

NanoPure

PROPORTION RELIEF VALVES



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"NanoPure" is a brand of Gas Delivery Total Solution, belongs to King Lai Group, who was founded 1991 in Taiwan and expanded production facility in Kunshan, Jiangsu Province, China. Supplying tubing/piping and fitting materials service for Semiconductor, FPD, LED and Photovoltaic industries, the core idea of "NanoPure" is providing "High purity materials" with high quality components for gas delivery applications.

Gas supply and delivery is always the topic to study in Semiconductor processing. To ensure the accuracy of the processing, the purity of gas sources is the vital factors. Keeping the purity while the gas has been transferred into processing tools is highly monitored by process engineers.

"NanoPure" is composed of people who are specialist in stainless steels fabrication. By making sure the selection of finest materials, we provide

finest products. The key point is how to control the quality of materials which makes big difference of welding quality while installing or welding assembly. There will be the potential impurity or inclusion in welding process. Therefore, electropolish is the solvable process for increasing reliability of stainless steel to against corrosion gases.

"NanoPure" aims to provide the highest quality products, so the quality control and uniformity are essential points to promise customers. In the meantime,



we do put emphasis on the details of products such as dimension and tolerance which are important for quality control and therefore remain the high yield rate for assembly. Operational packages can be followed according to the customer's instruction, the ranging from normal standard clean package to Ultra High Purity clean room package.

"NanoPure" In addition to UHP products, we also provide various products needed by various Industries, such as Oil & Gas Industries, Process Instrumentation, Power Generation, Pulp & Paper, Chemical, Analytical Instrumentation, Hydrogen Fuel Cells and Natural Gas

"NanoPure" considers every single key processing during the fabrication.

Our goal is keeping continually improvement to reach customers' satisfaction!



Features

High Pressure Valves

- Up to 6000 psig (413 bar)
- Multiple springs for a selection of set pressure ranges
- Valves available factory-set to a specified set pressure

Low-Pressure Valves

- Service up to 300 psig (20.6 bar)
- One spring for the full set pressure range
- Valves available factory-set to a specified set pressure

Applications

Our relief valves are proportional relief valves that open gradually as the pressure increases. Consequently, they do not have a capacity rating at a given pressure rise (accumulation), and they are not certified to ASME or any other codes.

Operation

Our relief valves OPEN when system pressure reaches the set pressure and CLOSE when system pressure falls below the set pressure. High-pressure SVH and SVLH series select and install the spring that covers the required set pressure; apply the matching label to the cap.

Technical Data

Pressure-Temperature Ratings

Series	SVH					SVLH				SV & SVL			
Inlet Working Pressure ^①	6000 psig (413 bar) up to 8000 psig (551 bar) during relief					6000 psig (413 bar)				300 psig (20.6 bar)			
Outlet Working Pressure ^①	1500 psig (103 bar)					2500 psig (172 bar)				225 psig (15.5 bar)			
Set Pressure	50 to 6000 psig (3.4 to 413 bar)					50 to 1500 psig (3.4 to 103 bar)				10 to 225 psig (0.7 to 15.5 bar)			
Seal Material	FKM	BN	NE	EP	FFKM	FKM	BN	NP	EP	FKM	BN	NE	EP
Temperature °F (°C)	Maximum Set Pressure, psig (bar)												
-40 (-40)													
-30 (-34)													
-10 (-23)													
0 (-17)													
10 (-12)													
25 (-4)													
30 (-1)													
40 (4)													
50 (10)													
70 (20)													
150 (65)	5580 (384)	5580 (384)	5580 (384)	5580 (384)	3000 (207)	1500 (103)							
200 (93)	5160 (355)	5160 (355)	5160 (355)	5160 (355)	1500 (103)		1500 (103)	1500 (103)	1500 (103)				
250 (121)	4910 (338)	4910 (338)	4910 (338)	4910 (338)						225 (15.5)	225 (15.5)	225 (15.5)	225 (15.5)
275 (135)			4660 (321)										
300 (148)													

① Outlet pressure should not exceed inlet pressure.

Set Pressure and Resealing Pressure

- Set pressure is the upstream pressure at which the first indication of flow occurs. Set pressure of each valve after initial relief is repeatable within
 - ± 3.0 psig(0.20bar) or $\pm 5\%$ (whichever is greater) of the initial set pressure at 60 to 80 °F (15 to 26°C)
 - ± 6.0 psig(0.40bar) or $\pm 20\%$ (whichever is greater) of the initial set pressure below 60 °F (15°C) and above 80 °F (26°C).
- Resealing pressure is the upstream pressure at which there is no indication of flow. Resealing pressure is always lower than set pressure.

Back Pressure

High Pressure

The effect of system back pressure is minimized by the design of these high-pressure valves.

Low Pressure Valves

System back pressure increases the set pressure of the valve. To compensate, multiply the back pressure by 0.8 and subtract the result from the desired set pressure. Use the result to pre-set the valve while back pressure is equal to atmospheric pressure.

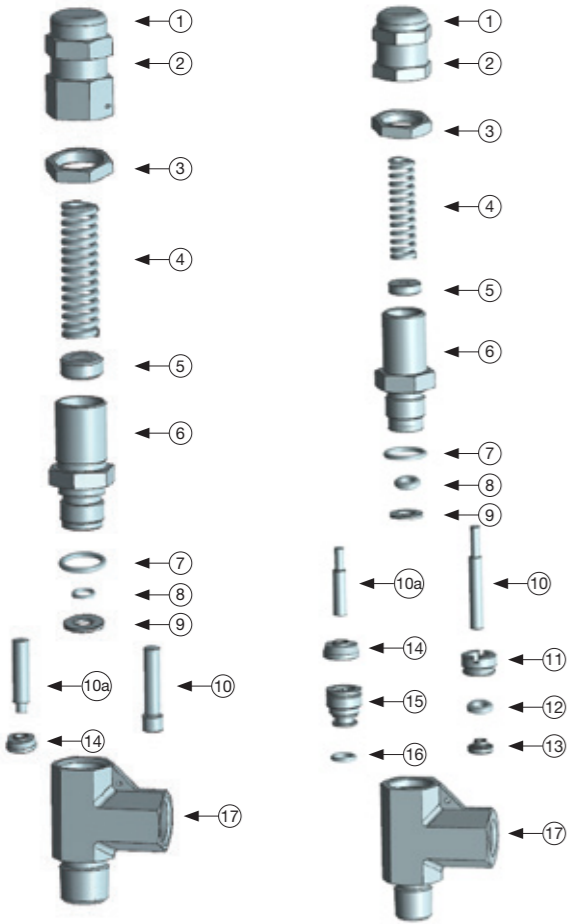
Example:

- Desired set pressure is 120 psig. System back pressure is 40 psig.
- Step 1. Multiply back pressure by 0.8. 40 psig \times 0.8=32 psig.
- Step 2. Subtract result from desired set pressure.
120 psig - 32 psig = 88 psig.
- Step 3. Pre-set proportional relief valve to 88 psig.

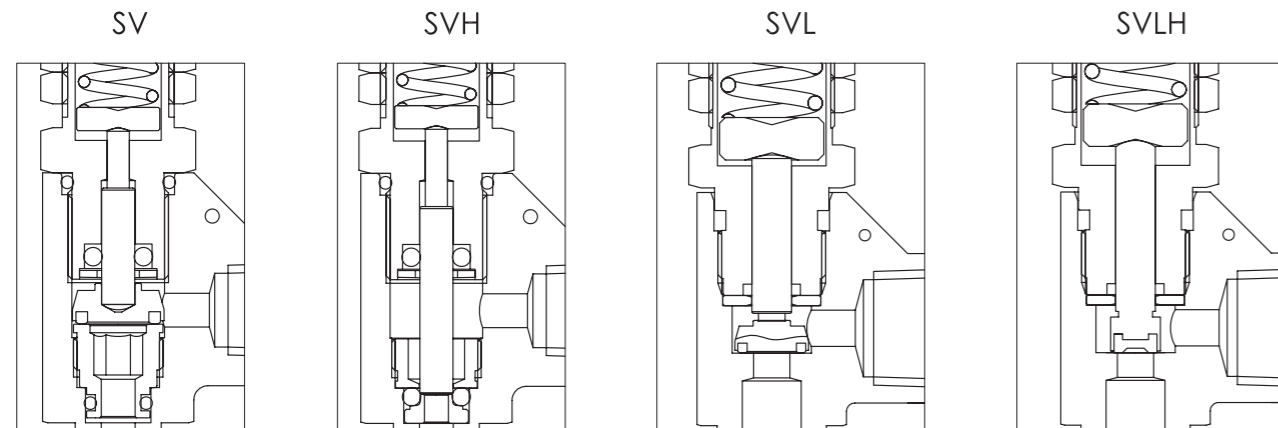
Testing

Every proportional relief valve is tested for set and resealing performance.

Series	Test Set Pressure psig (bar)	Minimum Resealing Pressure as a Percentage of Set Pressure, %
SV SVL	10 to 20 (0.7 to 1.3) 175 to 225 (12.0 to 15.5)	50 91
SVH SVHL	100 to 200 (6.8 to 13.7) 850 to 1000 (58.5 to 68.9)	84 50

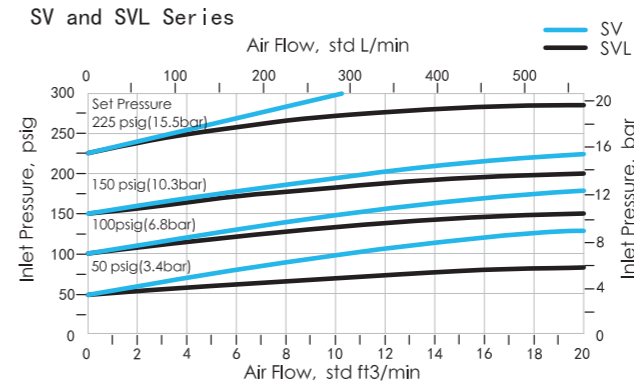


Component	Material Grade/ASTM Specification
1 Cap	316 SS/A479
2 Label	Polyester
3 Lock nut	RL3, R3A — powdered metal 300 series SS/B783; RL4, R4 — 316 SS/A276
4 Spring	S17700 SS/AMS 5678
5 Spring support	RL3, R3A — powdered metal 300 series SS/B783; RL4, R4 — 316 SS/A276
6 Bonnet	316 SS/A479
7 O-ring	Fluorocarbon FKM
8 O-ring	Fluorocarbon FKM
9 Retainer	RL3, R3A — 316 SS/A666; RL4, R4 — 316 SS/A479
10 Stem	316 SS/A479
10a Bonded stem	Fluorocarbon FKM-bonded 316 SS/A479
11 Bonded disc	
12 O-ring	Fluorocarbon FKM
13 Insert	316 SS/A479
14 Bonded disc	Fluorocarbon FKM-bonded 316 SS/A479
15 Seat	316 SS/A479
16 Gasket	PTFE-coated 316 SS/a240
17 Body	316 SS/A182
Lubricants	Molybdenum disulfide-based dry film and paste; silicone-based

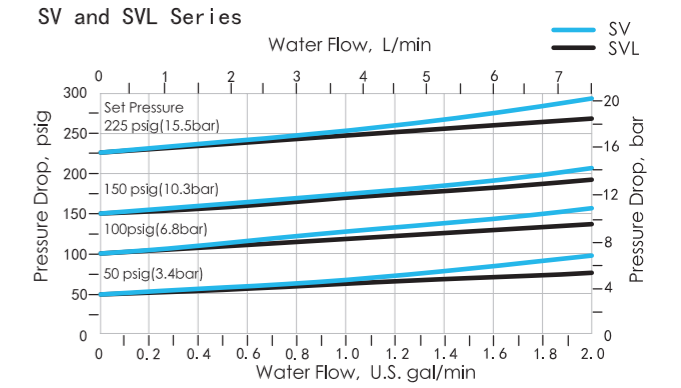


Flow Data at 70 °F (20°C)

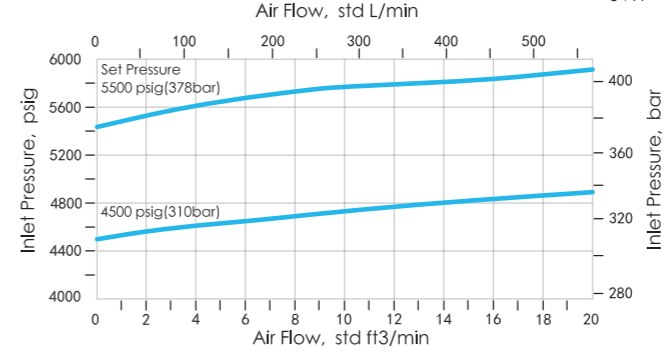
Air



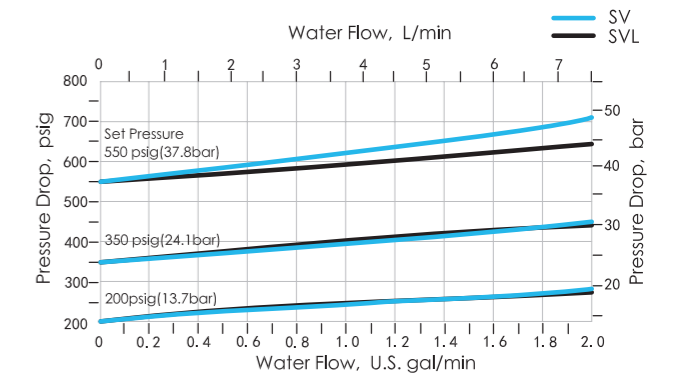
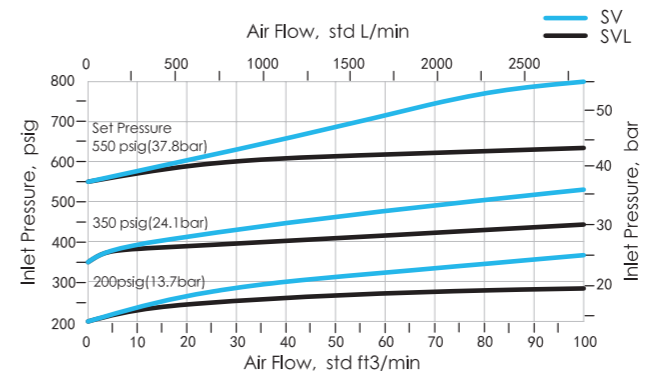
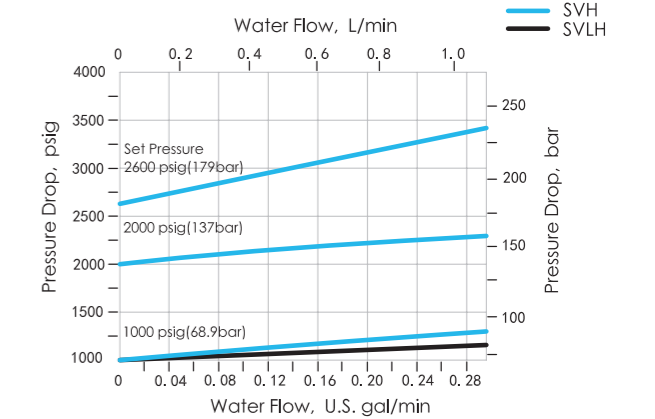
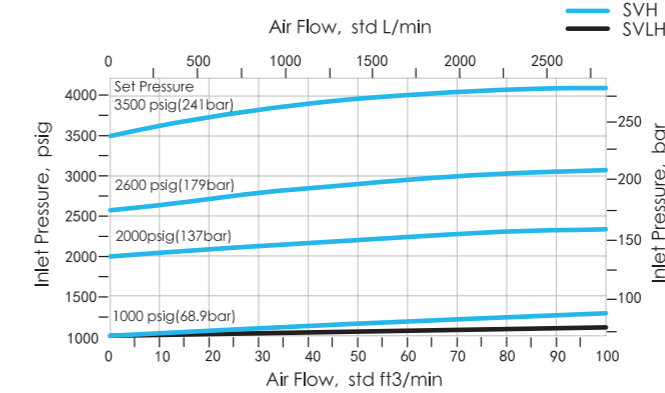
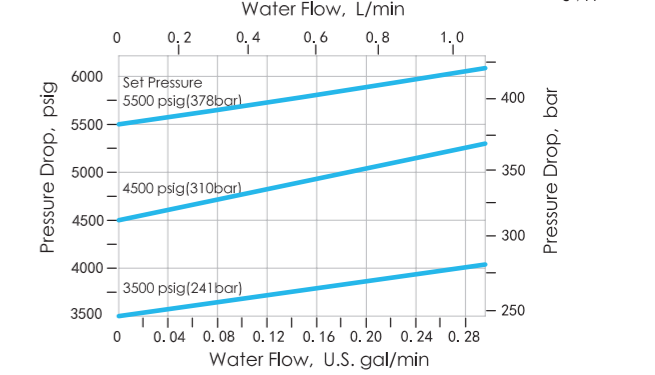
Water



SVH And SVLH Series

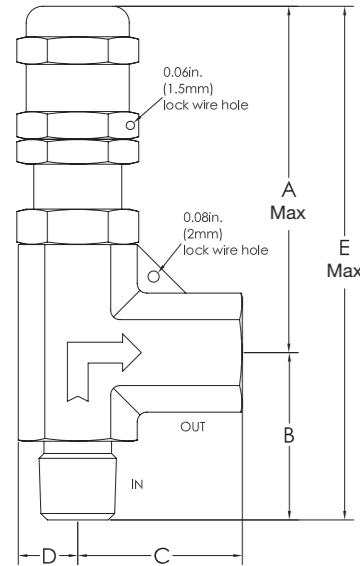


SVH And SVLH Series



Dimensions

Dimensions are for reference only and are subject to change.



Low-Pressure Valves (SV and SVL Series)

End Connections		Ordering Number	Dimensions, in. (mm)				
Inlet/Outlet	Size		A	B	C	D	E
SWG	1/4 in.	2.70 (68.6)	1.44 (36.6)	1.60 (40.6)	0.43 (10.9)	3.89 (98.8)	4.09 (104)
	6 mm						
	8 mm						
MNPT SWG	1/4 in.		1.19 (30.2)	1.60 (40.6)		3.89 (98.8)	
MNPT FNPT	1/4 in.		1.19 (30.2)	1.17 (29.7)		3.89 (98.8)	
MISO FISO ^①	1/4 in.		1.19 (30.2)	1.17 (29.7)		3.89 (98.8)	
SWG	1/2 in.	4.09 (104)	1.83 (46.5)		0.50 (12.7)	5.92 (150)	5.37 (136)
	12 mm						
MNPT SWG	1/2 in.		1.43 (36.3)	1.83 (46.5)	5.52 (140)		
MNPT FNPT	1/2 in.		1.43 (36.3)	1.43 (36.3)	5.52 (140)		

① See specifications ISO 7/1, BS EN 10226-1, DIN-2999, and JIS B0203.

High-Pressure Valves (SVH and SVLH Series)

End Connections		Ordering Number	Dimensions, in. (mm)				
Inlet/Outlet	Size		A	B	C	D	E
SWG	1/4 in.	2.70 (68.6)	1.44 (36.6)	1.60 (40.6)	0.43 (10.9)	3.89 (98.8)	4.09 (104)
	6 mm						
	8 mm						
MNPT SWG	1/4 in.		1.19 (30.2)	1.60 (40.6)		3.89 (98.8)	
MNPT FNPT	1/4 in.		1.19 (30.2)	1.17 (29.7)		3.89 (98.8)	
MISO FISO ^①	1/4 in.		1.19 (30.2)	1.17 (29.7)		3.89 (98.8)	
SWG	1/2 in.	4.09 (104)	1.83 (46.5)		0.50 (12.7)	5.92 (150)	5.37 (136)
	12 mm						
MNPT SWG	1/2 in.		1.43 (36.3)	1.83 (46.5)	5.52 (140)		
MNPT FNPT	1/2 in.		1.43 (36.3)	1.43 (36.3)	5.52 (140)		

① See specifications ISO 7/1, BS EN 10226-1, DIN-2999, and JIS B0203.

Ordering Information

Spring Kits: High Pressure Valves (SVH and SVLH Series)

Set Pressure Range psig (bar)	Spring Code	Spring Color
SVH Series		
50 to 350 (3.4 to 24.1)	A	Blue
350 to 750 (24.1 to 51.7)	B	Yellow
750 to 1500 (51.7 to 103)	C	Purple
1500 to 2250 (103 to 155)	D	Orange
2250 to 3000 (155 to 206)	E	Brown
3000 to 4000 (206 to 275)	F	White
4000 to 5000 (275 to 344)	G	Red
5000 to 6000 (344 to 413)	H	Green
SVLH Series		
50 to 350 (3.4 to 24.1)	A	Blue
350 to 750 (24.1 to 51.7)	B	Yellow
750 to 1500 (51.7 to 103)	C	Purple
SV & SVL Series		
10 to 225 (0.7 to 15.5)	I	

Seal Materials

Seal Material	Code	Remake
Buna N	BN	For SVH Series
Ethylene propylene	EP	
Neoprene	NE	
Perfluorocarbon FFKM	FFKM	Only for SVH Series
Fluorocarbon FKM	FKM	

