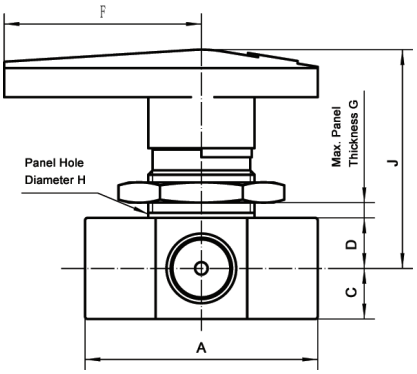
Flow Path Designator



Pressure-Temperature



Dimensions



NPT Fittings

Model	Orifice (in.)	CV	Connection Type Inlet / Outlet	Dimension (in.)							
				A	B	C	D	F	G	H	J
SS-BV42-FNT2	0.062	0.08	1/8" Female NPT	1.55	0.78	-	0.44	1.53	3/16	29/32	1.69
SS-BV42-FNT4	0.062	0.08	1/4" Female NPT	1.81	0.91	-	0.44	1.53	3/16	29/32	1.69

Ordering Information

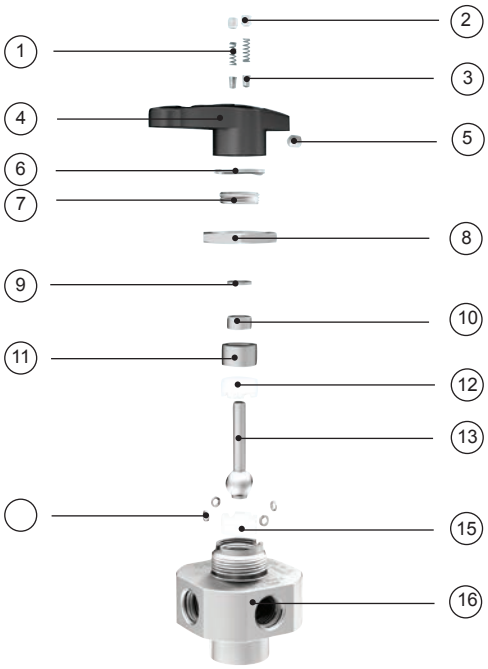
EX: SS -	BV42 -	FNT2
Body Material	**Series**	**Inlet / Outlet Connection**
SS: 316 SS	**BV42**	FNT2: 1/8" Female NPT FNT4: 1/4" Female NPT

Product Features

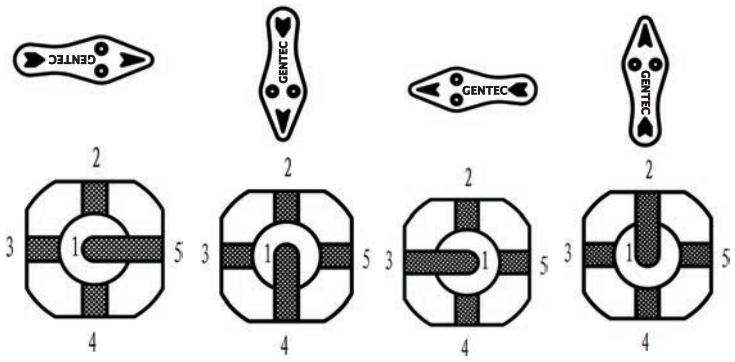
- 5-Way valve
- Maximum operating pressure: 2500 psi (172bar)
  (For pressure limitations under high temperature conditions, refer to pressure-temperature table)
- Operating temperature: 50°F ~ 150°F (10°C ~ 65°C)
- Handle indicates flow direction
- End connection: Female NPT
- The gas enters through the bottom port and exits in one of four ports
- The spring-loaded indexing pins on the handle assures accurate alignment and maximize flow
- Panel mounting available
- Top-loaded design allows in-line valve adjustment
- Cleaned and degreased for oxygen service according to CGA G-4.1 and ASTM G93 Class C, respectively
- Every valve is factory tested for leakage at 1000 psi
  Adjust packing nut when the working pressure is higher than 1000 psi to prevent leakage.

Components	Material
1 Set Screw	Stainless steel
2 Screw	316 SS
3 Pin	316 SS
4 Handle	Nylon
5 Set Screw	Stainless Steel
6 Gland	ST12
7 Packing Bolt	316 SS
8 Pannel Nut	316 SS
9 Upper Gland	316 SS
10 Bushing	PTFE
11 Lower Gland	316 SS
12 Upper Gland	PTFE
13 Ball Stem	316 SS
14 Side Rings	316 SS
15 Lower Gland	PTFE
16 Body	316 SS

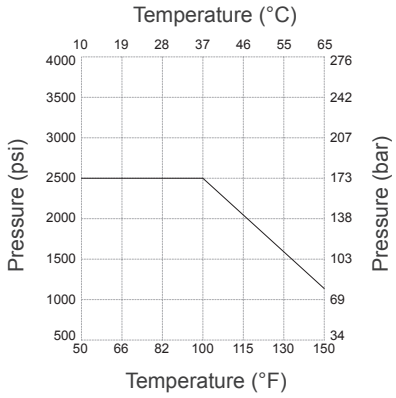
Materials of Construction



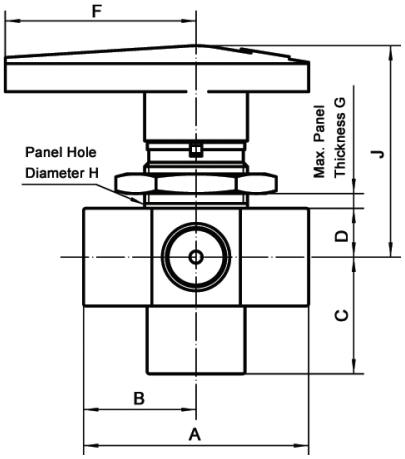
Flow Path Designator



Pressure-Temperature



Dimensions



NPT Fittings

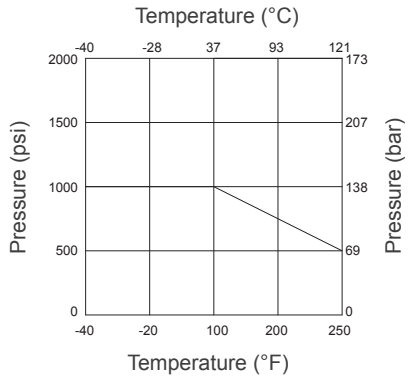
Model	Connection Type Inlet/Outlet	Orifice (in.)	CV	Dimension (in.)							
				A	B	C	D	F	G	H	J
SS-BV52-FNT2	1/8" Female NPT	0.062	0.07	1.55	0.78	0.88	0.44	1.53	5/32	29/32	1.69
SS-BV52-FNT4	1/4" Female NPT	0.062	0.07	1.81	0.91	0.85	0.44	1.53	5/32	29/32	1.69

Ordering Information

EX: SS -	BV52 -	FNT2
Body Material	**Series**	**Inlet / Outlet Connection**
SS: 316 SS	**BV52**	FNT2: 1/8" Female NPT FNT4: 1/4" Female NPT

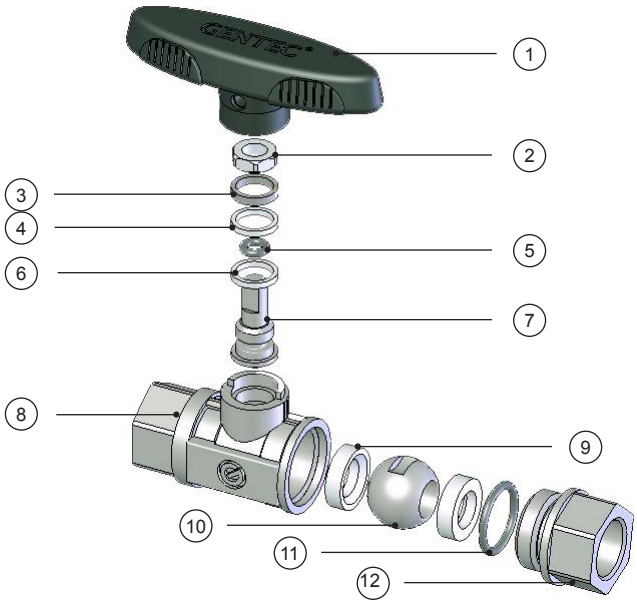
Product Features

- Maximum operating pressure: 1000 psi (69 bar)
  (For pressure limitations under high temperature conditions, refer to pressure-temperature table)
- Operating temperature: -40°F ~ 248°F (-40°C ~ 120°C)
- End connections: GENLOK and NPT
  (please refer to the tables on next page for the specifications)
- Cleaned and degreased for oxygen service according to CGA G-4.1 and ASTM G93 Class C, respectively
- Every valve is factory tested for leakage



Materials of Construction

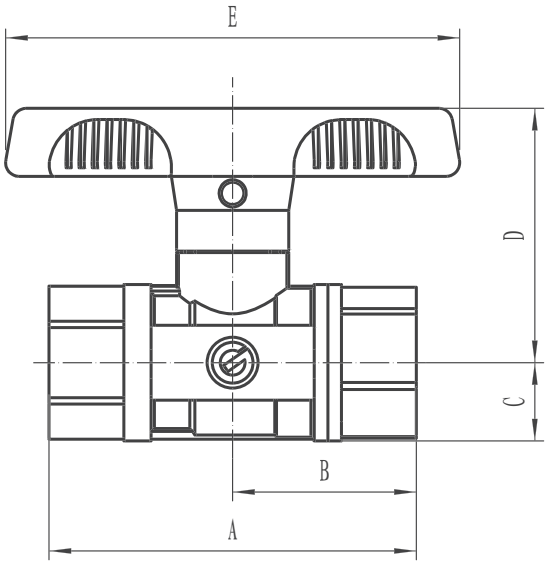
Components	Material
1 Handle	Nylon
2 Lock Nut	316 SS
3 Upper Gland	316 SS
4 Bushing	PTFE
5 O-ring	CR
6 Bushing	PTFE
7 Ball Stem	316 SS
8 Body	316 SS
9 Packing	PTFE
10 Ball	316 SS
11 O-ring	PTFE
12 Connector	316 SS



BV112, BV113, BV114, BV116, BV118 SERIES

Low Pressure Ball Valves

Dimensions



Fractional Tube Fittings

Model	Orifice (in.)	CV	Connection Type		Dimension (in.)				
			Inlet	Outlet	A	B	C	D	E
SS-BV112-TF4	0.20	1.3	1/4" GENLOK		3.15	1.57	0.45	1.48	2.63
SS-BV113-TF6	0.28	2.6	3/8" GENLOK		3.31	1.65	0.45	1.48	2.63
SS-BV114-TF8	0.41	10.5	1/2" GENLOK		4.17	2.09	0.77	2.07	3.70
SS-BV116-TF12	0.51	13.5	3/4" GENLOK		4.17	2.09	0.77	2.07	3.70
SS-BV118-TF16	0.63	18	1" GENLOK		4.25	2.13	0.77	2.07	3.70

NPT Fittings

Model	Orifice (in.)	CV	Connection Type		Dimension (in.)				
			Inlet	Outlet	A	B	C	D	E
SS-BV112-FNT4	0.20	1.3	1/4" Female NPT		2.13	1.06	0.45	1.48	2.63
SS-BV112-NT4	0.20	1.3	1/4" Male NPT		2.83	1.42	0.45	1.48	2.63
SS-BV113-FNT6	0.28	2.6	3/8" Female NPT		2.13	1.06	0.45	1.48	2.63
SS-BV113-NT6	0.28	2.6	3/8" Male NPT		2.83	1.42	0.45	1.48	2.63
SS-BV114-FNT8	0.41	10.5	1/2" Female NPT		3.31	1.65	0.77	2.07	3.70
SS-BV116-FNT12	0.51	13.5	3/4" Female NPT		3.31	1.65	0.77	2.07	3.70

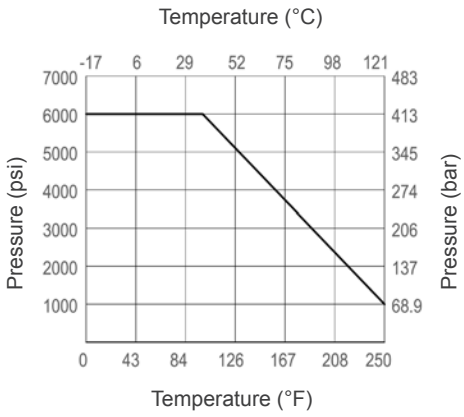
Ordering Information

EX: SS -	BV112 -	FNT4
Body Material	**Series**	**Inlet / Outlet Connection***
SS: 316 SS	**BV112** **BV113** **BV114** **BV116** **BV118**	FNT4: 1/4” Female NPT TF4: 1/4” GENLOK NT4: 1/4” Male NPT .....

* Specifications listed in table above change to. Please refer to the chart above for the available specifications for the desired connection type.

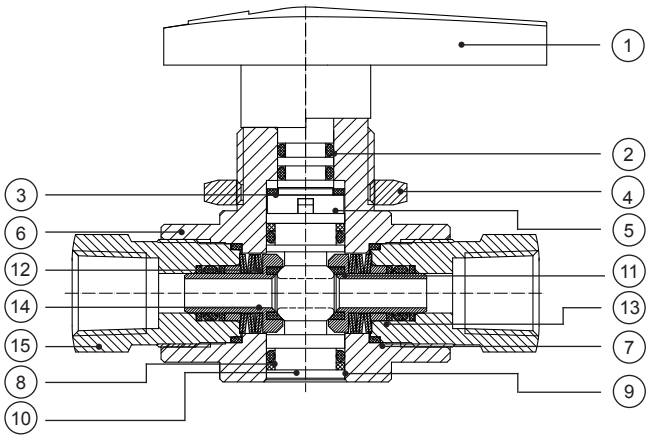
Product Features

- Maximum operating pressure: 6000 psi (415 bar)
  (For pressure limitations under high temperature conditions, refer to pressure-temperature table)
- Operating temperature: 1.4°F ~ 250°F (-17°C ~ 121°C)
- Handle indicates flow direction
- End connections: GENLOK and Female NPT
  (please refer to the specification tables for available dimensions)
- Panel mounting available
- Cleaned and degreased for oxygen service according to CGA G-4.1 and ASTM G93 Class C, respectively
- Every valve is factory tested for leakage with Nitrogen at 6000 psi

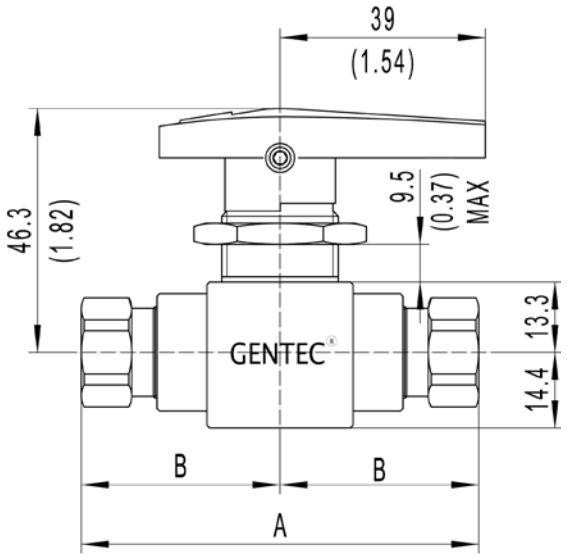


Materials of Construction

Components	Material
1 Handle	Nylon
2 O-ring	Fluororubber
3 Spacer	Enhanced PTFE
4 Mounting Nut	316 SS
5 Upper Valve Stem	316 SS
6 Valve Body	316 SS
7 End Screw Seal Ring	Enhanced PTFE
8 O-ring	Fluororubber
9 Stop Collar	Enhanced PTFE
10 Bottom Valve Stem	316 SS
11 Valve Base	PCTFE
12 Resilient Pad	60Si2Mn
13 Stop Collar	Enhanced PTFE
14 Valve Base Shelf	316 SS
15 End Threaded Fitting	316 SS



Dimensions



Fractional and Metric Tube Fittings

Model	Orifice (in.)	CV	Connection Type		Dimension (in.)		Panel Mounting Hole Diameter(in.)
			Inlet	Outlet	A	B	
SS-BV615-TF4	0.187	1.6	1/4" GENLOK		4.14	2.07	0.91
SS-BV615-TF6	0.187	1.4	3/8" GENLOK		4.39	2.19	0.91
SS-BV615-TF8	0.187	1.0	1/2" GENLOK		4.60	2.30	0.91
SS-BV615-TF6M	0.187	1.6	6mm GENLOK		4.14	2.07	0.91
SS-BV615-TF8M	0.187	1.5	8mm GENLOK		4.14	2.07	0.91
SS-BV615-TF10M	0.187	1.3	10mm GENLOK		4.39	2.19	0.91
SS-BV615-TF12M	0.187	1.0	12mm GENLOK		4.60	2.30	0.91

NPT Fittings

Model	Orifice (in.)	CV	Connection Type		Dimension (in.)		Panel Mounting Hole Diameter(in.)
			Inlet	Outlet	A	B	
SS-BV615-FNT2	0.187	1.2	1/8" Female NPT		2.94	1.47	0.91
SS-BV615-FNT4	0.187	1.0	1/4" Female NPT		2.93	1.47	0.91

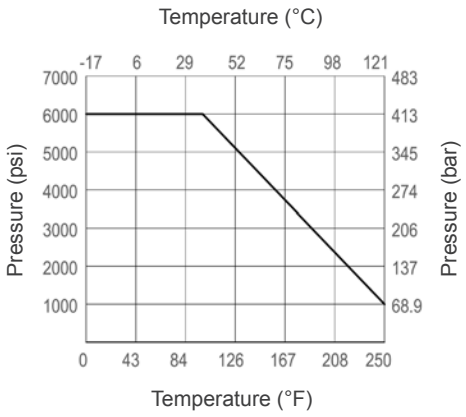
Ordering Information

EX: SS -	BV112 -	FNT4
Body Material	**Series**	**Inlet / Outlet Connection***
SS: 316 SS	**BV615**	FNT4: 1/4" Female NPT .....

* Specifications listed in table above change to. Please refer to the chart above for the available specifications for the desired connection type.

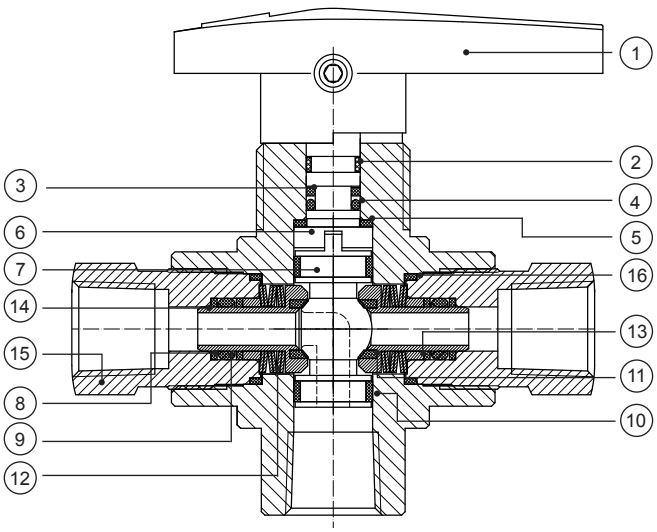
Product Features

- Maximum operating pressure: 6000 psi (415 bar)
  (For pressure limitations under high temperature conditions,
  refer to pressure-temperature table)
- Operating temperature: 1.4°F ~ 250°F (-17°C ~ 121°C)
- Handle indicates flow direction
- Inlet Connection: 1/4" NPT
  Outlet connections: GENLOK and NPT
  (please refer to the specification tables for available dimensions)
- Panel mounting available
- Cleaned and degreased for oxygen service according to CGA G-4.1 and ASTM G93 Class C, respectively
- Every valve is factory tested for leakage with nitrogen at 6000 psi

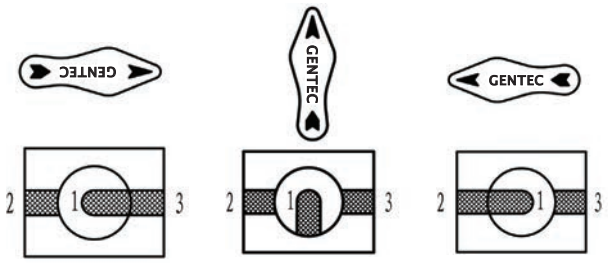


Components	Material
1 Handle	Nylon
2 slip ring	PEEK
3 Stop Collar	Enhanced PTFE
4 O-ring	Fluororubber
5 Spacer	PEEK
6 Upper Valve Stem	316 SS
7 Bottom Valve Stem	316 SS
8 Stop Collar	Enhanced PTFE
9 O-ring	Fluororubber
10 Slip Ring	PEEK
11 Valve Seat	PCTFE/PEEK
12 Resilient Pad	60Si12Mn
13 Stop Collar	316 SS
14 End Threaded Fitting	316 SS
15 Valve Seat Holder	316 SS
16 Seal Ring	PTFE

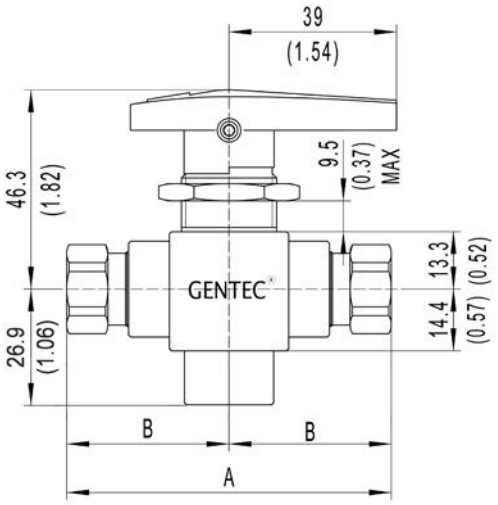
Materials of Construction



Flow Path Designator



Dimensions

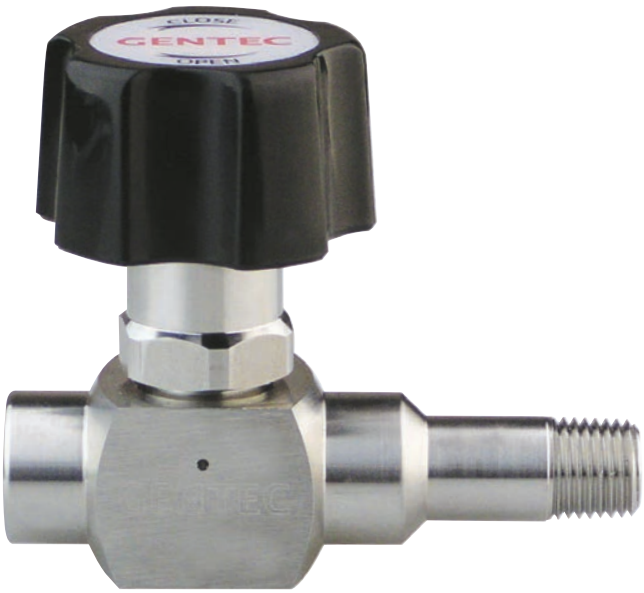


Model	Orifice (in.)	CV	Connection Type		Dimension (in.)		Panel Mounting Hole Diameter(in.)
			Inlet	Outlet	A	B	
SS-BV635-FNT4	0.187	1.0	1/4" Female NPT		2.93	1.47	0.91
SS-BV635-FNT2	0.187	1.2	1/4" Female NPT	1/8" Female NPT	2.94	1.47	0.91
SS-BV635-TF4	0.187	1.6	1/4" Female NPT	1/4" GENLOK	4.14	2.07	0.91
SS-BV635-TF6	0.187	1.4	1/4" Female NPT	3/8" GENLOK	4.39	2.19	0.91
SS-BV635-TF8	0.187	1.0	1/4" Female NPT	1/2" GENLOK	4.60	2.30	0.91
SS-BV635-TF6M	0.19	1.6	1/4" Female NPT	6mm GENLOK	4.14	2.07	0.91
SS-BV635-TF8M	0.19	1.5	1/4" Female NPT	8mm GENLOK	4.14	2.07	0.91
SS-BV635-TF10M	0.19	1.3	1/4" Female NPT	10mm GENLOK	4.41	2.20	0.91
SS-BV635-TF12M	0.19	1.0	1/4" Female NPT	12mm GENLOK	4.60	2.30	0.91

Ordering Information

EX: SS -	BV635 -	FNT4 -	E
Body Material	**Series**	**Inlet / Outlet Connection***	**Options**
SS: 316 SS	**BV635**	FNT4: 1/4" Female NPT	Blank: PCTFE (Valve seat material) E: PEEK

* Specifications listed in table above change to. Please refer to the chart above for the available specifications for the desired connection type.



Product Features

- Suitable for high purity applications
- NPT connection
- Internal spring-less design
- Metal-to-metal seal minimizes particle generation and ensures purity integrity in the flow passages
- Long service life
- 100% Helium leak tested

Materials

- Body: Plated Brass
- Seat: PCTFE
- Diaphragm: Elgiloy®

Specifications

- Cv: 0.17
- Leak Rate

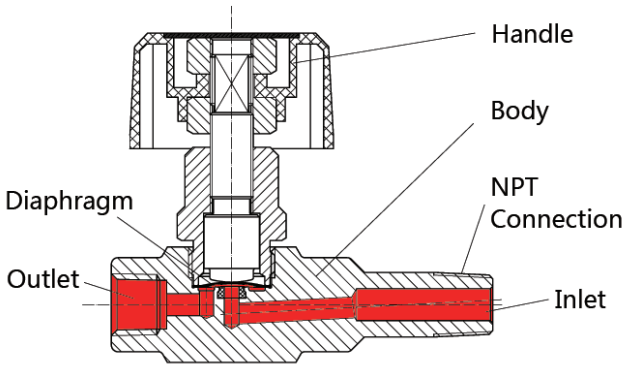
  Inboard: $1x10^{-9}$ atm cc/sec He

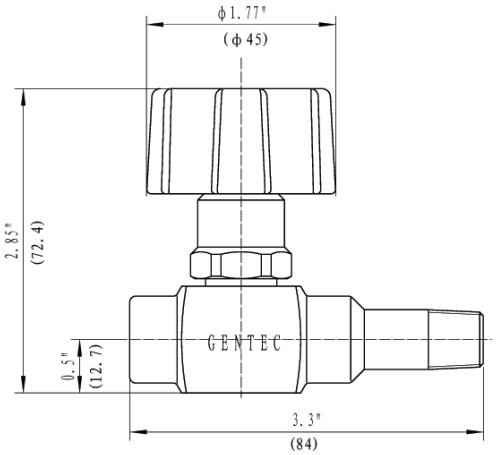
  Across Seat: $4x10^{-9}$ atm cc/sec He
- Proof Pressure: 150% of maximum operating pressure
- Burst Pressure: 400% of maximum operating pressure

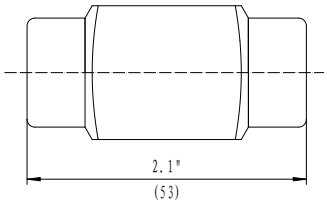
Operating Conditions

- Maximum operating pressure: 300 psi (20 bar)
- Minimum operating pressure: Vacuum
- Operating temperature: 40°F ~ 150°F (-40°C ~ 65°C)

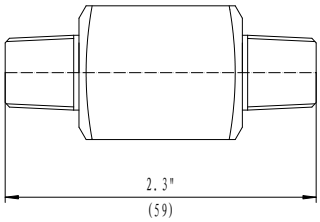
Dimensions







FNT4



NT4

Ordering Information

EX: BP -	DV11	N	L -	FNT4
Body Material	Series	Actuation	Working Pressure	Inlet / Outlet Connection
BP: Plated Brass	DV11	N: Handwheel (without status window)	L: 300 psi	NT4: 1/4" Male NPT FNT4: 1/4" Female NPT

Product Features

- Suitable for high purity applications
- NPT connection
- Internal spring-less design
- Metal-to-metal seal minimizes particle generation and ensures purity integrity in the flow passages
- Long service life
- 100% Helium leak tested

Materials

- Body: Brass, Plated Brass
- Seat: PCTFE
- Diaphragm: Elgiloy®

Specifications

- Cv: 0.17
- Leak Rate

  Inboard: $1x10^{-9}$ atm cc/sec He

  Across Seat: $4x10^{-9}$ atm cc/sec He
- Proof Pressure: 150% of maximum operating pressure
- Burst Pressure: 400% of maximum operating pressure

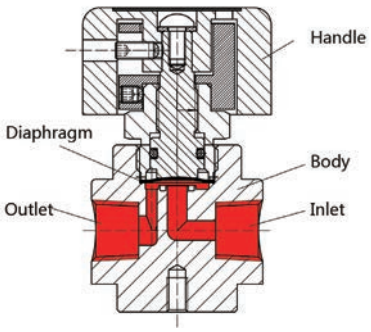
Operating Conditions

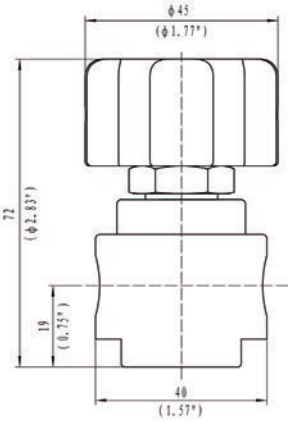
- Maximum operating pressure: 3500 psi (240 bar)
- Minimum operating pressure: Vacuum
- Operating temperature: 40°F ~ 150°F (-40°C ~ 65°C)

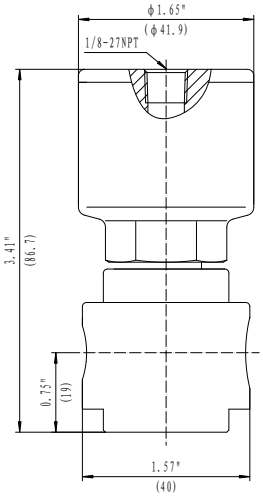
Pneumatic Actuator

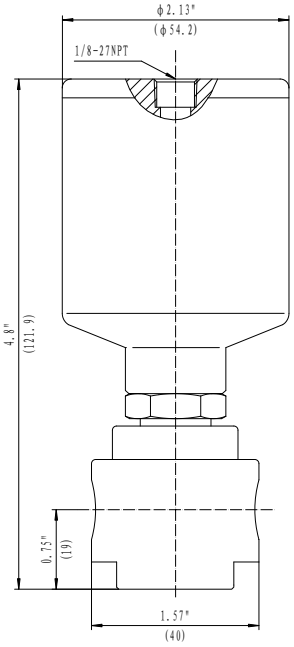
- Operating pressure: 70-125 psi
- Inlet Connection: 1/8” NPT(F)
- Working Status: Normally closed

Dimensions



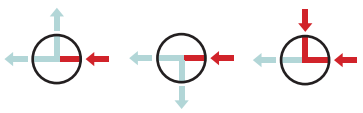
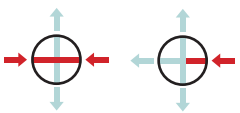
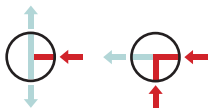
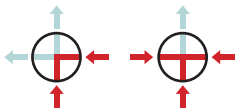






Manual | Pneumatic (Low Pressure) | Pneumatic (High Pressure)

Flow Path Designator

Type	Three-way			Four-way	
Flow schematic	B	C	D	I	J
Red arrow indicates inlet, Blue arrow indicates outlet*					
Flow schematic	E	F		K	L
Red arrow indicates inlet, Blue arrow indicates outlet*					

*All schematics are from top view

Ordering Information

EX: BP -	DV13	M	H	B -		FNT4 -	NO
Body Material	Series	Actuation	Working Pressure	Flow Path		Inlet / Outlet Connection	Options
B: Brass BP: Plated Brass	DV13	M: Handwheel (with status window) P: Pneumatic actuator (Normally closed)	H: 3500 psi L: 300 psi	Blank: In-line Type Three-way valve B: Right inlet, left / top outlet C: Right inlet, left / bottom outlet D: Right / top inlet, left outlet E: Right inlet, top / bottom outlet F: Top / bottom inlet, left outlet	Four-way valve I: Two inlet / two outlet J: One inlet / three outlet K: Two inlet / two outlet (elbow) L: Three inlet / one outlet	FNT4	Blank: Standard NO: Normally open (Pneumatic, Low Pressure)

Please refer to Flow Path Designator table above

Handle

Pneumatic (150 psi)

Handwheel handle

Product Features

- Suitable for high purity applications
- Connections: FSR, NPT and GENLOK
- Internal spring-less design
- Metal-to-metal seal minimizes particle generation and ensures purity integrity in the flow passages
- Long service life
- 100% Helium leak tested

Materials

- Body: 316L
- Seat: PCTFE
- Diaphragm: Elgiloy®

Specifications

- Cv: 0.2
- Leak Rate

  Inboard: $1x10^{-9}$ atm cc/sec He

  Across Seat: $4x10^{-9}$ atm cc/sec He
- Proof Pressure: 150% of maximum operating pressure
- Burst Pressure: 400% of maximum operating pressure

Operating Conditions

- Maximum operating pressure: 300 psi (20 bar)
- Minimum operating pressure: Vacuum
- Operating temperature: 40°F ~ 150°F (-40°C ~ 65°C)

Pneumatic Actuator

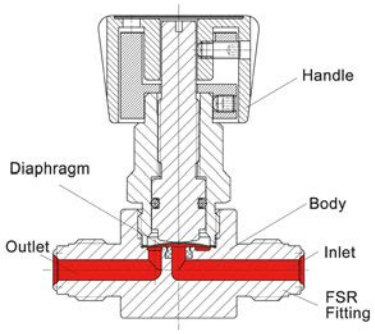
- Operating pressure: 70-125 psi (DV51PL)

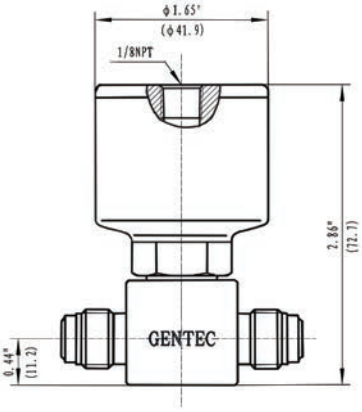
  60-90 psi (DV51PS)
- Inlet Connection: 1/8” NPT(F)
- Working Status: Normally closed

Surface Finish

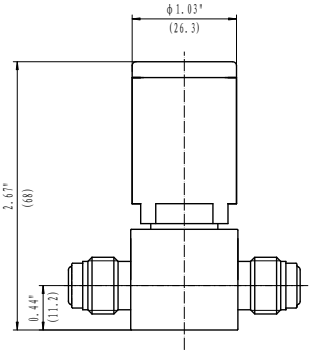
- Standard Ra: 20 µin

Dimensions

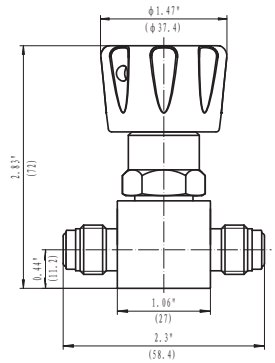




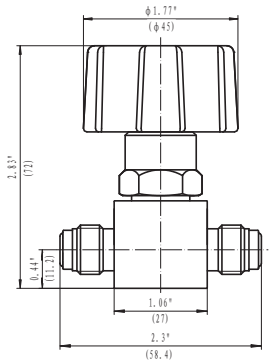
Pneumatic (300 psi)



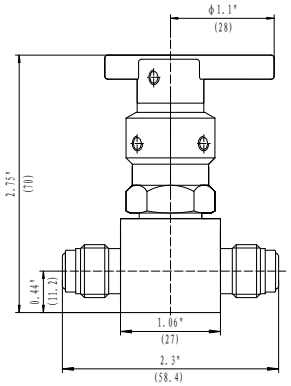
Pneumatic (150 psi)



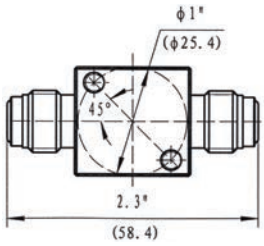
Handwheel (with status window)



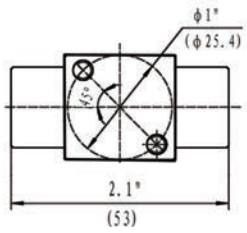
Handwheel (without status window)



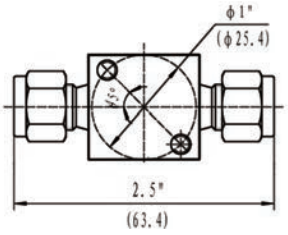
Handle (300 psi)



Face Seal Male Fittings



NPT Fittings



GENLOK Fittings

Ordering Information

EX: SL -	DV51	M	L -	VM4 - NT4 -	NO
Body Material	**Series**	**Actuation**	**Working Pressure**	**Inlet / Outlet Connection**	**Options**
SL: 316L	**DV51**	M: Handwheel (with status window) P: Pneumatic actuator (normally closed) B: Handle N: Handwheel (without status window)	L: 300 psi S: 150 psi	NT4 FNT4 TF4 VM4	Blank: Standard NO: Normally open (Pneumatic)

Product Features

- Suitable for high purity applications
- Connections: FSR, NPT and GENLOK
- Metal-to-metal seal minimizes particle generation and ensures purity integrity in the flow passages
- Long service life
- 100% Helium leak tested

Materials

- Body: 316L
- Seat: PCTFE
- Diaphragm: Elgiloy®

Specifications

- Cv: 0.16
- Leak Rate

  Inboard: $1x10^{-9}$ atm cc/sec He

  Across Seat: $4x10^{-9}$ atm cc/sec He
- Proof Pressure: 150% of maximum operating pressure
- Burst Pressure: 400% of maximum operating pressure

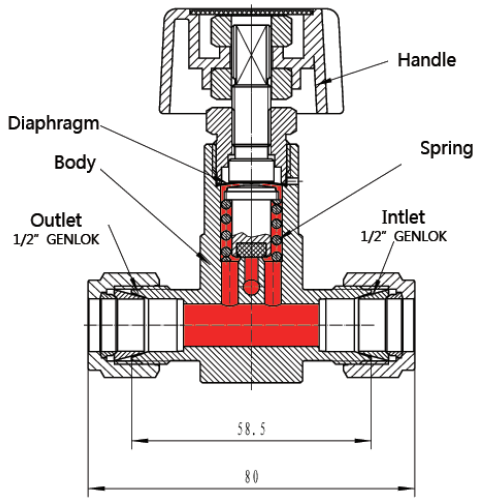
Operating Conditions

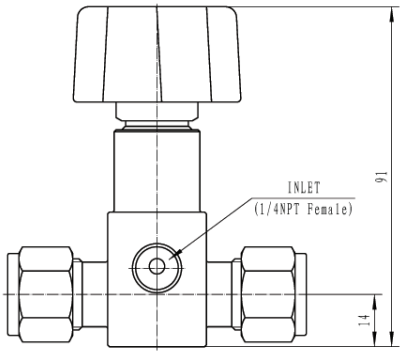
- Maximum operating pressure: 3500 psi (240 bar)
- Minimum operating pressure: Vacuum
- Operating temperature: 40°F ~ 150°F (-40°C ~ 65°C)

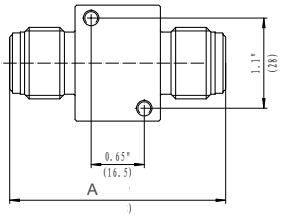
Surface Finish

- Standard Ra: 20 µin

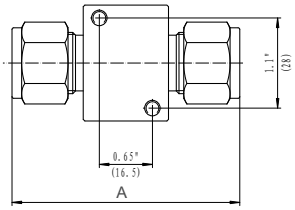
Dimensions



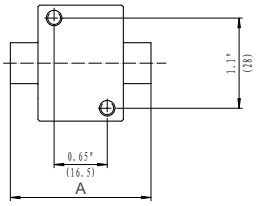




Face seal male (FSR fittings)

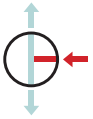
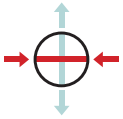


GENLOK Fitting



Butt welded

Flow Path Designator

Type	Three-way	Four-way
Flow schematic	E	I
Red arrow indicates inlet, Blue arrow indicates outlet*		

*All schematics are from top view

Inlet	Outlet	A (mm)
FNT4	TF6	50.3
FNT4	TF8	58.5
FNT4	TW6	58.5
FNT4	TW8	39.5
FNT4	VM8	67.1

Ordering Information

EX: SL -	DV53	M	H	E -	FNT4 -	TF6
Body Material	**Series**	**Actuation**	**Working Pressure**	**Flow Path**	**Inlet Connection**	**Outlet Connection**
SL: 316SL	**DV53**	N: Handwheel (without status window) M: Handwheel (with status window)	H: 3500 psi	Three-way valve E: Right inlet, top / bottom outlet Four-way valve I: Two inlet / two outlet Please refer to Flow Path Designator table above	FNT4	TF6, TF8 TW6, TW8 VM8

Manual
(Low Pressure)

Manual
(High Pressure)

Surface Finish

- Standard Ra: 10-15 µin

Internal Volume

- 1.6 cc

Product Features

- Suitable for high purity applications
- 316Lstainless steel enhances weldability and resistance to corrosion
- Both manual and pneumatic actuation are available
- Face seal fittings (FSR) or butt welded connections
- Internal spring-less design
- Metal-to-metal seal minimizes particle generation and ensures high purity in the flow passages
- Handle includes a status window to indicate open / closed position
- Long service life
- 100% Helium leak tested

Materials

- Body: 316L
- Seat: PCTFE*, Vespel®**
- Diaphragm: Elgiloy®

Specifications

- Cv: 0.3
- Leak Rate
  Inboard: $1x10^{-9}$ atm cc/sec He
  Across Seat: $4x10^{-9}$ atm cc/sec He
- Proof Pressure: 150% of maximum operating pressure
- Burst Pressure: 400% of maximum operating pressure

Operating Conditions

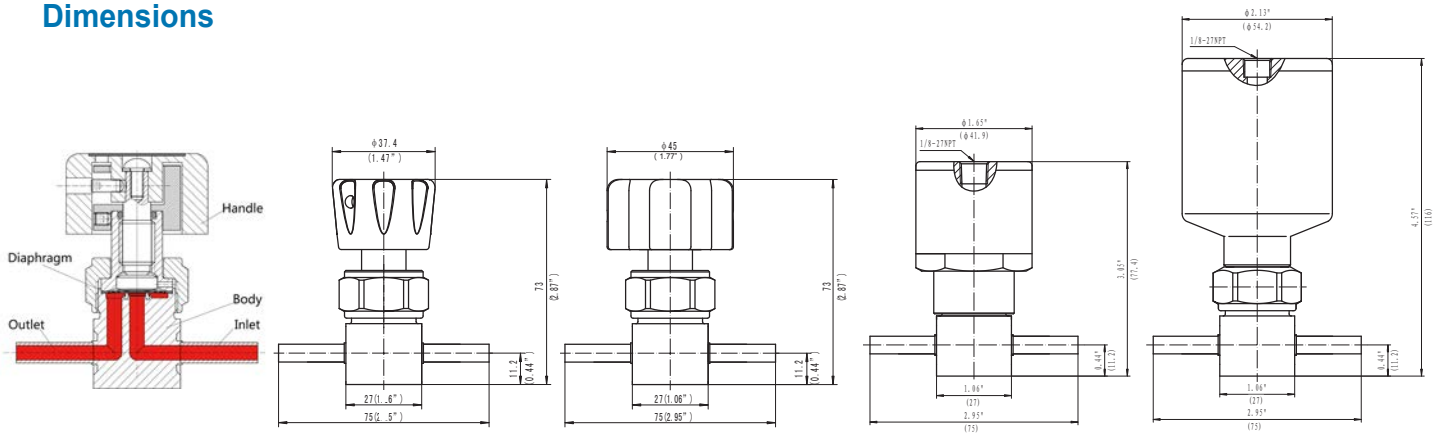
- Maximum operating pressure: 300 psi (20 bar), 3500 psi (240 bar)
- Minimum operating pressure: Vacuum
- Operating temperature: 40°F ~ 150°F (-40°C ~ 65°C)

Pneumatic Actuator

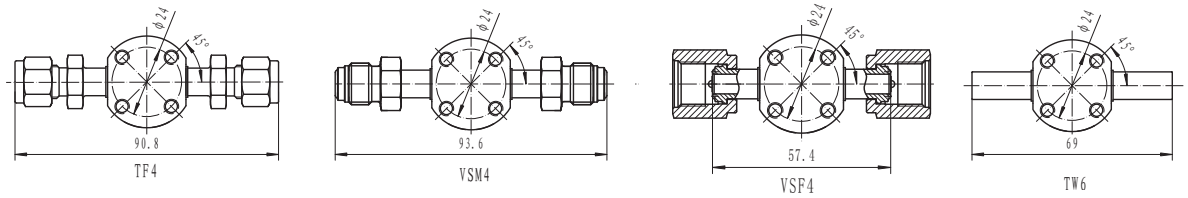
- Operating pressure: 70-125 psi
- Inlet Connection: 1/8” NPT(F)
- Working Status: Normally closed

* Standard Material
** Vespel® seat is recommended for Nitrous Oxide (N2O) service but is not available for low pressure pneumatic actuation

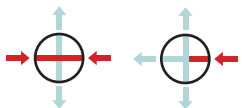
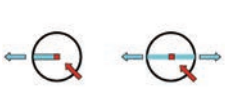
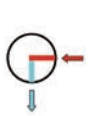
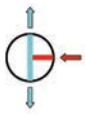
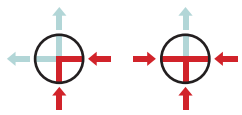
Dimensions



Manual (Low Pressure) Manual (High Pressure) Pneumatic (Low Pressure) Pneumatic (High Pressure)



Flow Path Designator

Type	Elbow	Three-way			Four-way		Rear-entry	
Flow schematic	P	B	C	D	I	J	A	T
Red arrow indicates inlet, Blue arrow indicates outlet*								
Flow schematic	Q	E	F	H	K	L	R	
Red arrow indicates inlet, Blue arrow indicates outlet*								

*All schematics are from top view

Ordering Information

EX: SL -	DV54	M	H	B -		TW4 -	NO
Body Material	Series	Actuation	Working Pressure	Flow Path		Inlet / Outlet Connection	Options
SL: 136L	DV54	M: Handwheel (with status window) P: Pneumatic actuator (Normally closed)	H: 3500 psi L: 300 psi	Blank: In-line Type Elbow Type P: Right in / top out Q: Right in / bottom out Three-way Valve B: Right inlet, left / top outlet C: Right inlet, left / bottom outlet D: Right / top inlet, left outlet E: Right inlet, top / bottom outlet F: Top / bottom inlet, left outlet H: Left / right inlet, top outlet	Four-way Valve I: Two inlet / two outlet J: One inlet / three outlet K: Two inlet / two outlet (elbow) L: Three inlet / one outlet Rear-entry Valve A: Rear inlet / one outlet T: Rear inlet / two outlet R: Rear inlet / four outlet	TW4 TW6 VSM4 VSF4 TF4	Blank: Standard NO: Normally open (Pneumatic, Low Pressure)

Please refer to Flow Path Designator table above

*: For standard models, if the high pressure (inlet) connections and low pressure (outlet) connections are same, list only one..
If different, the prior represents inlet connection, and the latter represents outlet connection.

Manual
(High Pressure)

Pneumatic
(High Pressure)

Product Features

- Suitable for ultra high purity applications
- 316Lstainless steel enhances weldability and resistance to corrosion
- Both manual and pneumatic actuation are available
- Face seal fittings (FSR) or butt welded connections
- Internal spring-less design
- Metal-to-metal seal minimizes particle generation and ensures high purity in the flow passages
- Handle includes a status window to indicate open / closed position
- Long service life
- 100% Helium leak tested
- Multiple flow paths available
- Electropolished

Materials

- Body: 316L
- Seat: PCTFE*, Vespel®**
- Diaphragm: Elgiloy®

Specifications

- Cv: 0.3
- Leak Rate
  Inboard: $1x10^{-9}$ atm cc/sec He
  Across Seat: $4x10^{-9}$ atm cc/sec He
- Proof Pressure: 150% of maximum operating pressure
- Burst Pressure: 400% of maximum operating pressure

Operating Conditions

- Maximum operating pressure: 300 psi (20 bar), 3500 psi (240 bar)
- Minimum operating pressure: Vacuum
- Operating temperature: 40°F ~ 150°F (-40°C ~ 65°C)

Surface Finish

- Standard Ra(EP): 7 µin

Internal Volume

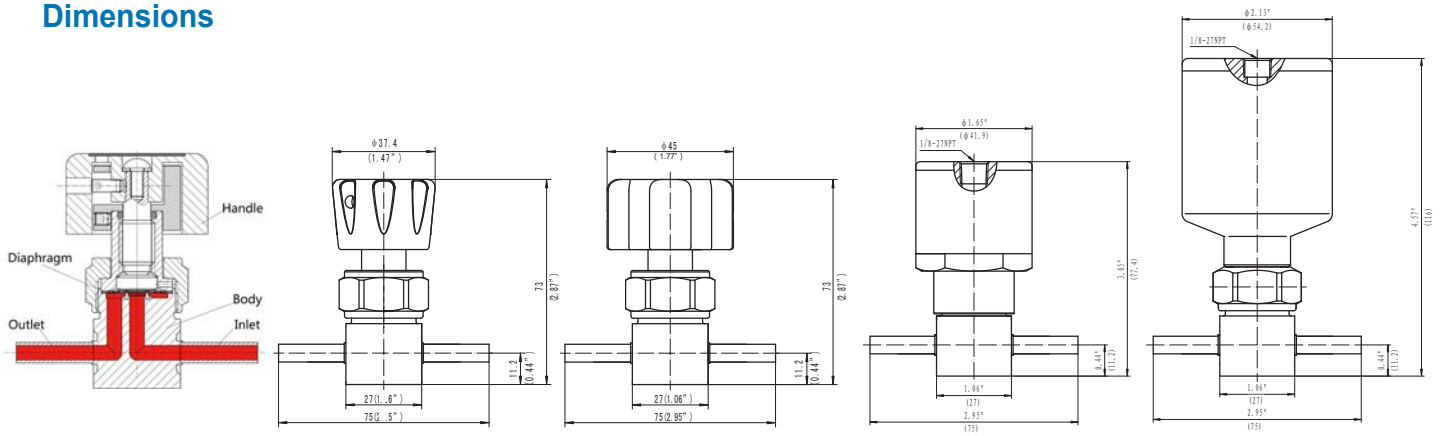
- 1.6 cc

Pneumatic Actuator

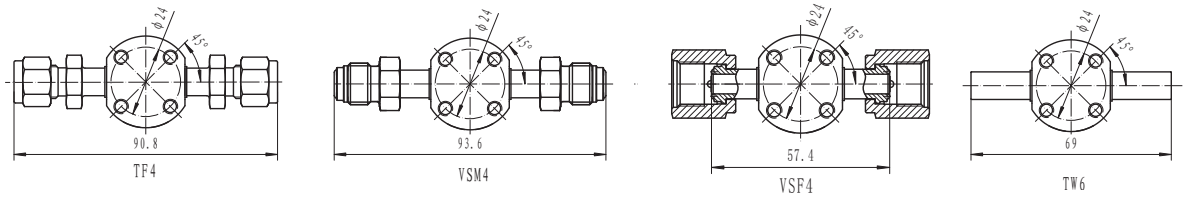
- Operating pressure: 70-125 psi
- Inlet Connection: 1/8” NPT(F)
- Working Status: Normally closed

* Standard Material
** Vespel® seat is recommended for Nitrous Oxide (N2O) service but is not available for low pressure pneumatic actuation

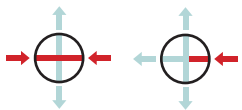
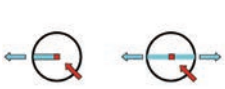
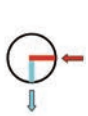
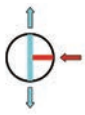
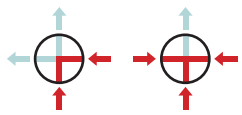
Dimensions



Manual (Low Pressure) Manual (High Pressure) Pneumatic (Low Pressure) Pneumatic (High Pressure)



Flow Path Designator

Type	Elbow	Three-way			Four-way		Rear-entry	
Flow schematic	P	B	C	D	I	J	A	T
Red arrow indicates inlet, Blue arrow indicates outlet*								
Flow schematic	Q	E	F	H	K	L	R	
Red arrow indicates inlet, Blue arrow indicates outlet*								

*All schematics are from top view

Ordering Information

EX: SL -	DV74	M	H	B -		TW4 -	NO
Body Material	Series	Actuation	Working Pressure	Flow Path		Inlet / Outlet Connection	Options
SL: 136L	DV74	M: Handwheel (with status window) P: Pneumatic actuator (Normally closed)	H: 3500 psi L: 300 psi	Blank: In-line Type Elbow Type P: Right in / top out Q: Right in / bottom out Three-way Valve B: Right inlet, left / top outlet C: Right inlet, left / bottom outlet D: Right / top inlet, left outlet E: Right inlet, top / bottom outlet F: Top / bottom inlet, left outlet H: Left / right inlet, top outlet Please refer to Flow Path Designator table above	Four-way Valve I: Two inlet / two outlet J: One inlet / three outlet K: Two inlet / two outlet (elbow) L: Three inlet / one outlet Rear-entry Valve A: Rear inlet / one outlet T: Rear inlet / two outlet R: Rear inlet / four outlet	TW4 TW6 VSM4 VSF4 TF4	Blank: Standard NO: Normally open (Pneumatic, Low Pressure)

*: For standard models, if the high pressure (inlet) connections and low pressure (outlet) connections are same, list only one..
If different, the prior represents inlet connection, and the latter represents outlet connection.

Manual

Pneumatic

Product Features

- Suitable for general and high purity applications
- Manual or pneumatic actuation
- End connections: GENLOK , NPT , Face seal fittings (FSR) and butt welded
- Cleaned and degreased for oxygen service according to CGA G-4.1 and ASTM G93 Class C, respectively
- Metal-to-metal diaphragm seal minimizes particle generation
- Long service life
- 100% Helium-leak tested

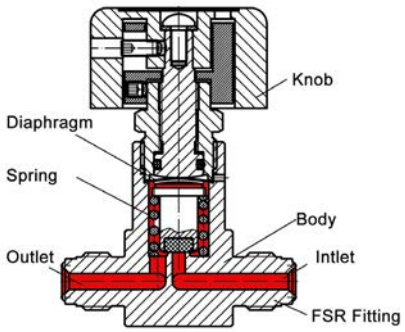
Specifications

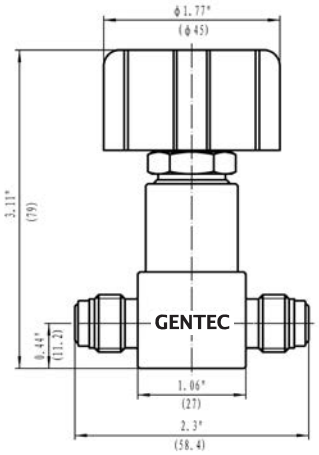
- Body: 316L stainless steel
- Seat: PCTFE*, Vespel®**
- Diaphragm: Elgiloy®
- Maximum operating pressure: 3500 psi (240 bar)
- Operating temperature: -40°F ~ 150°F (40°C ~ 65°C)
- Cv: 0.16
- Standard Ra: 15-20 µin (BA)

* Standard Material

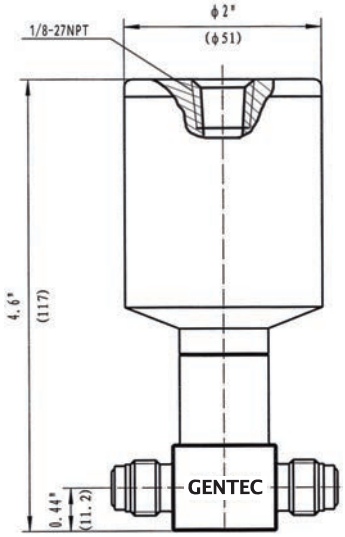
** Vespel® seat is recommended for Nitrous Oxide (N2O) service but is not available for low pressure pneumatic actuation.

Dimensions

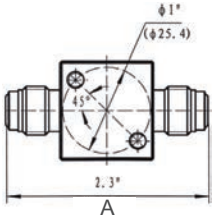




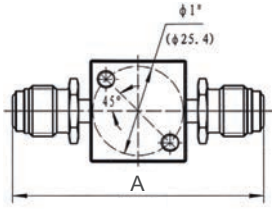
Manual



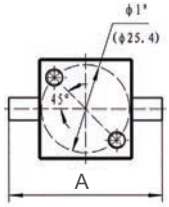
Pneumatic



Face seal male (FSR fittings)



Face seal swivel male (FSR fittings)



Butt welded

Connections*	A (mm)
VM4	58.4
VM8	67.6
VSM4	70.8
VSF4	70.6
TW4	44.2
TW8	44.2

*: Applies to both inlet & outlet connections

Ordering Information

EX: SL -	DV82	M	H -	VM4 -	K -	IS
Body Material	**Series**	**Actuation**	**Working Pressure**	**Inlet /Outlet Connection**	**Valve Seat**	**Option**
SL: 316SL	**DV82**	M: Handwheel (with status window) P: Pneumatic actuator (Normally closed)	H: 3500 psi	VM4, VM8 VSM4 ,VSM8 VSF4, VSF8 TW4, TW8	K: PCTFE V: Vespel®	IS: Electronic indicator*

*For pneumatic configuration only

Inlet & Outlet Connections		
Type	Dimensions	
VM: Face seal male (FSR fittings)	4, 8	4 = 1/4” 6 = 3/8” 8 = 1/2”
VSM: Face seal swivel male (FSR fittings)	4, 8	
VSF: Face seal swivel female (FSR fittings)	4, 8	
TW: Butt welded	4, 6, 8	

Manual

Product Features

- Suitable for ultra high purity applications
- Both manual and pneumatic actuation are available
- End connections: Face seal fittings (FSR) and butt welded
- Internal spring-less design and metal-to-metal seal minimizes particle generation and ensures “purity integrity” in the flow passages
- Cleaned and degreased for oxygen service according to CGA G-4.1 and ASTM G93 Class C, respectively
- Long service life
- 100% Helium-leak tested

Pneumatic

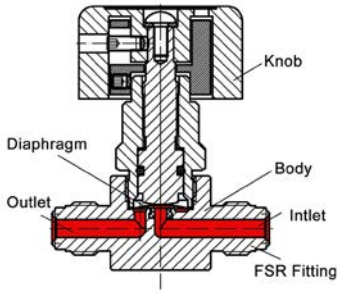
Specifications

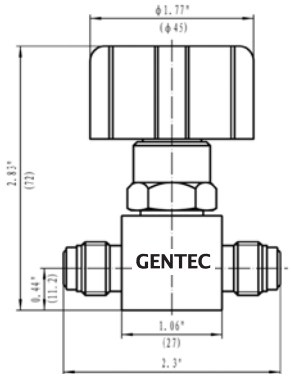
- Body: 316L stainless steel
- Seat: PCTFE*, Vespel®**
- Diaphragm: Elgiloy®
- Maximum operating pressure:
  300 psi (20 bar), 3500 psi (240 bar)
- Operating temperature:
  -40°F ~ 150°F (-40°C ~ 65°C)
- Cv: 0.17
- Standard Ra: 10 ~15 µin (BA)
  Optional: 7 µin (EP)

* Standard Material

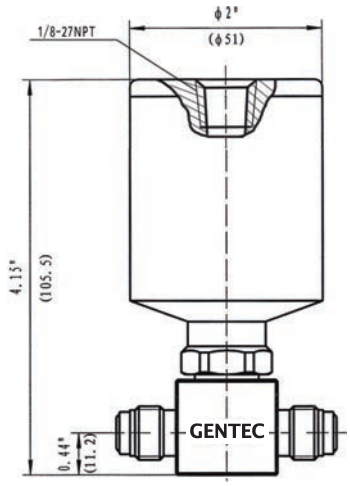
** Vespel® seat is recommended for Nitrous Oxide (N2O) service but is not available for low pressure pneumatic actuation.

Dimensions

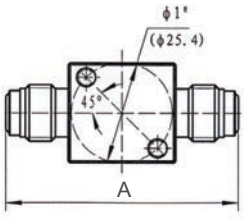




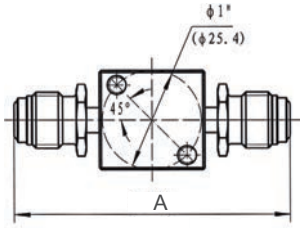
Manual



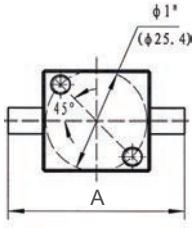
Pneumatic (High Pressure)



Face seal male (FSR fittings)



Face seal swivel male (FSR fittings)



Butt welded

Connections*	A (mm)
VM4	58.4
VM8	67.6
VSM4	70.8
VSF4	70.6
TW4	44.2
TW8	44.2

*: Applies to both inlet & outlet connections

Ordering Information

EX: SL -	DV84	M	H -	VM4 -	K	E -	IS
Body Material	**Series**	**Actuation**	**Working Pressure**	**Inlet /Outlet Connection**	**Valve Seat**	**Options**	**Option**
SL: 316SL	**DV84**	M: Handwheel (with status window) P: Pneumatic actuator (Normally closed)	H: 3500 psi	VM4, VM8 VSM4 ,VSM8 VSF4, VSF8 TW4, TW8	K: PCTFE V: Vespel®	None: 10~15 µin E: 7 µin (EP)	IS: Electronic indicator*

*For pneumatic configuration only

Inlet & Outlet Connections		
Type	Dimensions	
VM: Face seal male (FSR fittings)	4, 8	4 = 1/4” 6 = 3/8” 8 = 1/2”
VSM: Face seal swivel male (FSR fittings)	4, 8	
VSF: Face seal swivel female (FSR fittings)	4, 8	
TW: Butt welded	4, 6, 8	

Manual
(High Pressure)

Product Features

- Suitable for ultra high purity applications
- Both manual and pneumatic actuation are available
- End connections: Face seal fittings (FSR) and butt welded
- Internal spring-less design and metal-to-metal seal minimizes particle generation and ensures “purity integrity” in the flow passages
- Cleaned and degreased for oxygen service according to CGA G-4.1 and ASTM G93 Class C, respectively
- Long service life
- 100% Helium-leak tested

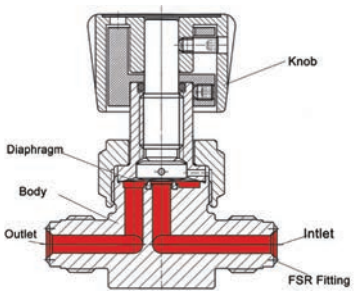
Pneumatic
(Low Pressure)

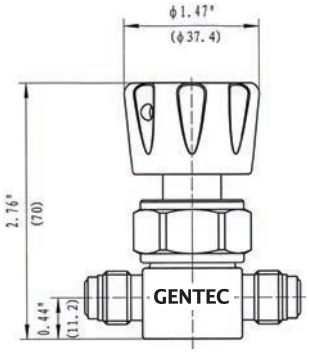
Specifications

- Body: 316L stainless steel
- Seat: PCTFE*, Vespel®**
- Diaphragm: Elgiloy®
- Maximum operating pressure:
  300 psi (20 bar), 3500 psi (240 bar)
- Operating temperature:
  -40°F ~ 150°F (-40°C ~ 65°C)
- Cv: 0.3
- Standard Ra: 15 µin (BA)
  Optional: 7 µin (EP)

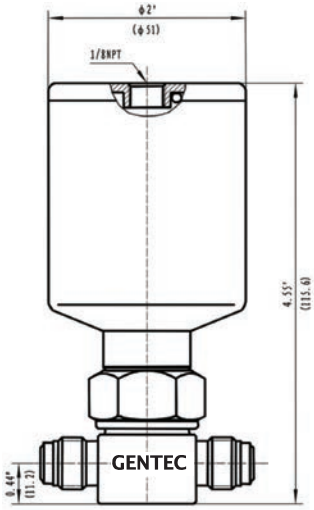
* Standard Material
** Vespel® seat is recommended for Nitrous Oxide (N2O) service but is not available for low pressure pneumatic actuation.

Dimensions

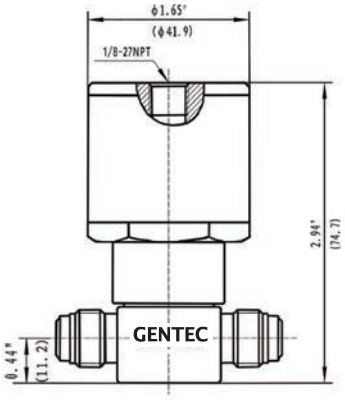




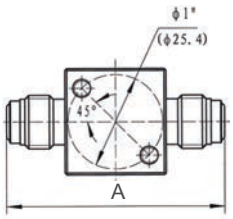
Manual (Low Pressure)



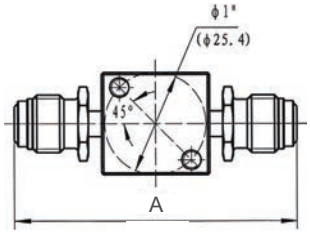
Pneumatic (High Pressure)



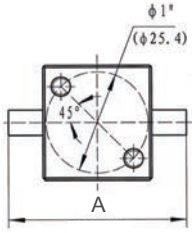
Pneumatic (Low Pressure)



Face seal male (FSR fittings)



Face seal swivel male (FSR fittings)



Butt welded

Connections*	A (mm)
VM4	58.4
VM8	67.6
VSM4	70.8
VSF4	70.6
TW4	44.2
TW8	44.2

*: Applies to both inlet & outlet connections

Ordering Information

EX: SL -	DV86	M	H -	VM4 -	K	E -	IS
Body Material	**Series**	**Actuation**	**Working Pressure**	**Inlet /Outlet Connection**	**Valve Seat**	**Options**	**Option**
SL: 316SL	**DV86**	M: Handwheel (with status window) P: Pneumatic actuator (Normally closed)	H: 3500 psi L: 300 psi	VM4, VM8 VSM4 ,VSM8 VSF4, VSF8 TW4, TW8	K: PCTFE V: Vespel®	None: 10~15 µin E: 7 µin (EP)	IS: Electronic indicator (for 3500 psi pneumatic only) NO: Normally open (for 300 psi pneumatic only)

Inlet & Outlet Connections		
Type	Dimensions	
VM: Face seal male (FSR fittings)	4, 8	4 = 1/4” 6 = 3/8” 8 = 1/2”
VSM: Face seal swivel male (FSR fittings)	4, 8	
VSF: Face seal swivel female (FSR fittings)	4, 8	
TW: Butt welded	4, 6, 8	

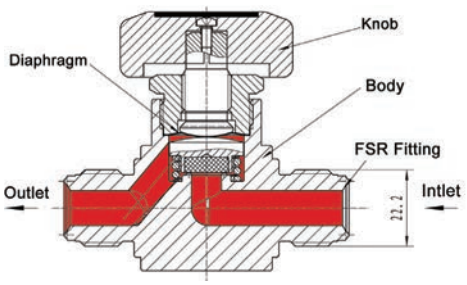
Product Features

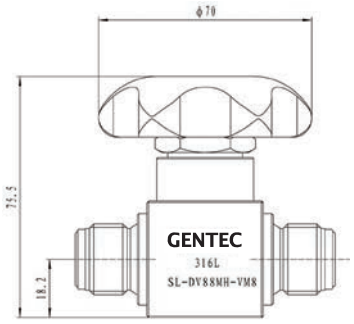
- Suitable for ultra high purity applications
- End connections include GENLOK, Face seal fittings (FSR) and butt welded
- Cleaned and degreased for oxygen service according to CGA G-4.1 and ASTM G93 Class C, respectively
- Metal-to-metal diaphragm seal minimizes particle generation
- Long service life
- 100% Helium-leak tested

Specifications

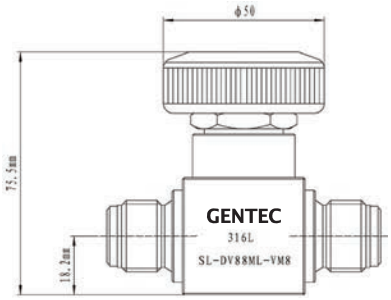
- Body: 316L stainless steel
- Seat: PCTFE
- Diaphragm: Elgiloy®
- Maximum operating pressure: 1000 psi (69 bar), 3500 psi (240 bar)
- Operating temperature: -40°F ~ 150°F (-40°C ~ 65°C)
- Cv: 1.0 (3500 psi); 1.5 (1000 psi)
- Standard Ra: 20 µin (BA)

Dimensions

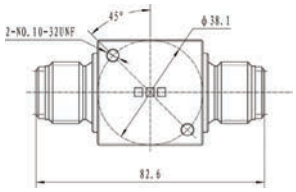




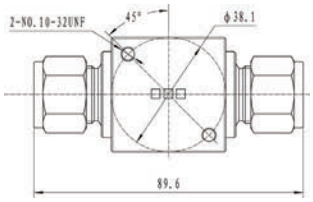
Manual (High Pressure)



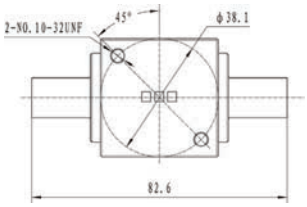
Manual (Low Pressure)



Face seal male (FSR fittings)



GENLOK fitting



Butt welded

Ordering Information

EX: SL -	DV88	N	H -	TF8
Body Material	**Series**	**Actuation**	**Working Pressure**	**Inlet /Outlet Connection**
SL: 316SL	**DV88**	N: Handwheel (without status window)	H: 3500 psi M: 1000 psi	VM8 TF8 TW8

Inlet & Outlet Connections		
Type	Dimensions	8 = 1/2”
VM: Face seal male (FSR fittings)	8	
TF: GENLOK fitting	8	
TW: Butt welded	8	

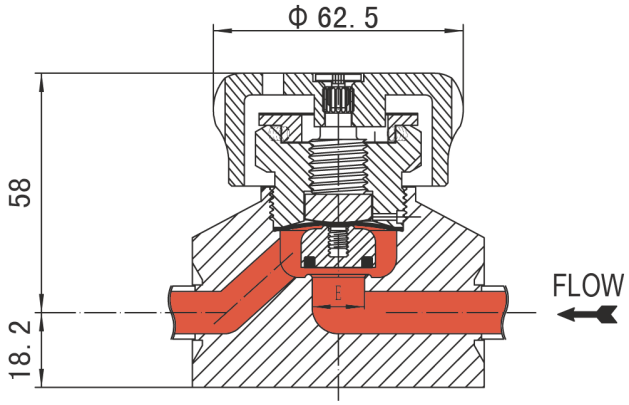
Product Features

- Suitable for high ultra purity applications
- End connection: Face seal fittings (FSR) and butt welded
- Internal spring-less design and metal-to-metal seal minimizes particle generation and ensures high purity in the flow passages
- Cleaned and degreased for oxygen service according to CGA G-4.1 and ASTM G93 Class C, respectively
- Long Service life
- 100% Helium-leak tested

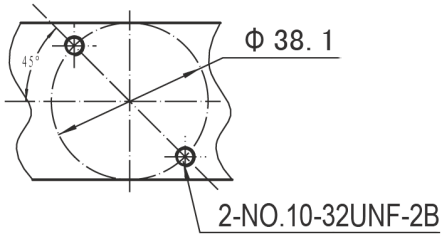
Specifications

- Body: 316L stainless steel
- Seat: PCTFE
- Diaphragm: Elgiloy®
- Maximum Operating Pressure: 300 psi (20.7 bar)
- Temperature: -40°F ~ 150°F (-40°C ~ 65°C)
- Cv: 2.8
- Standard Ra: 20 µin (BA)
  Optional: 7 µin (EP)

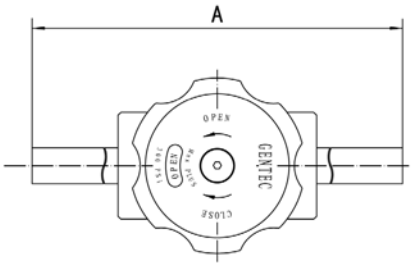
Dimensions



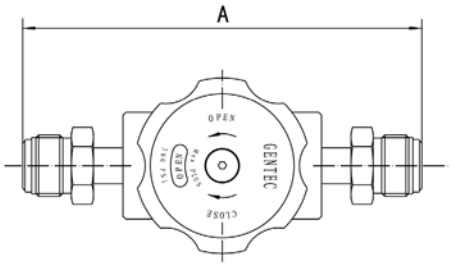
Rear Surface Mount



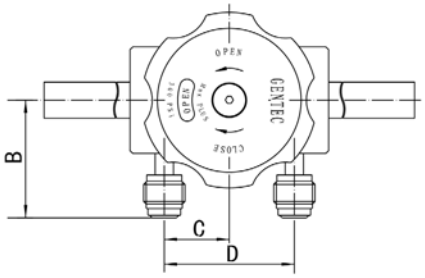
Dimensions



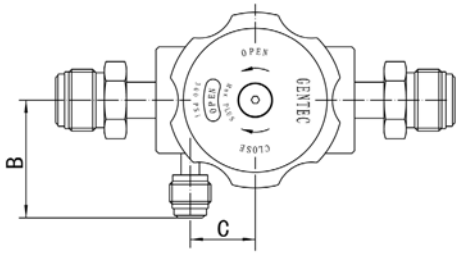
SL-DV90-TW8-E



SL-DV90-VSM8-E



SL-DV90B-TW8-E



SL-DV90D-VSM8-E

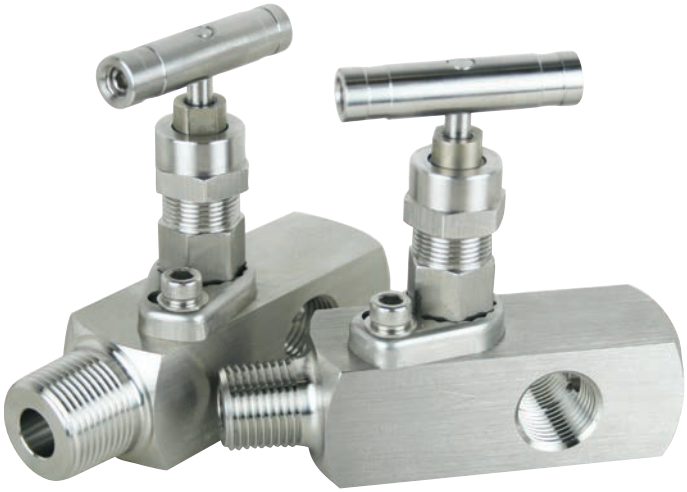
Model	Connection Type		Hole dia. (in.)	CV	Dimension (in.)			
	Inlet	Outlet			A	B	C	D
SL-DV90B-VSM8-E	1/2" Face seal swivel male (FSR fittings)		0.50	2.8	5.61	1.67	0.92	1.83
SL-DV90-VSM8-E	1/2" Face seal swivel male (FSR fittings)			2.8	5.61	-	-	-
SL-DV90B-VSF8-E	1/2" Face seal swivel female (FSR fittings)			2.8	5.61	1.67	0.92	1.83
SL-DV90-VSF8-E	1/2" Face seal swivel female (FSR fittings)			2.8	5.61	-	-	-
SL-DV90B-TW8-E	1/2" Butt-welded			2.8	8.78	1.67	0.92	1.83
SL-DV90-TW8-E	1/2" Butt-welded			2.8	8.78	-	-	-
SL-DV90B-TW12-E	3/4" Butt-welded			2.8	8.78	1.67	0.92	1.83
SL-DV90-TW12-E	3/4" Butt-welded			2.8	8.78	-	-	-

Ordering Information

EX: SL -	DV90	B -	VM8 -	E
Body Material	**Series**	**Options**	**Inlet /Outlet Connection**	**Option**
SL: 316SL	**DV90**	(Purge port, 1/4" FSR external threaded fitting) None: No purge port U: with inlet purge port D: with outlet purge port B: with both inlet and outlet purge port	VSM8 VSF8 TW8 TW12	E: 7 µin (EP)

* Specifications listed in table above change to. Please refer to the chart above for the available specifications for the desired connection type.

Inlet & Outlet Connections		
Type	Dimensions	
VSM: Face seal swivel male (FSR fittings)	8	8 = 1/2" 12 = 3/4"
VSF: Face seal swivel female (FSR fittings)	8	
TW: Butt welded	8, 12	



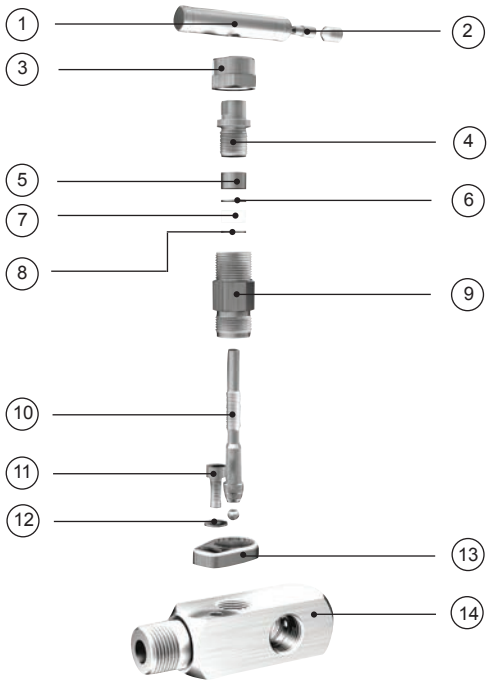
Product Features

- Compact construction
- Non-rotating ball tip design
- Multi-port allows versatile positioning of gauges and pressure switches
- Inlet Connection: 1/2” or 3/4” NPT
  Outlet connection: 1/2” Female NPT
- Bonnet Lock Pin helps prevent accidental separation of bonnet from the body
- Maximum operating pressure: 6000 psi (414 bar)
- Leakage across seat: < 0.1 std cm^3/min
- Operating temperature: -63°F ~ 450°F (-53°C ~ 232°C)
- Cleaned and degreased for oxygen service according to CGA G-4.1 and ASTM G93 Class C, respectively

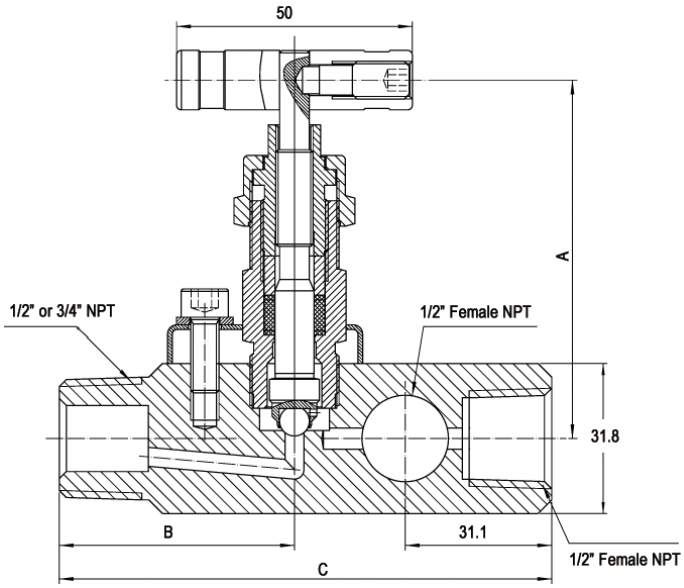
Caution:
Do not mix or interchange valve components with those of other manufacturers.

Materials of Construction

Components	Material
1 Handle	316 SS
2 Handle Pin	316 SS
3 Lock Nut	316 SS
4 Packing Bolt	416
5 Packing Ring	316 SS
6 Packing Supports	Reinforced PTFE
7 Packing	PTFE
8 Packing Supports	316 SS
9 Bonnet	316 SS
10 Stem	316 SS
11 Set Screw	316 SS
12 Washer	316 SS
13 Bonnet Lock Plate	316 SS
14 Body	316 SS



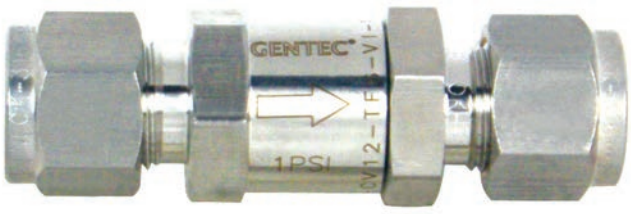
Dimensions



Model	Connection Type		Dimension (in.)			
	Inlet	Outlet	Hole dia.	A	B	C
SS-GV1ST-NT12-FNT8	3/4" NPT	1/2" NPT(F)	0.157	3.39	2.17	4.33
SS-GV1ST-NT8-FNT8	1/2" NPT	1/2" NPT(F)	0.157	3.39	2.17	4.33

Ordering Information

EX: SL -	GV1	S	T -	NT12 -	FNT8
Body Material	**Series**	**Valve Seat Material**	**Seal Packing Material**	**Inlet Connection**	**Outlet Connection**
SL: 316SL	**GV1**	S: Stainless steel	T: PTFE	NT8: 1/2" NPT NT12: 3/4" NPT	FNT8: 1/2" NPT (F)



Product Features

- Maximum operating pressure: 3000 psi (207 bar)

  (For pressure limitations under high temperature conditions,

  refer to pressure-temperature table)
- Connections: NPT and GENLOK

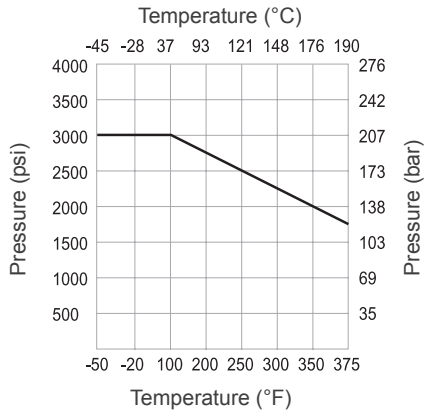
  (please refer to the specification tables for available dimensions)

Seal Materials

- Fluororubber O-rings are standard,

  other materials are listed in table below:

Seal Materials	Reference Number	Temperature Rate °F(°C)
Fluororubber	-R	-10~370 (-23 ~ 190)
Buna-N	-B	-10~250 (-23 ~ 121)
EPDM	-Y	-50~300 (-45 ~ 148)
Neoprene	-N	-40~250 (-40 ~ 121)
Kalrez®	-Q	-10~375 (-23 ~ 190)



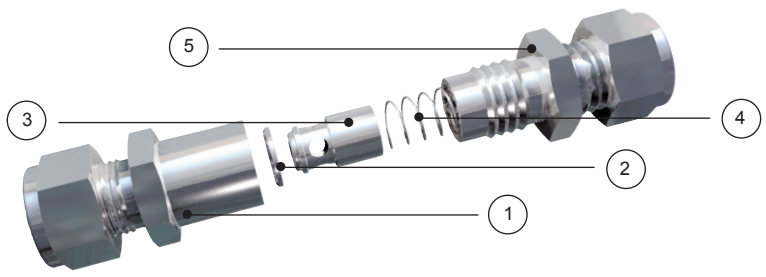
Cracking and Reseating Pressures

Nominal Cracking pressure psi (bar)	Cracking Pressure Ranges psi (bar)	Minimum Reseating Pressure psi (bar)
1 (0.07)	2 (0.14)	6 (0.41) back pressure
3 (0.20)	2.5~4 (0.17~0.28)	6 (0.41) back pressure
10 (0.69)	8~13 (0.55~0.90)	7 (0.48)
25 (1.72)	23~28 (1.59~1.93)	20 (1.38)

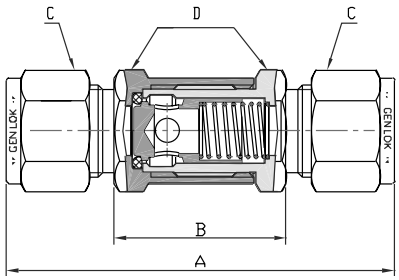
*Cracking and Reseating Pressure at 70°F (20°C), Air

Components	Material
1 Inlet body	316 SS
2 O-ring	Fluororubber
3 Poppet	316 SS
4 Spring	316 SS
5 Outlet body	316 SS

Materials of Construction



Dimensions



Fractional and Metric Tube Fittings

Model	Orifice (in.)	CV	Connection Type		Dimension (in.)			
			Inlet	Outlet	A	B	C (Hex Flat)	D (Hex Flat)
SS-CV11-TF2	0.19	0.16	1/8" GENLOK		2.19	0.98	7/16	5/8
SS-CV11-TF4	0.19	0.47	1/4" GENLOK		2.36	0.98	9/16	5/8
SS-CV12-TF6	0.28	1.48	3/8" GENLOK		2.58	1.07	11/16	3/4
SS-CV13-TF8	0.39	1.70	1/2" GENLOK		3.16	1.43	7/8	7/8
SS-CV14-TF10	0.53	2.60	5/8" GENLOK		3.61	1.89	1	1-1/8
SS-CV15-TF12	0.63	5.20	3/4" GENLOK		4.36	2.64	1-1/8	1-1/4
SS-CV16-TF16	0.71	9.00	1" GENLOK		4.77	2.69	1-1/2	1-3/8
SS-CV11-TF6M	0.19	0.47	6 mm GENLOK		2.36	0.98	9/16	5/8
SS-CV12-TF10M	0.28	1.48	10 mm GENLOK		2.52	1.07	3/4	3/4
SS-CV13-TF12M	0.39	1.70	12 mm GENLOK		3.16	1.43	7/8	7/8

NPT Fittings

Model	Orifice (in.)	CV	Connection Type		Dimension (in.)			
			Inlet	Outlet	A	B	C (Hex Flat)	D (Hex Flat)
SS-CV11-NT2	0.19	0.47	1/8" Male NPT		1.75	0.98	-	5/8
SS-CV11-FNT2	0.19	0.47	1/8" Female NPT		1.84	-	-	5/8
SS-CV11-NT4	0.19	0.47	1/4" Male NPT		2.10	0.98	-	5/8
SS-CV12-FNT4	0.28	1.48	1/4" Female NPT		2.24	1.07	-	3/4
SS-CV12-NT6	0.28	1.48	3/8" Male NPT		2.19	1.07	-	3/4
SS-CV13-FNT6	0.39	1.70	3/8" Female NPT		2.51	1.43	-	7/8
SS-CV13-NT8	0.39	1.70	1/2" Male NPT		2.93	1.43	-	7/8
SS-CV14-FNT8	0.53	2.60	1/2" Female NPT		3.33	-	-	1-1/8
SS-CV15-NT12	0.63	5.20	3/4" Male NPT		4.15	2.64	-	1-1/4
SS-CV15-FNT12	0.63	5.20	3/4" Female NPT		4.06	-	-	1-1/4
SS-CV16-NT16	0.71	9.00	1" Male NPT		4.58	2.69	-	1-3/8
SS-CV16-FNT16	0.71	9.00	1" Female NPT		4.39	2.69	-	1-5/8
SS-CV11-NT4-TF4	0.19	0.47	1/4" Male NPT	1/4" GENLOK	2.22	0.98	9/16	5/8

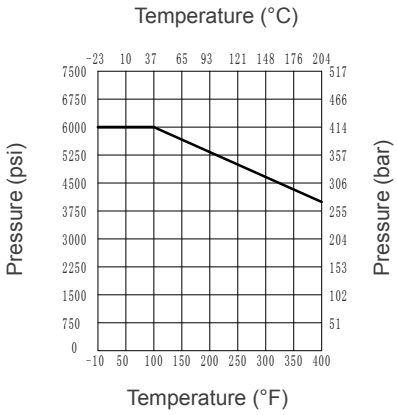
Ordering Information

EX: SL -	CV11 -	NT4 -	TF4 -	R -	1
Body Material	**Series**	**Inlet Connection***	**Outlet Connection***	**Seal Material**	**Cracking Pressure**
SL: 316SL	**CV11, CV12, CV13, CV14, CV15, CV16**	NT4: 1/4" Male NPT	TF4: 1/4" GENLOK	R: Fluororubber B: Buna-N Y: Ethylene Prorylene N: Neoprene Q: Kalrez®	1: 1 psi 3: 3 psi 10: 10 psi 25: 25 psi

* Specifications listed in table above change to. Please refer to the chart above for the available specifications for the desired connection type.

Product Features

- Maximum operating pressure: 6000 psi (414 bar)
  (For pressure limitations under high temperature conditions, refer to pressure-temperature table)
- Connections: NPT and GENLOK
  (please refer to the specification tables for available dimensions)



Seal Materials

- Fluororubber O-rings are standard,
  other materials are listed in table below:

Seal Materials	Reference Number	Temperature Rate °F(°C)
Fluororubber	-R	-10~370 (-23 ~ 190)
EPDM	-Y	-50~300 (-45 ~ 148)
Neoprene	-N	-40~250 (-40 ~ 121)

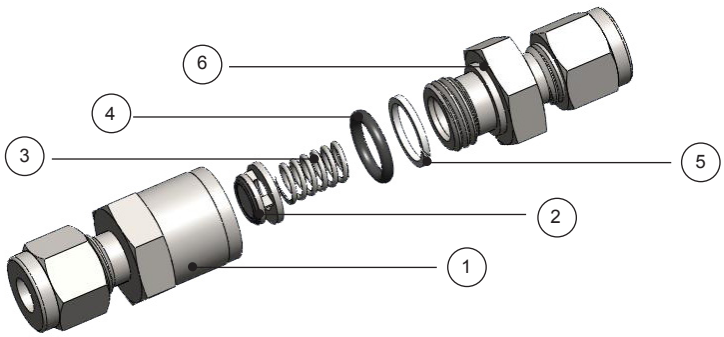
Cracking and Reseating Pressures

Nominal Cracking pressure psi (bar)	Cracking Pressure Ranges psi (bar)	Minimum Reseating Pressure psi (bar)
1 (0.07)	2 (0.14)	6 (0.41) back pressure
3 (0.20)	2.5~4 (0.17~0.28)	6 (0.41) back pressure
10 (0.69)	8~13 (0.55~0.90)	7 (0.48)
25 (1.72)	23~28 (1.59~1.93)	20 (1.38)

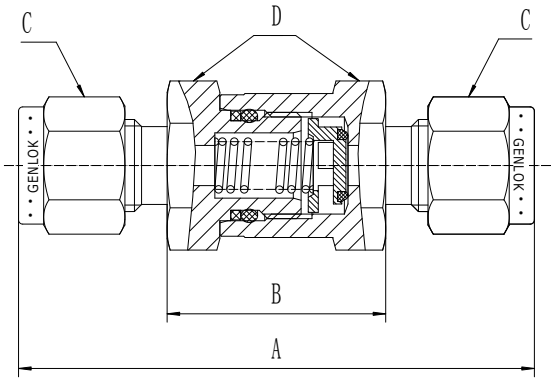
*Cracking and Reseating Pressure at 70°F (20°C), Air

Materials of Construction

Components	Material
1 Inlet body	316 SS
2 Poppet set	Viton bonded 316 SS
3 Spring	316 SS
4 O-ring	Fluororubber
4 Backup ring	PTFE
6 Outlet body	316 SS



Dimensions



Fractional and Metric Tube Fittings

Model	Orifice (in.)	CV	Connection Type		Dimension (in.)			
			Inlet	Outlet	A	B	C (Hex Flat)	D (Hex Flat)
SS-CV42-TF4	0.19	0.47	1/4"GENLOK		2.43	1.03	9/16	11/16
SS-CV43-TF6	0.33	1.8	3/8"GENLOK		2.75	1.26	11/16	1
SS-CV43-TF8	0.33	1.8	1/2"GENLOK		2.97	1.22	7/8	1

NPT and FSR Fittings

Model	Orifice (in.)	CV	Connection Type		Dimension (in.)			
			Inlet	Outlet	A	B	C (Hex Flat)	D (Hex Flat)
SS-CV42-NT2	0.19	0.47	1/8"Male NPT		1.79	0.93	-	11/16
SS-CV42-FNT2	0.19	0.47	1/8"Female NPT		1.73	1.05	-	11/16
SS-CV42-NT4	0.19	0.47	1/4"Male NPT		2.12	1.02	-	11/16
SS-CV42-FNT4	0.19	0.47	1/4"Female NPT		1.98	1.79	-	11/16
SS-CV42-VM4	0.19	0.47	1/4" FSR		2.28	1.04	-	11/16
SS-CV43-FNT6	0.33	1.8	3/8" Female NPT		2.55	1.46	-	1
SS-CV43-NT6	0.33	1.8	3/8" Male NPT		2.36	1.26	-	1
SS-CV43-NT8	0.33	1.8	1/2" male NPT		2.73	1.77	-	1
SS-CV43-FNT8	0.33	1.8	1/2" Female NPT		3.03	1.77	-	1 1/16
SS-CV43-VM8	0.33	1.8	1/2" FSR		2.74	1.02	-	1

Ordering Information

EX: SL -	CV42 -	NT4 -	R -	1
Body Material	**Series**	**Inlet \ Outlet Connection***	**Seal Material**	**Cracking Pressure**
SL: 316SL	**CV42,** **CV43**	NT4: 1/4" Male NPT	R: Fluororubber Y: Ethylene Prorylene N: Neoprene	1: 1 psi 3: 3 psi 10: 10 psi 25: 25 psi

* Specifications listed in table above change to. Please refer to the chart above for the available specifications for the desired connection type.

Used in pipeline system to stop uncontrolled release of system media in the event of a downstream gas line rupture or disconnection, thereby saving the media and guaranteeing the system safety.

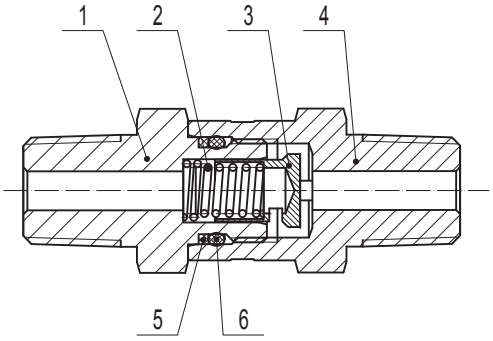
Product Features

- Maximum operating pressure: 6000 psi (414 bar)
- Operating temperature: 400°F (204°C)
- End Connections: GENLOK and NPT
- Connection size: 1/8" to 1/2"
- The flow through the bleed vent is less than 1% of the flow rate in the trip range

Operating Principles

The spring-loaded poppet remains in the open position during system operation. If an excess flow occurs downstream, i.e. a pressure drop, the poppet rapidly moves to the cutoff position to block all uncontrolled flow. When the pressure is balanced once again, the poppet will automatically revert to the original (open) position.

Materials of Construction



Components	Material
1 Valve Body	316 SS
2 Spring	316 SS
3 Poppet	316 SS
4 Valve Bushing	316 SS
5 Backup ring	PTFE
6 O-ring	Viton®

Pressure-Temperature Ratings

The nominal pressure depends on the end connections

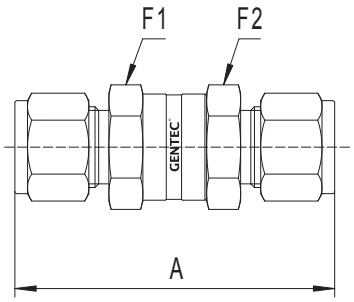
Material	316 SS
Temperature °F (°C)	Operating pressure psi (bar)
-10 (-23) ~ 100 (37)	6000 (414)
200 (93)	5160 (356)
250 (121)	4910 (339)
300 (148)	4660 (321)
400 (204)	4280 (295)

O-ring Materials

Viton O-rings are standard. For other O-ring materials, add the corresponding designator to the ordering number.

Seal Materials	Reference Number	Temperature Rate °F (°C)
Fluororubber	-R	-10~370 (-23 ~ 190)
Buna-N	-B	-10~250 (-23 ~ 121)
Neoprene	-N	-40~250 (-40 ~ 121)
Kalrez®	-Q	-10~375 (-23 ~ 190)

Dimensions



Fractional and Metric Tube Fittings

Model	Connection Type		Pressure Range psi (bar)	Dimension (in.)	
	Inlet	Outlet		A	F1/F2
SS-EV12-TF4	1/4" GENLOK		6000 (413)	2.43	11/16
SS-EV13-TF6	3/8" GENLOK		6000 (413)	2.70	1
SS-EV14-TF8	1/2" GENLOK		6000 (413)	2.97	1
SS-EV12-TF6M	6mm GENLOK		6000 (413)	2.43	11/16
SS- EV13-TF8M	8mm GENLOK		6000 (413)	2.80	1
SS- EV13-TF10M	10mm GENLOK		6000 (413)	2.55	11/16
SS-EV14-TF12M	12mm GENLOK		6000 (413)	2.97	1

NPT and FSR Fittings

Model	Connection Type		Pressure Range psi (bar)	Dimension (in.)	
	Inlet	Outlet		A	F1/F2
SS-EV12-FNT2	1/8" Female NPT		6000 (413)	1.87	11/16
SS-EV12-FNT4	1/4" Female NPT		6000 (413)	1.87	11/16
SS-EV12-NT2	1/8" Male NPT		6000 (413)	1.79	11/16
SS-EV12-NT4	1/4" Male NPT		6000 (413)	2.28	11/16
SS-EV12-VM4	1/4" FSR		6000 (413)	2.75	1
SS-EV13-FNT6	3/8" Female NPT		5300 (365)	2.12	11/16
SS-EV13-NT6	3/8" Male NPT		6000 (413)	2.36	1
SS-EV14-FNT8	1/2" Female NPT		4900 (337)	3.03	1 1/16
SS-EV14-NT8	1/2" Male NPT		6000 (413)	2.73	1
SS-EV14-VM8	1/2" FSR		4300 (296)	2.73	1

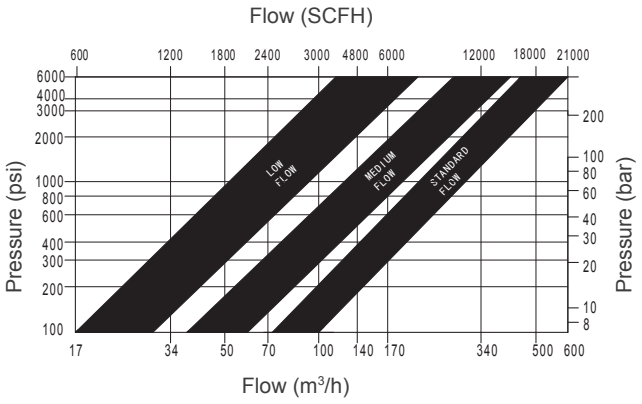
Ordering Information

EX: SL -	EV12 -	NT4 -	B -	M
Body Material	**Series**	**Inlet \ Outlet Connection***	**Seal Material**	**Cracking Pressure**
SL: 316SL	EV12 EV13 EV14	NT4: 1/4" Male NPT	R: Fluororubber B: Buna-N N: Neoprene Q: Kalrez®	None: Standard Flow M: Medium Flow L: Low Flow Refer to the flow data charts on the next page

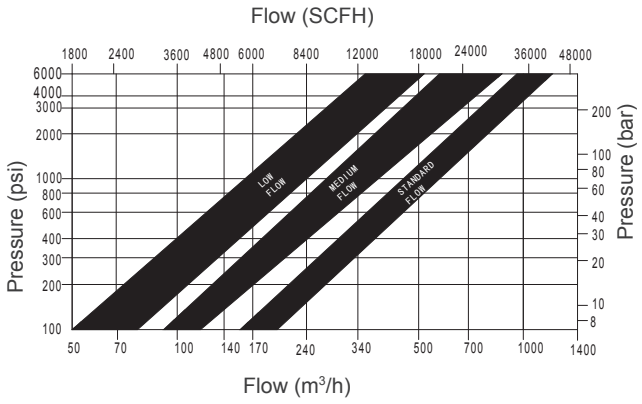
* Specifications listed in table above change to. Please refer to the chart above for the available specifications for the desired connection type.

Flow Data at 70°F (20°C)

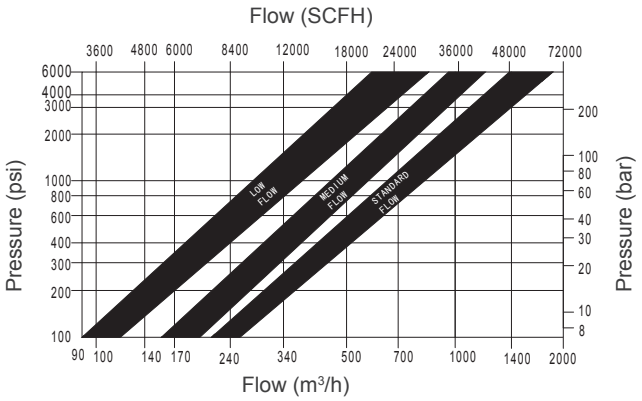
EV12 Series



EV13 Series



EV14 Series



Product Selection

Excess flow valves are used to prevent uncontrolled release of flow in the event of a gas line rupture or disconnection. The excess flow valves are intended to close upon excess flow of gas and remain closed until the system equalizes.

Selection Guideline:

- EV12 Excess Flow Valve: When inlet pressure is 60 bar with peak flow rate of 50 m3/h. The intersection point on the chart above lies within the Low Flow section. The proper cracking pressure range should be medium flow or the standard flow. A low flow range selection would have a risk of the excess flow valve reducing or shutting the flow during normal system operation.
- EV 13 Excess Flow Valve: When inlet pressure is 20 Bar with peak flow rate of 100 m3/h and a system restriction flow 300m3/h. The two intersection points are within the low flow and standard flow range.
  Therefore select an excess flow valve with medium flow trip range which can not only avoid nuisance tripping, but also ensure effective performance under flow restriction condition.
- EV 14 Excess Flow Valve: When inlet pressure is 15 bar with peak flow rate of 240 m3/h. The intersection point is within the medium flow range. Therefore select an excess flow valve with standard flow. In systems that contain restriction devices—such as pressure regulators, flow control valves and reducing pipes, the flow through the rupture might not be sufficient enough to reach the flowrate required to trip the excess valve. In these cases, excess valves with medium flow and low flow trip range should be selected.

RV31, RV32 SERIES

Relief Valves

Product Features

- 316 stainless steel construction
- RV31 series

  Nominal diameter: 3.6 mm

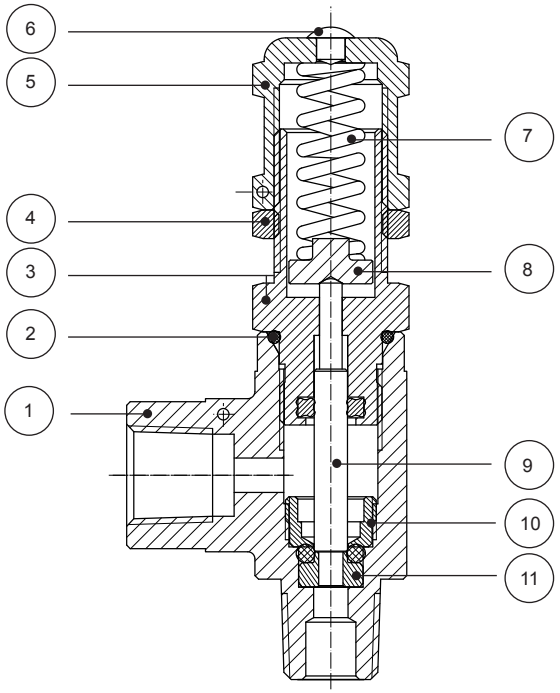
  Pressure range: 10-6000 psi (0.69~414 bar)
- RV32 series

  Nominal diameter: 6.4 mm

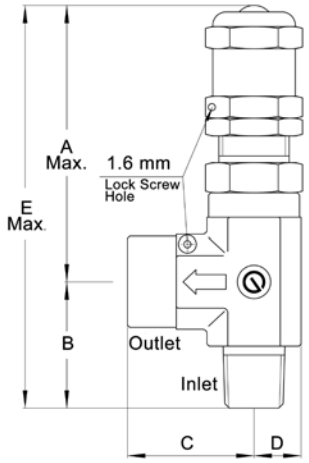
  Pressure range: 10-1500 psi (0.69~103 bar)
- End connections: 1/4 ‘’ and 1/2’’ NPT thread (standard), 1/4’’, 3/8’’,1/2’’, 6mm,8mm,10mm and12mm GENLOK are optional
- Replaceable springs for variable pressure range
- Color coded labels to identify spring range
- Various sealing materials such as neoprene and Buna-N are available for different applications

Materials of Construction

Components	Material
1 Valve body	316 SS
2 O-ring	Fluororubber
3 Bonnet	316 SS
4 Lock nut	316 SS
5 Adjusting Cap	316 SS
6 Plug	PTFE
7 Spring	Piano Wire
8 Spring Retainer	316 SS
9 Valve Stem	316 SS
10 Packing Screw	316 SS
11 Sleeve	316 SS



Dimensions



Fractional and Metric Tube Fittings

Model	Connection Type		Dimension (in.)					
	Inlet	Outlet	Orifice	A	B	C	D	E
SS-RV31 -TF4	1/4" GENLOK		0.14	2.62	1.40	1.40	0.42	4.02
SS-RV31 -TF6M	6mm GENLOK		0.14	2.62	1.40	1.40	0.42	4.02
SS-RV31 -TF8M	8mm GENLOK		0.14	2.62	1.12	1.40	0.42	3.74
SS-RV32 -TF12M	12mm GENLOK		0.25	3.88	1.40	1.78	0.51	5.28

NPT Fittings

Model	Connection Type		Dimension (in.)					
	Inlet	Outlet	Orifice	A	B	C	D	E
SS-RV31 -NT4-TF4	1/4" Male NPT	1/4" GENLOK	0.14	2.62	1.12	1.40	0.42	3.74
SS-RV31 -NT4-FNT4	1/4" Male NPT	1/4" Female NPT	0.14	2.62	1.12	1.12	0.42	3.74
SS-RV31 -RT4-FRT4	1/4" Male BSPT/ ISO Tapered	1/4" Female BSPT/ ISO Tapered	0.14	2.62	1.12	1.12	0.42	3.74
SS-RV32 -NT8-TF8	1/2" Male NPT	1/2" GENLOK	0.25	3.88	1.40	1.78	0.51	5.28
SS-RV32 -NT8-FNT8	1/2" Male NPT	1/2" Female NPT	0.25	3.88	1.40	1.40	0.51	5.28

Ordering Information

EX: SL -	RV31	R	H -	NT4 -	FNT4 -	XX
Body Material	**Series**	**Seal Material**	**Pressure Range**	**Inlet Connection***	**Outlet Connection***	**Custom Pressure**
SL: 316SL	RV31: 3.6 mm (Orifice) RV32: 6.4 mm (Orifice)	R: Fluororubber B: Buna-N rubber Y: EPDM	**(Factory Setup):** A: 10~25 (25) psi B: 25~50 (50) psi C: 50~100 (100) psi D: 100~250 (250) psi E: 250~350 (350) psi F: 350~750 (750) psi G: 750~1500 (1500) psi H: 1500~2250 (2250) psi I: 2250~3000 (3000) psi J: 3000~4000 (4000) psi K: 4000~5000 (5000) psi L: 5000~6000 (6000) psi	NT4: 1/4" Male NPT	FNT4: 1/4" Female NPT	

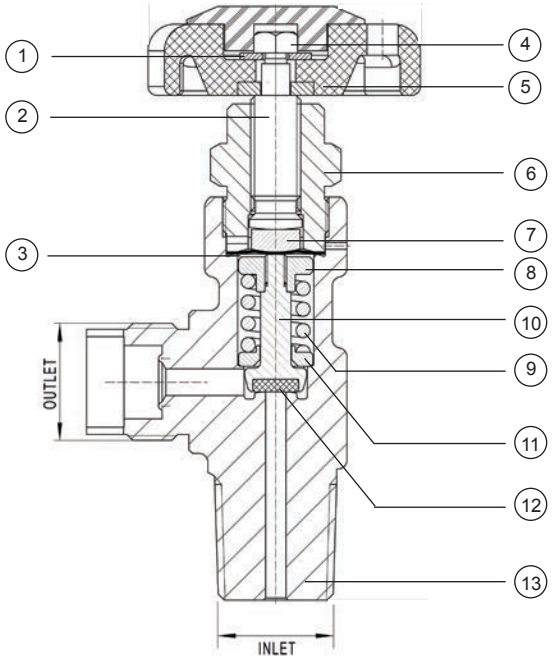
* Specifications listed in table above change to. Please refer to the chart above for the available specifications for the desired connection type.

Product Features

- Maximum operating pressure: 3000 psi (207 bar)
- Internal Leakage: < 1x 10^{-9} cc/sec He
- Operating temperature: -4°F ~ 158°F (-20°C ~ 70°C)
- Angle pattern is the standard
- Can be mounted directly on the cylinder
- Cv: 0.3

Materials of Construction

Components	Material
1 Gasket	304
2 Upper Valve Stem	316 SS
3 Diaphragm	316L
4 Screw	304
5 Handle	Nylon
6 Joint Nut	316 SS
7 Slip Block	316 SS
8 Upper Locating Block	316L
9 Spring	316L
10 Bottom Valve Stem	316L
11 Bottom Locating Block	316L
12 Gasket	304
13 Valve Body	316L



Ordering Information

EX: SL -	V200 -	N4 -	C350 -	K -	R1
Body Material	**Series**	**Cylinder connection***	**Outlet Connection***	**Valve Seat Material**	**Safety Plug Model**
SL: 316SL	V200	N4: 3/4NGT N8: 3/8NGT T2: 1/2NPT B1: BSP, 1"-14(1:8) E2: EN629-1 25E D2: DIN477 W28.8*1/14 J2: JIS B8246 V2 P2: GB PZ27.8	C350: CGA350 D632: CGA632 (DISS) C660: CGA660 D714: CGA714 (DISS) D718: CGA718 (DISS)BS03: BS341#03 DN01: DIN477#01 J22R: J22R GB03: G5/8-RH(GB)	K: PCTFE	R1: safety plug (see table below)

* For other connections, please contact Genstar customer service.

Safety Plug Allocation Table				
Code	Remark	Features Description	Solution Temperature °F (°C)	Working Pressure psi (bar)
R1	Ni	Rupture disk type	/	2016 (139)
R2	Ni	Rupture disk type	/	2265 (156)
R3	Ni	Solution+rupture disk type	165 (74)	2016 (139)
R4	Ni	Solution+rupture disk type	165 (74)	2265 (156)
R5	Ni	Solution+rupture disk type	212 (100)	2016 (139)
R6	Ni	Solution+rupture disk type	212 (100)	2265 (156)
R7	Ni	Rupture disk type	/	1380 (95)
R10	SS	Rupture disk type	/	2016 (139)
R11	SS	Solution+rupture disk type	165 (74)	2016 (139)
R12	SS	Solution+rupture disk type	165 (74)	2400 (165)
R13	SS	Solution+rupture disk type	212 (100)	2265 (156)
R22	multicomponent alloy	Soluble washer	212 (100)	500 (35)
R23	multicomponent alloy	Fusible plug	165 (74)	500 (35)

V600 SERIES
Cylinder Valves

Ultra High Purity Diaphragm Cylinder Valve is developed for the semiconductor industry. It is designed for use with ultra high purity gas cylinders to prevent gas leakage and achieve the low leakage rates demanded by high purity gas users.

V601
Pneumatic

V600
Manual

Product Features

- Manual and actuated versions are available based on a common body design
- Suitable for most special gases including variants for oxygen and highly corrosive gases such as chlorine and hydrogen chloride
- Final assembly and testing is carried out under class 10 clean room conditions
- Designed for the low leakage rates demanded by high purity gas users
- Non tied-diaphragm construction; the diaphragms act directly on the seat to close the valve, which minimizes dead space and wetted area
- Mechanically supported and retained valve seat to minimize deformation under load and seat lift under reverse flow conditions
- The diaphragm isolates the operating mechanism from the process fluids
- The one-piece, non-welded construction improves durability
- To prevent the shedding of particulate contamination, there are no sliding, rotating or rubbing components in the flow path
- Inlet and outlet port configurations are available to suit all known industry standards. The same valve family can be used for all fluids in all market areas
- For transportation the actuator can be locked closed to prevent shock induced leakage
- The outlet port is sealed and protected by a cap retained by a chain
- The valve mechanism incorporates secondary sealing for enhanced safety

Specification

- Working pressure: 3300 psi (230 bar)
- Suitable for spec gas applications, including toxic and corrosive gases
- Nominal Bore: 4 mm
- Operating temperature: -4°F ~ 150°F (-20°C ~ 65°C)
- Outboard (gland) Leak rate: < $1x10^{-9}$ mbar l/s (200bar He)
- Inlet/Outlet (seat) Leak rate: < $1x10^{-8}$ mbar l/s (200bar He)
- Cv: 0.3

Materials of Construction

- BODY - 316L stainless steel, 316L VAR stainless steel
- SEAT - PCTFE, Kynar 740, Vespel SP21 or Zytel 103 (Nylon)
- DIAPHRAGM - Elgiloy

No lubrication is used in the flow passages. The seat materials are chosen for maximum compatibility, maintaining gas purity and integrity.

Please feel free to contact Genstar if you have any questions.

Actuator Specification

- A normally-closed actuator is available for all valves

  The valve is opened by applying pressure and is closed by spring return

  The valve can be locked in the closed position during for additional safety
- Pilot pressure: 70 ~ 120 psi (5 ~ 8 bar)
- Actuating medium: Air or Nitrogen
- Pilot Port: 1/8" NPT
- Materials of Construction: Stainless Steel, Nickel Aluminium Bronze and Hard Anodized Aluminium Alloy

Ordering Information

EX: SL -	V600 -	N4 -	D632 -	K -	R4
Body Material	**Series**	**Cylinder connection***	**Outlet Connection***	**Valve Seat Material**	**Safety Plug Model**
SL: 316L SLV: 316L VAR	V600: Manual V601: Pneumatic	N4: 3/4NGT N8: 3/8NGT T2: 1/2NPT B1: BSP, 1"-14(1:8) E2: EN629-1 25E D2: DIN477 W28.8*1/14 J2: JIS B8246 V2 P2: GB PZ27.8	C350: CGA350 D632: CGA632 (DISS) C660: CGA660 D714: CGA714 (DISS) D718: CGA718 (DISS)BS03: BS341#03 DN01: DIN477#01 J22R: J22R GB03: G5/8-RH(GB)	K: PCTFE F: Kynar® V: Vespel® L: Nylon®	R4: safety plug (see table below) T1: Flow Restrictor Diameter (T1: 0.3 mm T2: 0.5 mm T3: 1.0 mm T4: 1.75 mm T5: 2.5 mm T6: 3.0 mm)

* For other connections, please contact Genstar customer service.

Safety Plug Allocation Table				
Code	Remark	Features Description	Solution Temperature °F (°C)	Working Pressure psi (bar)
R1	Ni	Rupture disk type	/	2016 (139)
R2	Ni	Rupture disk type	/	2265 (156)
R3	Ni	Solution+rupture disk type	165 (74)	2016 (139)
R4	Ni	Solution+rupture disk type	165 (74)	2265 (156)
R5	Ni	Solution+rupture disk type	212 (100)	2016 (139)
R6	Ni	Solution+rupture disk type	212 (100)	2265 (156)
R7	Ni	Rupture disk type	/	1380 (95)
R10	SS	Rupture disk type	/	2016 (139)
R11	SS	Solution+rupture disk type	165 (74)	2016 (139)
R12	SS	Solution+rupture disk type	165 (74)	2400 (165)
R13	SS	Solution+rupture disk type	212 (100)	2265 (156)
R22	multicomponent alloy	Soluble washer	212 (100)	500 (35)
R23	multicomponent alloy	Fusible plug	165 (74)	500 (35)

Gas Control Systems Solutions Overview

- Manifold Systems
- Control Panels
- HP/UHP Regulators
- Pressure Gauges
- Valves & Fittings

Specialty Gas Manifolds

- Specialty Gas Control Panels
- Specialty Gas Manifolds
- Terminal Gas Control Panels
- Other Control Systems
- Accessories

Specialty Gas Regulators & Accessories

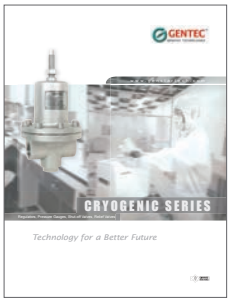
- General Purpose Forged Brass Regulators
- High Purity Brass Barstock Regulators
- High Purity Stainless Steel Barstock Regulators
- Accessories

Ultra High Purity

- U Series Regulators
- DV Series Valves
- Pressure Gauges
- Face Seal Fittings
- Weld Fittings
- Vacuum Generators

Tube Fittings

- Male Connectors
- Male Elbows
- Male Adapters
- Female Connectors
- Female Elbows
- Unions
- Reducing unions



Cryogenic Series

- Regulators
- Pressure Gauges
- Shut-off Valves
- Relief Valves

F Series Filters

- Inline Filters
- T-type Filters

Manifold Systems for Liquid Vessels

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