

VDK-LOK

V61 Series

Rev. 01-01
Aug. 2023





Features

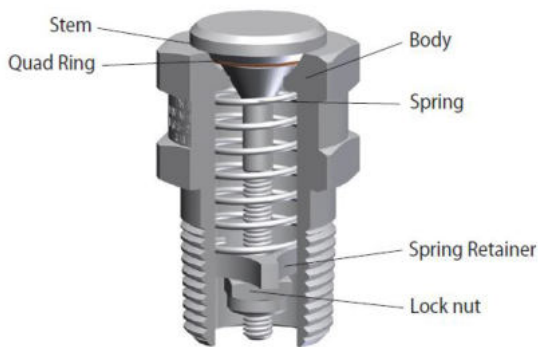
- Precise cracking pressure with high reliability.
- Keeping the sealing to 95~98% of Set Pressure at least.
- Reliable Reseal performance.
- Tamper proof design.

Design and application

V61 Series Vent relief valves is designed to vent out the excess pressure from the line automatically to keep the required line pressure safely when the line pressure is exceeded over the limitation unusually. This valves can be used in the case that the working fluid is not harmful when vented out. The level of cracking pressure should be set by adjusting the force of the spring in the valve before this valve is installed in the system.

Installation and Operation

This valve should be positioned perpendicularly to the direction of fluid flow in the line and that position should be considered and the vented fluid should be not directed to the personnel operating and the parts that has any influences on that. The line system should be run to check the performance of the valve after the personnel operating move to the safty zone. Because this valve is opened automatically when the excess of the required line pressure.



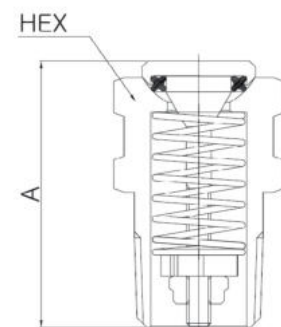
Materials of construction

Component	Valve Body Material	
	SS316	Brass
Body	ASTM A276 / A479 TYPE 316	ASTM B16 / Brass 360 (Nickel plated)
Stem	ASTM A276 / A479 TYPE 316	ASTM B16 / Brass 360
Quad-Ring	FKM	NBR
Spring	STAINLESS STEEL 302	STAINLESS STEEL 302
Spring retainer	ASTM A276 / A479 TYPE 316	ASTM B16 / Brass 360
Lock nut	STAINLESS STEEL	STAINLESS STEEL

• Lubricants listed in blue.

Ordering Number and Table of Dimensions

Basic Ordering No.	Pipe Size NPT	Orifice mm(inch)	Dimension mm(inch)	
			A	Hex.
V61-M-2N	1/8" Male NPT	4.74 (0.187)	24.6 (0.97)	12.7(1/2)
V61-M-4N	1/4" Male NPT	6.98 (0.275)	30.48 (1.2)	15.87 (5/8)
V61-M-6N	3/8" Male NPT	8.76 (0.345)	31.5 (1.24)	19.05 (3/4)
V61-M-8N	1/2" Male NPT	10.41 (0.41)	44.5 (1.75)	25.4 (1.0)
V61-M-12N	3/4" Male NPT	14.47 (0.57)	57.15 (2.25)	28.57 (1-1/8)
V61-M-16N	" Male NPT	19.94 (0.785)	79.25 (3.12)	38.1 (1-1/2)



Technical Data

1. Set Pressure Range : 0.5 to 150 psig (0.03 to 10.4 bar)
2. Temperature Range : -65° to 400°F (-54°C to 204°C)
(differ from material selection)

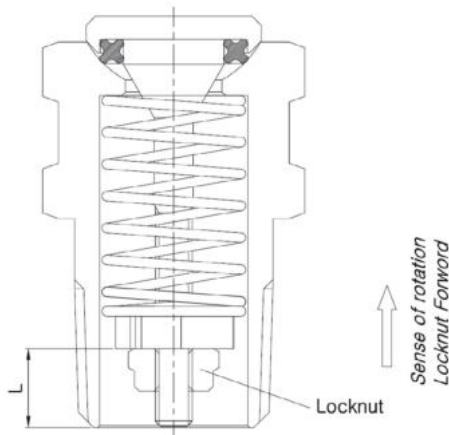
Material	Designator	Temperature Rating
FKM	V	-20 to 400°F (-28°C to 204°C)
NBR	N	-40 to 250°F (-40°C to 121°C)
EPDM	EP	-65 to 300°F (-54°C to 148°C)

Technical Data

Cracking & Reseal Tolerance

	Cracking Pressure	Tolerance
Cracking	below 2 psig (0.14 bar)	± 10%
	2 to 150 psig (0.14 to 10.3 bar)	± 5%

	Cracking Pressure	Tolerance
Reseal	2 ~ 10 psig (0.14 to 1.7 bar)	80% of Cracking
	10 ~ 150 psig (0.7 to 10.3 bar)	92% of Cracking



According to system line's requested pressure,
Turn the locknut (with JIG as picture.1) as picture and set the
cracking pressure.

* Ordering Jig Part No.: V61 - JIG

JIG Reference <picture.1>



Spring Cracking Pressure Range Designator and Flow Data

Designator	Cracking Pressure Range @ 20°C (70°F), psig (bar)	Standard Cracking Pressure (The Middle Point Cracking) psig (bar)	Flow Data for Size, SCFM					
			1/8"	1/4"	3/8"	1/2"	3/4"	1"
1	0.5 to 2.5 (0.03 to 0.17)	1.6 (0.11)	0.13	0.13	0.20	0.83	1.23	-
5	2.6 to 7.5 (0.18 to 0.51)	5 (0.34)	0.57	0.62	0.97	1.83	1.37	2.92
10	7.6 to 15 (0.52 to 1.03)	11.5 (0.79)	0.92	1.15	1.80	2.50	1.58	1.90
20	16 to 35 (1.1 to 2.41)	26 (1.79)	1.50	2.05	2.50	3.67	3.75	5.17
50	36 to 75 (2.48 to 5.17)	56 (3.86)	4.33	8.58	9.17	24.30	17.50	9.17
100	76 to 125 (5.24 to 8.61)	100 (6.89)	8.33	33.52	21.67	62.08	34.67	76.67
150	126 to 150 (8.68 to 10.4)	138 (9.5)	10.17	38.17	19.00	66.67	57.50	91.67

Factory Test

Every valve is factory tested for standard set cracking and performance.

How to Order

Select valve basic ordering number, applicable seal, spring nominal cracking pressure, and body material.

V61 -	NIL- KZ- EP-	1-	S B
Seal Material Designator	Spring Nominal Cracking Pressure Designator	Valve Body Material Designator	
FKM : Nil for SS316 Valve NBR : Nil for Brass Valve FKM : V NBR : N EPDM : EP	"Note : Select the spring designator 1, 5, 10, 20, 50, 100, 150"	S : SS316 B : Brass	

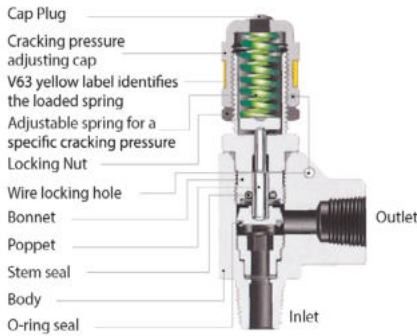
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V63-V66 Series Relief Valves

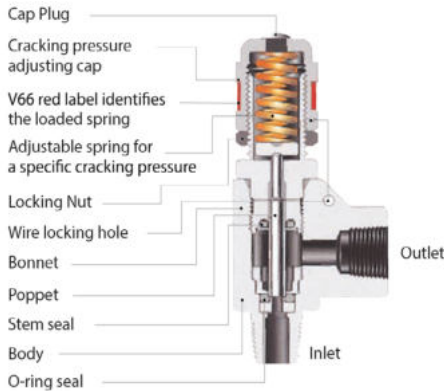
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V63 Series for working pressure 300 psig (20.6 bar)



V66 Series for working pressure 6,000 psig (413 bar)



Technical Data

V63 Series Technical Data

- Maximum working pressure : 300 psig @ 68°F (20.6 bar @ 20°C)
- Cracking pressure range : 10 to 225 psig (0.68 to 15.5 bar)

Table 1. V63 Series Spring Designator

Spring Designator	Cracking Pressure		Color Code
	psig	bar	
RVS-L	10 to 225	0.68 to 15.5	RED

- Orifice : 4.8 mm (0.19 in.)

V63/66 Series Temperature Rating

Seal Material	Temperature Rating, °C (°F)	
	V63 Series	V66 Series
FKM (Viton)	-12 ~ -135 (10.4 ~ 275)	-4 ~ 121 (24.8 ~ 250)
Buna N	-23 ~ 148 (-9.4 ~ 298)	-17 ~ 121 (1.4 ~ 250)
Ethylene Propylene (EPDM)	-40 ~ 148 (-40 ~ 298)	-1 ~ 121 (30.2 ~ 250)

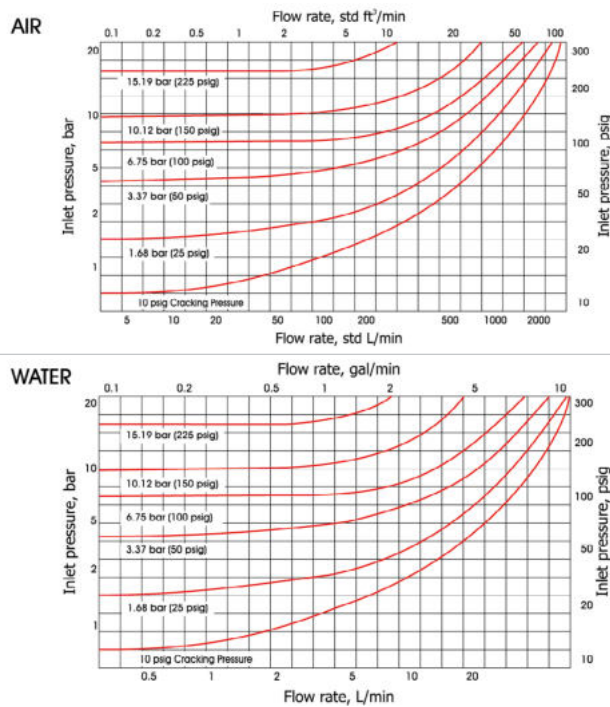
V66 Series Technical Data

- Maximum working pressure : 6,000 psig @ 68°F (413 bar @ 20°C)
- Orifice size : 3.4 mm (0.13 in.)
- Cracking pressure range : 50 to 6,000 psig (3.4 to 413 bar)

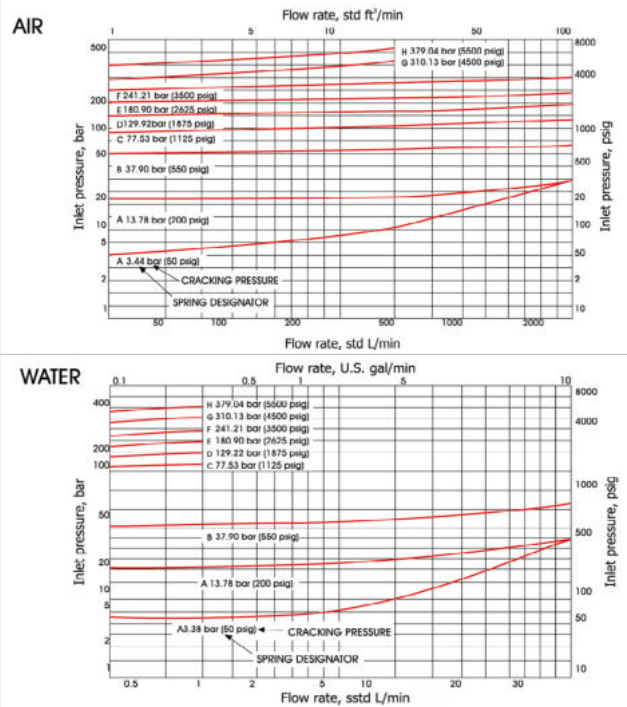
Table 2. V66 Series Spring Designators

Spring Designator	Cracking Pressure		Color Code	Spring Designator	Cracking Pressure		Color Code
	psig	bar			psig	bar	
RVS-A	50 to 350	3.4 to 24	WHITE	RVS-E	2250 to 3000	155 to 206	GREEN
RVS-B	350 to 750	24 to 51.6	BLUE	RVS-F	3000 to 4000	206 to 275	YELLOW
RVS-C	750 to 1500	51.6 to 103	CLEAR	RVS-G	4000 to 5000	275 to 344	BROWN
RVS-D	1500 to 2250	103 to 155	BLACK	RVS-H	5000 to 6000	344 to 413	ORANGE

V63 Series Flow Rate



V66 Series Flow Rate



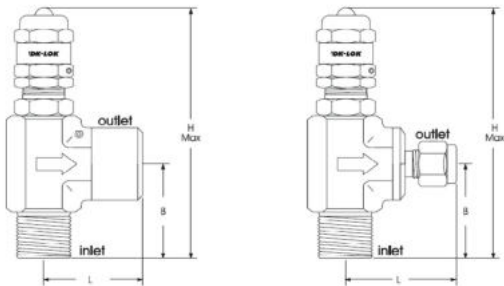
Factory Test

Every valve is factory tested for cracking and reseal performance.

How To Adjust Valve Cracking Pressure

The valve user shall set a specific cracking pressure of the valve supplied.

1. To increase the cracking pressure of the valve, turn the adjusting cap clockwise to compress the spring.
2. To reduce the cracking pressure, turn counterclockwise.
3. Start the pump with the spring relaxed (eight threads showing with the Locking Nut at bottom), with the discharging port open, check the gauge pressure as you turn the adjusting cap clockwise to increase the pressure to the desired operating range.
4. If the system has more than one outlet, set the valve pressure with one outlet open, and then check again with all outlets open to make sure that the set pressure is within the desired operating range.
5. Set the Locking Nut and the wire to maintain the set cracking pressure.



Operation

- Install the valve between the pump outlet as close as possible, and any shutoff device in the discharge line. The preferable mounting position is vertical with the adjusting cap at the top.
- D-Pro relief valve bypasses the system fluid to prevent instrument or sensitive gauge in the system from excess pressure.
- When the inlet pressure overcomes the set spring pressure on the poppet, the poppet lifts off the valve seat, allowing flow to bypass and thereby balance the system pressure.
- If the valve has not been actuated for a period of time, it may initially crack above the set cracking pressure.
- Cracking pressure is only sensitive to inlet pressure, and is not affected by outlet pressure.
- Cv reduction : Valve flow may be reduced by the restriction of pipe and tubing connected.

Material of Construction	
Cap Plug	Polypropylene
Adjusting Cap	ASTM A276 / A479 Type 316
Spring	Stainless Steel 302
Locking Nut	ASTM A276 / A479 Type 316
Bonnet	
Poppet	Standard Viton, optional EPDM and Buna N
Stem & O-ring seal	
Body	ASTM A182 F316

Ordering information and Dimensions

Basic Ordering Number	End Connections		Orifice mm(in.)	Dimensions mm (in.)			
	Inlet	Outlet		H	B	L	
V63- and V66-	D-4T-	1/4 DK-Lok	V63 : 4.8 (0.19) V66 : 3.4 (0.13)	100 (3.93)	37 (1.45)	39 (1.53)	
	D-6M-	6 mm DK-Lok			38 (1.49)	40 (1.57)	
	D-8M-	8 mm DK-Lok		105 (4.13)	44 (1.73)	42 (1.65)	
	D-8T-	1/2 DK-Lok			98 (3.85)	36 (1.41)	42 (1.65)
	D-12M-	12 mm DK-Lok		94 (3.70)		32 (1.25)	30 (1.18)
	MD-8N8T-	1/2 Male NPT			1/2 DK-Lok	98 (3.85)	36 (1.41)
	MD-8N12M-	1/2 Male NPT		12 mm DK-Lok	94 (3.70)		32 (1.25)
	MF-4N-	1/4 Male NPT		1/4 Female NPT		98 (3.85)	36 (1.41)
	MF-4R-	1/4 Male ISO 7/1		1/4 Female ISO 7/1	94 (3.70)		32 (1.25)
	MF-6N-	3/8 Male NPT		3/8 Female NPT		98 (3.85)	36 (1.41)
	MF-6R-	3/8 Male ISO 7/1		3/8 Female ISO 7/1	94 (3.70)		32 (1.25)
	MF-8N-	1/2 Male NPT		1/2 Female NPT		98 (3.85)	36 (1.41)
MF-8R-	1/2 Male ISO 7/1	1/2 Female ISO	94 (3.70)	32 (1.25)	35 (1.37)		



Model Shown :
V66-MF-4N-A

All dimensions shown are for reference only and are subject to change. Dimensions with DK-Lok nuts are in finger-tight position.

How to order

Please select the desired valve basic ordering number, the applicable seal, spring designator and CE certified option from the table below.

Example : V66-D-4T

-BN	-B	-CE
Seat Designator	Spring Designator	CE certified
Nil : Standard Viton BN : Buna N EP : EPDM	Refer to Table 1, Table 2 for spring designator	CE : Valve to 2014/68/EU

Factory pressure set valve

To order, specify the set pressure on the valve ordering number.
Example : V66-D-4T-60BAR or V66-D-4T-870PSI

Valve without spring installed

To order, do not specify spring designator on the ordering number.
Example : V66-D-4T

Note : The valve with no spring installed is supplied with the label stated "NO SPRING INSTALLED" on the adjusting cap.

Spring for field assembly

To order, select an applicable spring from the spring designator table 1 & 2. Spring kit includes spring, sticker and wire. Example : RVS-A

Safe Valve Selection

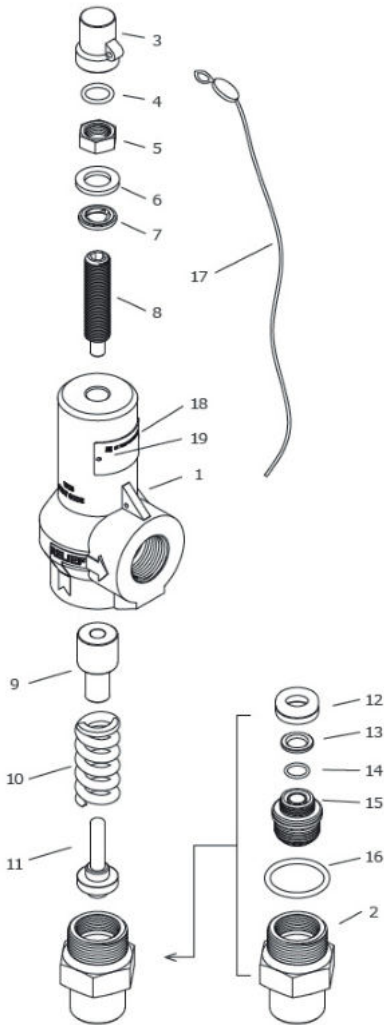
The selection of a valve for any application or system design must be considered to ensure safe performance. Valve function, valve rating, material compatibility, proper installation, operation and maintenance remain the sole responsibility of the system designer and the user. DK-Lok accepts no liability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

VDK-LOK

V64 Series

Rev. 02-01
Jan. 2024





Features

- **Wide Media Applications :**
Air, Gases, CNG, and Liquid relief applications.
 - **High Performance Soft Seat :**
Provides Repetitive & Reliable Bubble-tight Seal.
 - **Orifice:** 0.404 in. (10.26 mm)
 - **Working Pressure:** 6,000 psi (413 bar)
 - **Cracking Pressure Range:**
15 to 5,500 psig (1.03 to 379 bar)
- Valves are supplied with protective painted surface.

Table 1. Materials of Construction

No.	Component	Valve Body Materials	
		Carbon Steel	Stainless Steel
Standard O-ring Type			
1	Body	ASTM A216 Gr. WCB	ASTM A351 CF3M
2	Seat Frame	ASTM A105 or Equivalent	ASTM A479/A276 Type316
3	Cap	Carbon Steel	Stainless Steel
4	Cap O-Ring	Rubber	
5	Jam Nut	Carbon Steel	Stainless Steel
6	Flat Washer	Carbon Steel	Stainless Steel
7	Bonded Seal	NBR inner ring bonded to carbon steel outer ring	
8	Adjustable Screw	Carbon Steel with Cr Plated	Stainless Steel
9	Spring Keeper	Stainless Steel	
10	Spring	AISI 1086 or Equivalent	
11	Disc	ASTM A479/A276 Type316	
12	Seat Cap	ASTM A479/A276 Type316	
13	Seat Support	ASTM A479/A276 Type316	
14	Seat O-Ring	FKM (see Table 2 for optional O-rings)	
15	Insert Holder	ASTM A479/A276 Type316	
16	Body O-Ring	FKM (see Table 2 for optional O-rings)	
17	Lead Seal Wire	Stainless Steel	
18	Name Plate	Stainless Steel	
19	Rivet Bolt	Stainless Steel	
Optional PCTFE Type (only spring spec. No.9-11)			
12-1	Seat Cap	ASTM A476/A276 Type316	
14-1	Seat	PCTFE	

· Wetted parts are listed in blue.

V64 Series Technical Data

Working Pressure	Cracking Pressure Range	Orifice	Orifice Area
6,000 psig (413 bar)	15 to 5,500 psig (1.03 to 379 bar)	0.404 in. (10.26 mm)	0.128 in. ² (82.58 mm ²)

Table 2. Elastomer O-ring Technical Information

Component	Temp. Rating °F (°C)		Recommended Media
	Min.	Max.	
FKM (Viton)*	-15 (-26)	400 (204)	Hydrocarbons, H ₂ S, Mineral Oil/Grease, Silicone Oil/Grease, Fuels, Chlorinated Hydrocarbons.
HNBR	-25 (-31)	325 (162)	Hydrocarbons, CO ₂ , Dilute Acids, Water and Steam Less than 300 °F.
EPDM	-70 (-56)	250 (121)	Glycols, Organic Acids, Inorganic Acids, Hydraulic Fluids, Solvents.

* In case of CNG service, FKM of special compound is applied and temperature service is applicable to -40°F (-40°C).

Operation

When the inlet pressure overcomes the spring set pressure, it causes the valve to open, releasing flow to bypass and thereby balance the pressure.

Factory Test

Every valve is factory tested for cracking and reseal performance.

Certifications

Certificates		Certificate No.
PED 97/23/EC (Pressure Equipment Directive)	Module B	HSBI-10-11-045
	Module D	HSBI-10-11-046
CSEL (China Special Equipment License)		TSF700E53-2023

Ordering Number and Dimensions

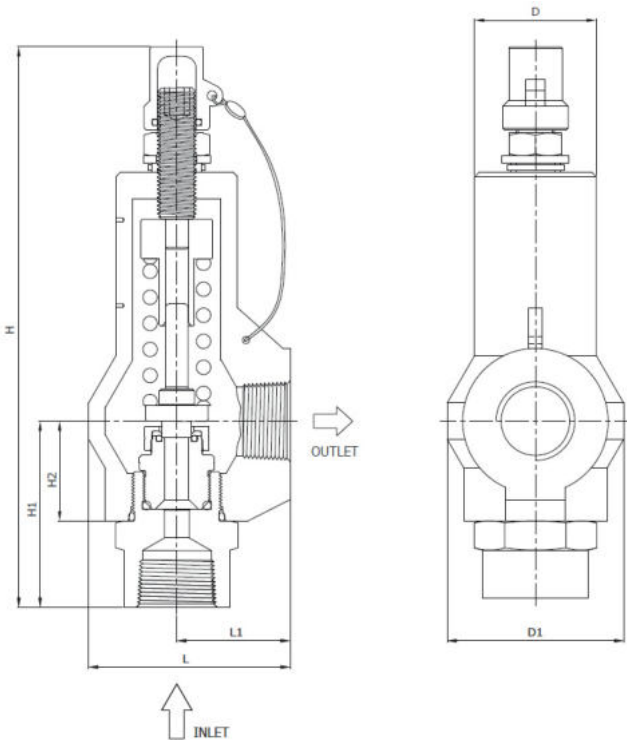


Table 3. Flow Rate

Flow rate measured by overpressure of 110% or 3 psig.

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

Table 4. Basic Ordering Number and Dimensions

Basic Ordering Number	End Connections		Dimensions in. (mm)							
	Inlet	Outlet	H	H1	H2	L	L1	D	D1	
V64-	F8N16N-	1/2 in. Female NPT	1 in. Female NPT	9.25 (235)	3.07 (78.0)	1.64 (41.8)	3.32 (84.50)	1.87 (47.5)	2.00 (51.0)	2.36 (60.0)
	F12N16N-	3/4 in. Female NPT								
	MF8N16N-	1/2 in. Male NPT								
	MF12N16N-	3/4 in. Male NPT								
	MF16N-	1 in. Male NPT								

Ordering Information

Select the desired valve basic ordering number in the table 4, applicable O-Ring designator, Spring designator, and Valve body material in the table below.

O-Ring Material Designators	Spring Set Pressure Designators Unit: psig	Valve Body Material Designators	Example of a complete Ordering Number.
Applicable to components number of 14, and 16 in the table 1. • Nil: Standard FKM O-Ring • HBN: HNBR • EP: EPDM	<ul style="list-style-type: none"> • 1 : 15-35(Brown) • 2 : 36-70(Light Blue) • 3 : 71-200(Yellow) • 4 : 201- 350(Light Green) • 5 : 351-750(Red) • 6 : 751 - 1300(Orange) • 7 : 1301 - 1800(Silver) • 8 : 1801 - 2800(Black) • 9 : 2801 - 3700(Dark Brown) • 10 : 3701 - 5500(Gray) • 11 : 5800 (Gold) 	<ul style="list-style-type: none"> • C: Carbon Steel • S: Stainless Steel 	V64-F12N16N-EP-8-C V64-MF16N-PC-10-C Factory Set Valve To order, specify the set pressure on the valve ordering number. i.e., V64-F8N16N-1200-C
Seat Material Designators	• Nil: Standard O-Ring Type, • PC: PCTFE Type(only spring spec. No.9~11)		

Safe Valve Selection

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