

VS6/VS6P Safety Relief Valves

Working Pressure: 6000 psig (413 bar)
 PED 97/23/EC Certified

Catalog No. VS6-4, June 2016



Features

- Standard flow VS6, high flow VS6P Series for Air, Gas, liquid and CNG Service.
- Valves are designed to satisfy the requirements of API 520 standard.
- Reliable seat design for repetitive leak-tight performance.
- Carbon Steel valves are red-painted for protection from corrosion.

Working Pressure:
6000 psig (413 bar)

Set Pressure:
Set pressure is the system pressure that opens the valve. After initial relief, set pressure is repeatable within +/- 5% at room temperature.

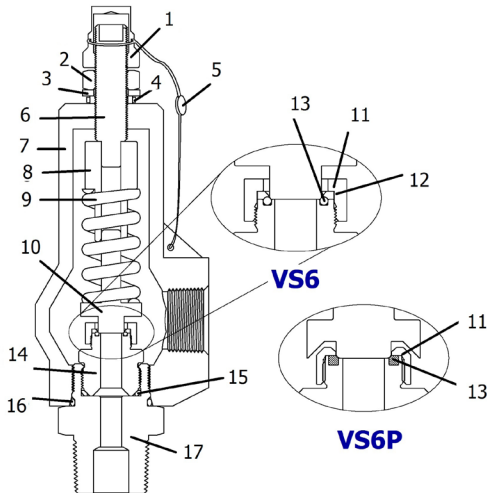
Swivel Flanged Valves
HSME swivel flange assembly provides easy alignment of the bolt holes to a common flange such as API 6A, ASME B16.5, MSS SP-44.

Table 1. Set Pressure Range

Spring Designator	Set Pressure Range, psi (bar)	Color Coding
1	15 to 40 (1.03 to 2.75)	Brown
2	41 to 100 (2.82 to 6.89)	Light Blue
3	101 to 215 (6.96 to 14.82)	Yellow
4	216 to 350 (14.89 to 24.13)	Light Green
5	351 to 750 (24.2 to 51.71)	Red
6	751 to 1000 (51.77 to 68.94)	Orange
7	1001 to 1800 (69.01 to 124.07)	Silver
8	1801 to 2800 (124.7 to 193)	Black
9	2801 to 3700 (193 to 255)	No color
10	3700 to 5500 (255 to 379)	Dark Brown
11	4500 to 6000 (310 to 413)	White

Materials of Construction

Components	Valve Body Materials		
	Material Grade / ASTM Standard		
	Stainless Steel	Carbon Steel	
Valve Series	VS6	VS6	VS6P
1 Cap	Yellow Zinc-Plated S20C-45C/JIS G4051		
2 Lock Nut	SS316 /ASTM A476, A276	JIS G4051 S20C	
3 Washer	JIS G4051 S20C Zinc plated		
4 Bonded Gasket	NBR bonded Carbon Steel Outer Ring		
5 Lock Wire	Stainless Steel wire with clamp seal		
6 Set Screw	Stainless Steel	Chrome Plated Steel	
7 Body	ASTM A351 CF8M	ASTM A216 Gr.WCB	
8 Spring Guide	SS316 /ASTM A476, A276		
9 Spring	AISI 1086		
10 Poppet	SS316 /ASTM A476, A276		
11 Poppet Guide			
12 Seat Guide	SS316 /ASTM A476, A276	-	
13 Seat	FKM, see optional O-ring table 3		
14 Poppet Housing	SS316 /ASTM A476, A276		
15 Housing O-ring	Standard FKM,		
16 Adapter O-ring	see optional O-ring table 3		
17 Inlet Adapter	SS316/A276, A479	S20C - S50C / JIS G4051	



Wetted parts are listed in **BOLD** letters.

Lubricants: Silicon-based.

Ordering Information and Dimensions

Basic Ordering Number	End Connections		Dimensions mm (in.)				
	Inlet	Outlet	L	L1	H	H1	
VS6- VS6P-	F8N16N-C	1/2 in. Female NPT	1 in. Female NPT	84.5 (3.33)	47.5 (1.87)	77.0 (3.03)	154.0 (6.06)
	F12N16N-C	3/4 in. Female NPT					
	MF8N16N-C	1/2 in. Male NPT					
	MF12N16N-C	3/4 in. Male NPT					
	MF16N-C	1 in. Male NPT					
1R16C1R16A-C	Swivel Flange, See table 2		176.8 (6.96)	114.0 (4.50)	104.9 (4.13)	153.0 (6.02)	

Dimensions are reference only and subject to change.

Table 2. Swivel Flange Assembly

ASME Flange Facing Finish		Flange Size		Flange Class		Flange End Part No. Examples;
Flange Facing Finish	D*	Size	D*	Class	D*	
RF-Spiral Finish	1R	1/2 in.	8	150	A-	1R16C- 1R16A-
RF-Smooth Finish	2R	3/4 in.	12	300	B-	
RF-Stock Finish	3R	1 in.	16	600	C-	
RTJ-Ring Type Joint	J	1 1/2 in.	24	900/1500	E-	
Flat Face-Stock Finish	F	2 in.	32	2500	F-	

Ordering Information

To order carbon steel valve, select an applicable basic ordering number:

To complete the ordering number, select an applicable spring designator from table 1 and insert it in the ordering No.

To order stainless steel valve, replace "C" in the ordering number with "SS".

To order valve with an optional O-ring, select an applicable designator from table 3 and insert it in the ordering No.

VS6-F8N16N-C

VS6-F8N16N-9-C

VS6-F8N16N-9-SS

VS6-F8N16N-9-EP-SS

Table 3. O-ring Materials

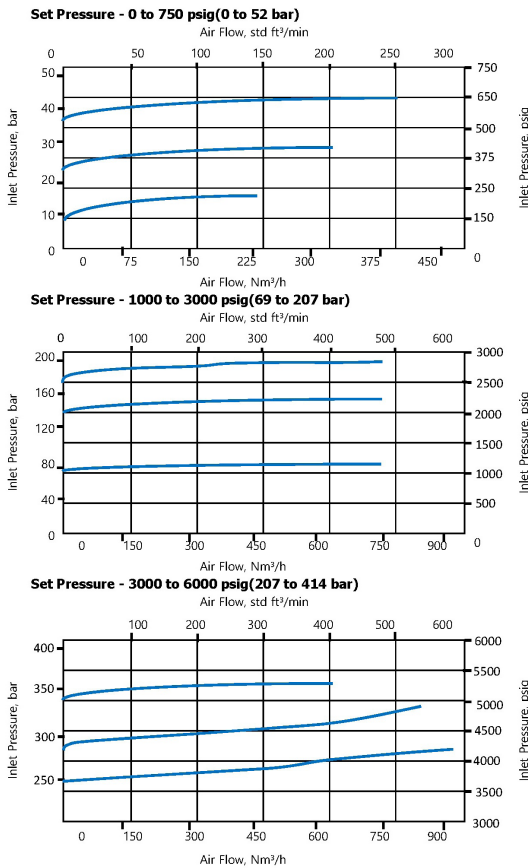
Materials	Designator	Temperature Range, °F (°C)
Standard FKM	-	- 15 to 400 (-26 to 204)
Optional HNBR	HN	- 40 to 284 (-40 to 140)
Optional EPDM	EP	- 70 to 250 (-56 to 121)

Valve Operation

Valves open when system pressure reaches the set pressure, and close when system pressure falls down below the set pressure. Valves that are not actuated for a period of time, initial relief pressure may be different than the set pressure.

VS6 Series Flow Rates

Cv: 4.36



VS6P Series Flow Rates

Media	Water	Air	Gas
Density	62.306	0.0764	0.0458
SG	1	1	0.6
Temp. F (C)	70 (21.1)	60 (15.5)	60 (15.5)
Orifice Dia. in. (mm)	0.409 (10.4)		
Orifice Area (SQ. in.)	0.131		
KD Factor	0.62	0.838	0.838
Flow Unit	GPM	SCFM	
Set Pressure psig (bar)	Over pressure 110% or 3 psi, whichever is greater		
15 (1.03)	13	64	80
20 (1.3)	14	74	93
25 (1.7)	16	84	105
30 (2.0)	17	94	117
50 (3.4)	22	137	171
100 (6.8)	32	245	306
150 (10.3)	39	353	441
200 (13.7)	45	462	576
250 (17.2)	50	570	711
300 (20.6)	55	678	846
400 (27.5)	63	894	1117
500 (34.4)	71	1111	1387
600 (41.3)	77	1327	1657
700 (48.2)	84	1543	1927
900 (62.0)	95	1976	2467
1000 (68.9)	100	2192	2737
1500 (103)	122	3274	4088
1750 (120)	132	3815	4763
2000 (137)	141	4355	5438
2500 (172)	158	5437	6789
3000 (206)	173	6519	8139
4000 (275)	200	8682	10840
4500 (310)	212	9763	12191
5000 (344)	224	10845	13541
5500 (379)	235	11927	14892

Resealing Pressure

Valves are resealed by the spring force when upstream pressure falls down below the set pressure.

Upstream Pressure for Valve to Reseal

Set Pressure, psi (bar)	Minimum Resealing Upstream Pressure at a Percentage of Set Pressure, %
3000 (207) and above	95
1800 (124) to 750 (52)	90
750 (52) to 350 (24)	85
350 (24) and below	80

Back Pressure

System back pressure increases the set pressure of the valve by forcing the poppet to form a sealing in addition to the spring force. Valves that have lower set pressure may require back pressure to reseal.

Factory Set Valves

To set the valve at a specific set pressure at factory, specify the desired set-pressure in psig in the valve ordering number. Example: VS6-F8N16N-1500-C.

Factory Test and Cleaning

Every valve is factory tested to the requirements of API 527 using nitrogen. All valves are cleaned and packaged in accordance with HSME cleaning standard CS-01.

Safe Valve Selection

The selection of a valve for any application or system must be considered to ensure safe performance. Valve rating, valve function, material compatibility, proper installation, operation and maintenance remain the sole responsibility of the system designer and the user. HSME Corporation accepts no liability for any improper selection, compatibility, installation, operation or maintenance.