

## V33, VP33, VA33, VDA33, VH36 and VL36 Series

for VCH36 Series for CNG/NGV applications

Pressures up to 3,000 psig (206 bar) and 6,000 psig (413 bar)

### Features

- Fixed cracking pressure valves : V33, VP33, VH36, VCH36 Series
- Adjustable cracking pressure valves : VA33, VDA33 Series
- Lift Check valves : VL36 Series

### Technical Information

Valve Series	V33 Series			VP33 Series	VA33 & VDA33 Series	VH36 Series	
	V33A, V33B, V33C, V33D	V33E, V33F		VP33A, VP33B	VA33A, VA33B, VDA33	VH36A, VH36B	VH36C
Materials	SS316 & Brass	SS316	Brass	SS316 & Brass	SS316 & Brass	SS316	SS316
Working Pressure @70°F (21°C) Unit : psig (bar)	3000 (206)	2000 (137)	1500 (103)	3000 (206)	3000 (206)	6000 (413)	5000 (344)
Temperature Ratings °F (°C)	<b>Seal Material</b>	<b>Designator</b>		<b>Rating</b>	<b>Seal Material</b>	<b>Designator</b>	<b>Rating</b>
	FKM O-ring	VT		-10 to 375 (-23 to 190) <sup>(a)</sup>	EPDM O-ring	EP	-50 to 300 (-45 to 148)
	NBR O-ring	BN		-10 to 250 (-23 to 121)	FFKM O-ring	KZ	-10 to 600 (-23 to 315)
	(a)VH36 Series with FKM O-ring : -10 to 400 °F (-23 to 204 °C) • FKM is standard for SS316 valves. • NBR is standard for Brass valves.						
Cracking Pressure	Refer to spring table of each valve series						

- Poppet Check Valves, V33 Series : 2, 3 page
- One-Piece Check Valves, VP33 Series : 3 page
- One-Piece Adjustable Check Valves, VA33 Series : 4, 5 page
- In-Line Adjustable Check Valves, VDA33 Series : 4, 5 page
- CNG/NGV Check Valves, VCH36 Series : 6, 7 page
- High Pressure Check Valves, VH36 Series : 6, 7 page
- Lift Check Valves, VL36 Series : 8 page

### Cracking, Reseal and Back Pressure @ 70°F(21°C)

- **Cracking Pressure** : Valve poppet is actuated when the pressure difference between the inlet (upstream) and the outlet (downstream) reaches the range of cracking pressure.
- **Reseal Pressure** : Valves that have higher cracking pressure can be resealed to bubble-tight by the spring force. The reseal pressure is the pressure at the same flow direction, but lower than the cracking pressure.
- **Back Pressure** : Valves that have cracking pressure of 5 psig (0.34 bar) and lower may not be able to return to the bubble-tight seal. This may require back pressure to press the seal to form a bubble-tight contact in addition to the spring force.

### Class Ratings

Valve Series	V33 Series				VP33, VA33, VDA33 Series		VH36 Series	
	V33A, V33B, V33C, V33D		V33E, V33F		VP33A, VP33B, VA33A, VA33B, VDA33		VH36A, VH36B	VH36C
Temperature, °F (°C)	Working Pressure, psig (bar)							
	SS316	Brass	SS316	Brass	SS316	Brass	SS316	Brass
-18 to 100 (-28 to 38)	3000 (206)	3000 (206)	2000 (137)	1500 (103)	3000 (206)	3000 (206)	6000 (413)	5000 (344)
200 (93)	2575 (177)	2600 (179)	1715 (118)	1300 (89)	2575 (177)	2600 (179)	5160 (355)	4290 (295)
225 (175)	2510 (172)	2500 (172)	1670 (115)	1250 (86)	2510 (172)	2500 (172)	5030 (346)	4180 (288)
250 (121)	2450 (168)	2405 (165)	1630 (112)	1200 (82)	2450 (168)	2405 (165)	4910 (338)	4080 (281)
300 (148)	2325 (160)	-	1545 (106)	-	2325 (160)	-	4660 (321)	3875 (267)
350 (176)	2255 (155)	-	1490 (102)	-	2255 (155)	-	4470 (308)	3720 (256)
375 (190)	2185 (150)	-	1450 (99)	-	2185 (150)	-	4375 (301)	3640 (250)
400 (204)	-	-	-	-	-	-	4280 (294)	3560 (245)

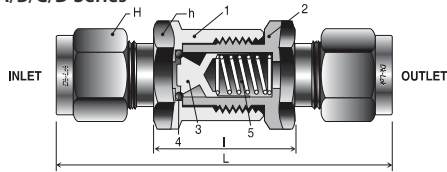
\* VH36 & VCH36 Series is Pressure ratings may be limited by the end connection. See Page 7, Dimensions Table.

## V33 series

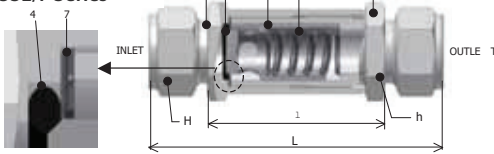
### Features

- Working pressure up to 3,000 psig (206 bar)

#### V33A/B/C/D Series



#### V33E/F Series



### Material of Construction

Component	Valve Body Materials	
	Stainless Steel	Brass
	Material Grade/ASTM	
1. Body	SS316 /A276, A479	Brass 360 /B16
2. Connector		
3. Poppet	FKM	NBR
4. O-ring*		
5. Spring	SS302/A313	
6. O-ring seal	FKM	NBR
7. Washer	SS316 With PTFE Coating	

Wetted parts are listed in blue.  
4. O-ring\* on V33E & V33F Series is secured in poppet groove.

#### Lubrication :

- Silicon-based Lubricant for Poppet.
- Molybdenum Dry Film Lubricant for SS316 Body Threads.

### Operation

- Valves that have not been actuated for a period of time may require a higher cracking pressure than the set cracking pressure.
- DK-Lok check valves prevent reverse flow in circuits. Do not use them as relief valves.
- DK-Lok check valves are designed to prevent loss of media caused by failed connections and for uni-directional flow control of fluids in chemical processing, power generation, oil and gas industries.

### Factory Test, Cleaning and Packaging

- Every valve is factory tested for cracking and reseals performance.
- Every valve is cleaned, and packaged in accordance with DK-Lok cleaning standard of DC-01.
- Special cleaning and packaging in accordance with DK-Lok DC-11 in compliance with ASTM G93 Level C is available on request.

### Ordering Information and Dimensions

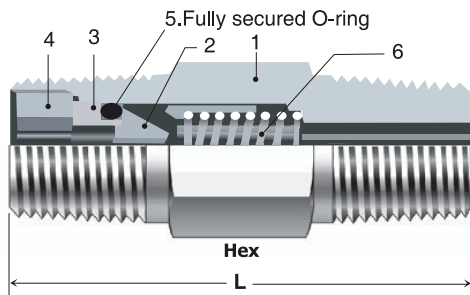
Basic Ordering		End Connections		Orifice mm (in.)	Cv	Dimensions mm (in.)				
Number		Inlet	Outlet			h-Hex	H-Hex	L	I	
V33A-	D-2T-	1/8 in. DK-Lok		4.8 (0.19)	0.16	15.88 (5/8)	11.11 (7/16)	55.60 (2.19)	25.00 (0.98)	
	M-2N-	1/8 in. Male NPT					-	44.40 (1.75)	-	
	F-2N-	1/8 in. Female NPT					-	46.50 (1.83)	-	
	D-4T-	1/4 in. DK-Lok			0.47		14.29 (9/16)	60.00 (2.36)	25.00 (0.98)	
	D-6M-	6 mm DK-Lok					14.00	-		
	MD-4N4T-	1/4 in. Male NPT	1/4 in. DK-Lok				14.29 (9/16)	56.40 (2.22)		
V33B-	M-4N-	1/4 in. Male NPT		7.1 (0.28)	1.48	19.05 (3/4)	-	53.40 (2.10)	-	
	F-4N-	1/4 in. Female NPT					-	56.80 (2.24)	-	
	D-6T-	3/8 in. DK-Lok					17.46 (11/16)	65.50 (2.58)	27.10 (1.07)	
	D-10M-	10 mm DK-Lok					19.00	55.50 (2.19)		
V33C-	M-6N-	3/8 in. Male NPT		10.0 (0.39)	1.7	22.22 (7/8)	-	63.80 (2.51)	-	
	F-6N-	3/8 in. Female NPT					-	63.80 (2.51)	-	
	D-8T-	1/2 in. DK-Lok					22.22 (7/8)	80.20 (3.16)	36.20 (1.43)	
	D-12M-	12 mm DK-Lok					22.00	74.40 (2.93)		
V33D-	M-8N-	1/2 in. Male NPT		13.5 (0.53)	2.6	28.58 (1-1/8)	-	84.70 (3.33)	-	
	F-8N-	1/2 in. Female NPT					-	84.70 (3.33)	-	
V33E-	D-10T-	5/8 in. DK-Lok		16.0 (0.63)	5.2	31.75 (1-1/4)	25.40 (1)	91.80 (3.61)	48.10 (1.89)	
	D-12T-	3/4 in. DK-Lok					28.58(1-1/8)	110.70 (4.35)	66.1 (2.6)	
	M-12N-	3/4 in. Male NPT					-	105.30 (4.15)		-
	F-12N-	3/4 in. Female NPT					-	103.00 (4.06)	-	
V33F-	D-16T-	1 in. DK-Lok		18.0 (0.71)	8.0	34.93 (1-3/8)	38.1 (1-1/2)	120.8 (4.75)	68 (2.68)	
	M-16N-	1 in. Male NPT					-	115.8 (4.56)		-
	F-16N-	1 in. Female NPT					-	111 (4.37)		-

# IDK-LOK® Check Valves

Table 1. Spring Cracking, Reseal and Back Pressure @ 70 °F (21 °C) (for V33)

Spring Nominal Cracking Pressure Designator		Cracking Pressure Ranges				Reseal Pressures psig (bar)
psig	bar	Min. Pressure		Max. Pressure		
		psig	bar	psig	bar	
1/3	0.02	0	0	3	0.21	Up to 6 (0.41) Back pressure
1	0.07	0	0	4	0.28	Up to 6 (0.41) Back pressure
3	0.21	2	0.14	7	0.48	Up to 4 (0.28) Back pressure
10	0.69	7	0.48	15	1.03	Minimum 3 (0.21) Reseal pressure
25	1.72	20	1.38	30	2.07	Minimum 17 (1.17) Reseal pressure
50	3.45	40	2.76	60	4.14	Minimum 35 (2.41) Reseal pressure
75	5.17	60	4.14	90	6.20	Minimum 53 (3.65) Reseal pressure
100	6.89	80	5.51	120	8.27	Minimum 70 (4.82) Reseal pressure

## VP33 Series One-Piece Check Valves



### Features

- O-ring seal blow-out proof design
- One piece body construction.
- Working pressure up to 3,000 psig (206 bar)

### Materials of Construction

Component	Valve Body Materials	
	Stainless Steel	Brass
	Material Grade/ASTM	
1. Body	SS316 / A276, A479	Brass 360 / B16
2. Poppet		
3. O-ring Holder		
4. Locking Screw		
5. O-ring	FKM	NBR
6. Spring	SS302/A313	

Wetted parts are listed in blue.

### Lubrication :

- Silicon-based Lubricant on Poppet
- Molybdenum Dry Film Lubricant on SS316 Locking Screw.

### Ordering Information and Dimensions

Basic Ordering Number	End Connections		Cv	Dimensions mm (in.)		
	Inlet	Outlet		L	Hex.	
VP33A-	M-4N-	1/4 in. Male NPT		0.35	41 (1.62)	14.28 (9/16)
	M-4R-	1/4 in. ISO Male Tapered			61 (2.41)	
	F-4N-	1/4 in. Female NPT				
	F-4R-	1/4 in. ISO Female Tapered			64 (2.54)	
	MF-4N-	1/4 in. Male NPT	1/4 in. Female NPT		44 (1.75)	
	FM-4N-	1/4 in. Female NPT	1/4 in. Male NPT		58 (2.28)	
VP33B-	M-8N-	1/2 in. Male NPT		1.20	58 (2.28)	22.22 (7/8)
	F-8N-	1/2 in. Female NPT			94 (3.71)	26.98 (1-1/16)
	MF-8N-	1/2 in. Male NPT	1/2 in. Female NPT		72 (2.83)	

Table 2. Spring Cracking, Reseal and Back Pressure @ 70°F (21°C)

Spring Nominal Cracking Pressure Designator		Cracking Pressure Ranges				Reseal Pressures psig (bar)
psig	bar	Min. Pressure		Max. Pressure		
		psig	bar	psig	bar	
1/3	0.02	0	0	3	0.21	6 to 20 (0.41 to 1.38) back pressure
1	0.07	0	0	4	0.28	5 to 20 (0.34 to 1.38) back pressure
10	0.69	7	0.48	13	0.90	3 to 10 (0.21 to 0.69) back pressure
25	1.72	21	1.45	29	2.00	Minimum 5 (0.34) Reseal pressure