

INSTRUMENTATION RELIEF VALVES

Low & High Pressure Relief Valves

V13-VR-00, JAN, 2016



VR Series

- Compact body for installation in small space
- Cracking pressure adjustable externally
- Lock wire capability to maintain pressure relief setting
- Body materials available in 316 stainless steel
- 100% factory tested for crack and reseal performance

INSTRUMENTATION RELIEF VALVES

■ Features

- **Body Design** compact body for angle pattern.
- **Springs** adjust to provide desired set pressure.
- **Quad Seal** eliminates leakage around stem during relief mode.
- **O-Ring** provides elastomer-to-metal seal for positive shutoff at seat.
- **Cap** provides easy external set pressure adjustment.
- **Lock Nut** maintains cap position, ensuring set pressure adjustment.
- **Lock Wire Capability** secures cap to maintain set pressure.
- **End Connections** include gaugeable LOK tube fittings and NPT or ISO pipe threads.
- **Label** identifies set pressure range.

■ Specifications

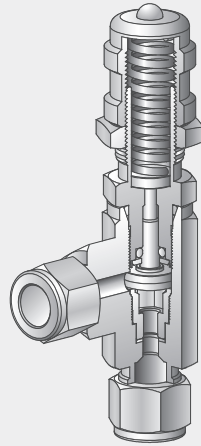
Series	VR3	VR6
Max. Working Pressure	300 psig (20.7 barg) @ 68°F (20°C)	6,000 psig (414 barg) @ 68°F (20°C)
Cracking Pressure Range	10 to 250 psig (0.7 to 17.2 barg)	225 to 6,000 psig (15.5 to 414 barg)
Body material	316/L stainless steel	
Port Connections	1/4" to 1/2"	
Orifice	4.8 mm	3.2 mm

- **VR3 Series** : One spring adjustable over entire cracking pressure range, blue - color spring standard. Cracking pressure is affected by the outlet pressure.
- **VR6 Series** : Various springs are available as mentioned below. Cracking pressure is not affected by the outlet pressure.

VR3 Series

Low Pressure Relief Valve

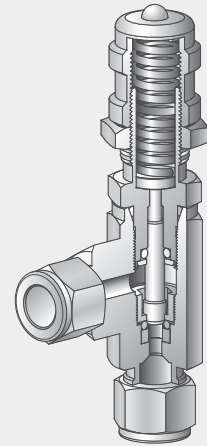
Orifice : 4.8 mm (0.19 in)
Cv = 0.60



VR6 Series

High Pressure Relief Valve

Orifice : 3.2 mm (0.13 in)
Cv = 0.41



■ Valve Operation and Adjusting Cracking Pressure

- To increase the cracking pressure, turn the pressure adjusting nut clockwise to compress the spring.

■ VR6 Series Spring and Cracking Pressure

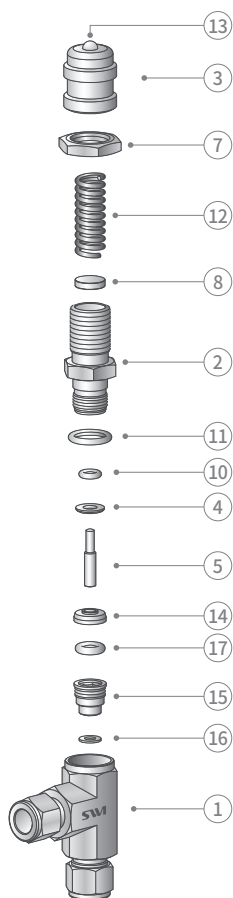
Spring Designator	Spring Color	Cracking Pressure		
		psig	barg	kPa
Y	Yellow	225 ~ 750	15.5 ~ 51.5	1,550 ~ 5,150
P	Purple	750 ~ 1,500	51.5 ~ 103	5,150 ~ 10,300
O	Orange	1,500 ~ 2,250	103 ~ 155	10,300 ~ 15,500
B	Brown	2,250 ~ 3,000	155 ~ 206	15,500 ~ 20,600
W	White	3,000 ~ 4,000	206 ~ 275	20,600 ~ 27,500
R	Red	4,000 ~ 5,000	275 ~ 344	27,500 ~ 34,400
G	Green	5,000 ~ 6,000	344 ~ 414	34,400 ~ 41,400

• If spring kit is required, mention part no. Ex) VR6-P.

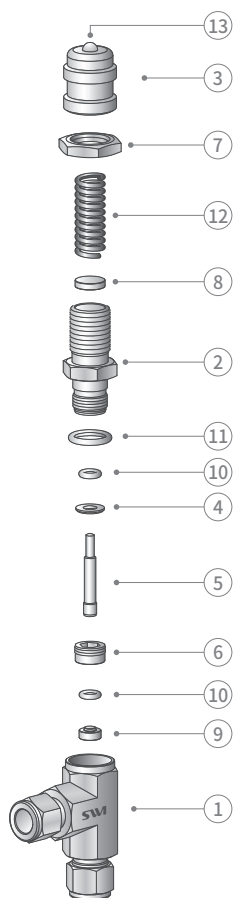
■ Testing

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

VR3-T Series



VR6-T Series



Materials of Construction

Component		Material
1	Body	A182 F316/L
2	Bonnet	A276 / 479 Type 316/L
3	Cracking Pressure Adjusting Nut	A276 / 479 Type 316
4	Retainer	
5	Stem Shaft	A276 / 479 Type 316/L
6	Stem Guide	A276 / 479 Type 316/L
7	Lock Nut	A276 / 479 Type 316
8	Spring Support	
9	Stem Retainer	A276 / 479 Type 316/L
10	O-Ring	FKM
11	O-Ring	FKM
12	Spring	SS631 (UNS S17700)
13	Cap	Polypropylene
14	Stem	A276 / 479 Type 316/L
15	Seat Retainer	A276 / 479 Type 316/L
16	Seat	A276 / 479 Type 316
17	O-Ring	FKM

VR3 / VR6 Series

VR3-MS Series

Front view

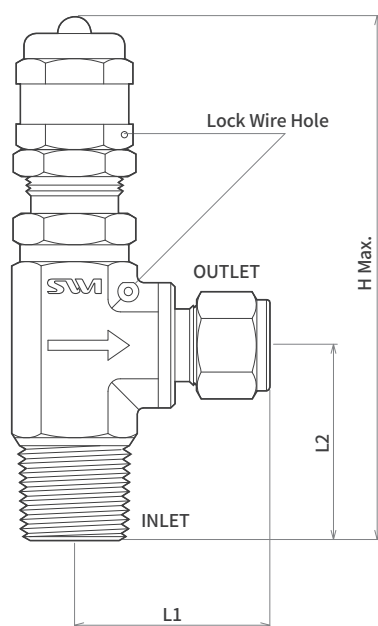


Table of Dimensions

Part No.	Orifice in. (mm)	End Connection		Dimension in. (mm)			
		Inlet	Outlet	L1	L2	H	
VR3 or VR6	0.18 (4.8) or 0.12 (3.2)	1/4 " Tube Fitting		1.52 (38.7)	1.46 (37.3)	4.11 (104.6)	
		6mm Tube Fitting					
		8mm Tube Fitting					
		3/8 " Tube Fitting		1.74 (44.4)	1.74 (44.4)	4.39 (111.7)	
		1/2 " Tube Fitting		1.83 (46.7)	1.83 (46.7)	4.48 (114.0)	
		12mm Tube Fitting					
		MT 8N-8T	1/2 " M NPT	1/2 " Tube Fitting	1.83 (46.7)	1.40 (35.7)	4.05 (103.0)
		MT 8N-12M	1/2 " M NPT	12mm Tube Fitting	1.83 (46.7)	1.40 (35.7)	4.05 (103.0)
		MF 4N	1/4 " M NPT	1/4 " F NPT	1.18 (30.0)	1.26 (32.2)	3.91 (99.5)
		MF 6N	3/8 " M NPT	3/8 " F NPT	1.35 (34.5)	1.26 (32.2)	3.91 (99.5)
		MF 8N	1/2 " M NPT	1/2 " F NPT	1.49 (38.0)	1.40 (35.7)	4.05 (103.0)

* All dimensions are for reference only and are subject to change.

INSTRUMENTATION RELIEF VALVES

Ordering Information

Code Table: **VR** **1** **2** **3** **4** **5** **6**

Sample Valve Code: **6** **MT** **8N** **R** **S** **N**

Example : INSTRUMENTATION RELIEF VALVE, HIGH PRESSURE, MALE NPT 1/2 " x MALE NPT 1/2 ", SPRING AND CRACKING PRESSURE - 4,000 to 5,000 psig, 316/L STAINLESS STEEL BODY, NACE MR 0175

1. Valve Series	
3	Low Pressure
6	High Pressure

2. End Connection		
	Inlet	Outlet
T	LOK Tube Fitting	LOK Tube Fitting
MT	Male Thread	LOK Tube Fitting
MF	Male Thread	Female Thread

3. Inlet and Outlet Connection Size & Type					
NPT (ISO / BSP)	Thread (NPS)	1/8	1/4	3/8	1/2
	Designator	2N(R)	4N(R)	6N(R)	8N(R)
Fractional Tube	O.D. (in.)	1/8	1/4	3/8	1/2
	Designator	2	4	6	8
Metric Tube	O.D. (mm)	3	6	10	12
	Designator	3M	6M	10M	12M

4. Spring and Cracking Pressure (psig)							
Pressure	225 ~ 750	750 ~ 1,500	1,500 ~ 2,250	2,250 ~ 3,000	3,000 ~ 4,000	4,000 ~ 5,000	5,000 ~ 6,000
Designator	Y	P	O	B	W	R	G

5. Material	
S	Stainless Steel 316 / 316L

6. Option	
N	NACE MR 0175
Q	BS EN 10204 Type 3.2

Selecting Valve

When selecting a product, the system design in its entirety must be considered to ensure safe performance. Proper installation, operation and maintenance, as well as material compatibility, adequate ratings and function are the responsibilities of the system designer and user.

