



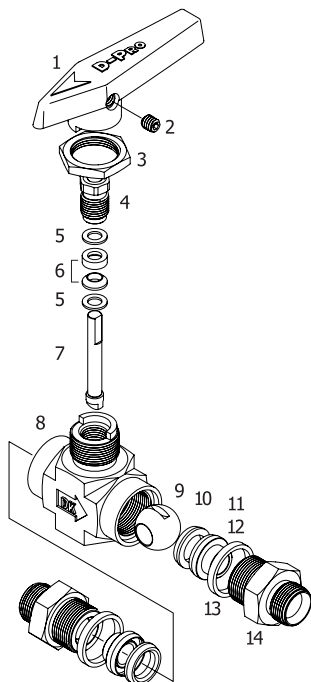
VH86 series

High Pressure Multi Purpose Ball Valves

Catalog No. VH86-4
Oct. 2009

Features

- High flow in a compact design.
- High pressure capacity designed for blow-out proof with internally loaded ball stem.
- Micro-finished ball provides a positive seal.
- 90 degree actuation for 2-way and 180 degree actuation for 3-way ball valves.
- Panel mounting as standard.
- Chevron stem seal, adjustable with the handle disassembled.
- Handle indicates flow direction.
- Low operating torques and positive handle stops.
- Optional pneumatic actuation.



Material of Construction

Components	Valve Body Material Stainless Steel Grade/ASTM Specification
1. Handle	Nylon with brass insert
2. Set Screw	Stainless steel
3. Panel Nut	SS316/A276
4. Packing bolt*	
5. Upper / Lower Gland	PTFE/D1710 type 1, Grade 1, Class B
6. Stem Chevron Packing	
7. Stem	SS316/A276
8. Body	SS316/A276 Type F316
9. Ball	SS316/A276
10. Seat (2)	Standard PCTFE (Kel-F), optional PTFE, PEEK
11. Retainer (2)	SS316/A276
12. Retainer Seal (2)	PTFE/D1710 type 1, Grade 1, Class B
13. End Connector Seal (2)	
14. End Connector (2)	SS316/A276

- * Molybdenum disulfide with hydrocarbon coating
- Wetted parts and lubricants are listed in blue.
 - Lubricant is Fluorinated-based.

Operation and Packing Adjustment

- VH86 valves are designed to control fluid in full open and closed position, using VH86 valves to throttle the flow may reduce the valve life.
- Stem packing can be adjustable with the handle disassembled. Tighten packing bolt clockwise to tighten the stem packing.
- Valves that have not been actuated for a period of time may have a higher initial actuation torque.
- If the valve system needs to be tested at higher pressure than the valve maximum pressure, the valve must be in open position during the test so as not to damage the valve seat.
- Optional Sour Gas Service applicable.

Application

VH86 series ball valve offers a safe and reliable performance in a wide range of onshore and offshore applications: Water, oil, gas, petrochemical in heavy duty applications.

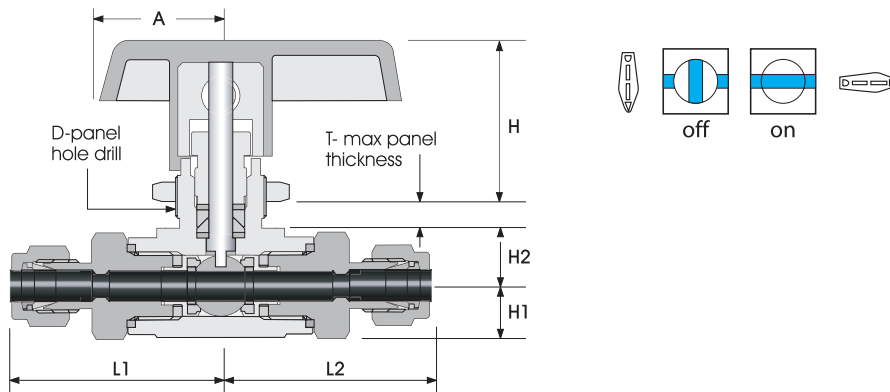
Factory Test, Cleaning and Packaging

- Every valve is factory tested with nitrogen gas at 1000 psig (68.9 bar) for leakage at seat to a maximum allowable leak rate of 0.1 SCCM. The packing is tested with nitrogen gas for no detectable leakage.
- Every valve is cleaned and packaged in accordance with DK cleaning standard DC-01.



Bi-directional 2-way Ball Valves

In-line pattern



Technical Data

Valve Series	Sealing Materials			Pressure Rating @-27 to 37 °C (-20 to 100 °F)	Temperature Rating
	Seat	Stem Packing	Retainer / End Seal		
VH86A, VH86B, and VH86C series	PCTFE	PTFE	PTFE	6000 psig (413 bar)	-30 to 180 °C (-22 to 355 °F)
	PEEK	PTFE	PTFE	6000 psig (413 bar)	-54 to 230 °C (-65 to 446 °F)
	PTFE	PTFE	PTFE	1500 psig (103 bar)	-30 to 176 °C (-22 to 349 °F)

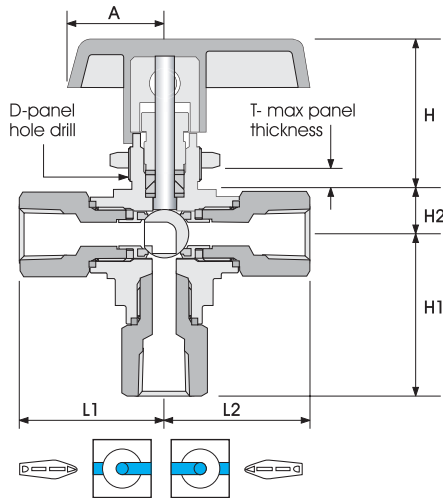
• PCTFE is standard seat material.

Ordering Information and Dimensions

Basic Ordering Number	End Connections		Orifice		Cv	Dimensions mm (in.)											
	Inlet	Outlet	mm	inch		L1	L2	H1	H2	H	A	D	T				
VH86A-	D-1T-	1/16" Dk-Lok	1.3	0.052	0.06	33.0 (1.30)	33.0 (1.30)	8.4 (.33)	9.5 (.37)	24.8 (.98)	19.1 (.75)	14.7 (.58)	3.3 (.13)				
	D-2T-	1/8" Dk-Lok	2.4	0.093	0.21	34.5 (1.36)	34.5 (1.36)										
	F-2N-	1/8" Female NPT	4.2	0.165	0.43	27.2 (1.07)	27.2 (1.07)										
	M-2N-	1/8" Male NPT	4.2	0.165	0.43	30.0 (1.18)	30.0 (1.18)										
	D-4T-	1/4" Dk-Lok	4.2	0.165	0.43	37.6 (1.48)	37.6 (1.48)										
	M-4N-	1/4" Male NPT	4.2	0.165	0.43	34.3 (1.35)	34.3 (1.35)										
	D-3M-	3mm Dk-Lok	2.2	0.086	0.18	34.8 (1.37)	34.8 (1.37)										
VH86B-	D-2T-	1/8 in. Dk-Lok	2.4	0.093	0.26	41.9 (1.65)	41.9 (1.65)	10.7 (.42)	11.9 (.47)	38.9 (1.53)	25.4 (1.00)	19.6 (.77)	6.4 (.25)				
	D-4T-	1/4 in. Dk-Lok				44.2 (1.74)	44.2 (1.74)										
	MD-4N4T-	1/4 in. Male NPT	1/4 in. Dk-Lok	4.7	0.187	1.04	44.2 (1.74)							41.1 (1.62)			
	FD-4F4T-	1/4 in. Female NPT	1/4 in. Dk-Lok				38.4 (1.51)							38.4 (1.51)			
	F-4N-	1/4 in. Female NPT				38.4 (1.51)	38.4 (1.51)										
	M-4N-	1/4 in. Male NPT				41.1 (1.62)	41.1 (1.62)										
	MF-4N-	1/4 in. Male NPT	1/4 in. Female NPT	6.4	0.25	2.34	38.4 (1.51)							41.1 (1.62)			
	MD-4N6T-	1/4 in. Male NPT	3/8 in. Dk-Lok				45.7 (1.8)							38.4 (1.51)			
	FD-4N6T-	1/4 in. Female NPT	3/8 in. Dk-Lok				45.7 (1.8)							38.4 (1.51)			
	D-6T-	3/8 in. Dk-Lok					82.2 (3.24)										
	M-6N-	3/8 in. Male NPT					89.0 (3.50)										
	D-6M-	6 mm Dk-Lok	4.7	0.187	1.04		90.4 (3.56)										
	D-8M-	8 mm Dk-Lok	6.4	0.25	2.34		92.0 (3.62)										
D-10M-	10 mm Dk-Lok					99.0 (3.90)											
VH86C-	F-6N-	3/8 in. Female NPT	10.3	0.406	6.42	118.8 (4.68)	17.5 (.69)	17.8 (.70)	44.2 (1.74)	38.1 (1.50)	22.9 (.90)	9.7 (.38)					
	F-8N-	1/2 in. Female NPT											109.20 (4.30)				
	D-8T-	1/2 in. Dk-Lok											118.8 (4.68)				
	M-8N-	1/2 in. Male NPT											112.8 (4.44)				
	D-12T-	3/4 in. Dk-Lok															
	D-12M-	12 mm Dk-Lok											9.5	0.375	5.57	118.4 (4.66)	
	D-16M-	16 mm Dk-Lok											10.3	0.406	6.42		

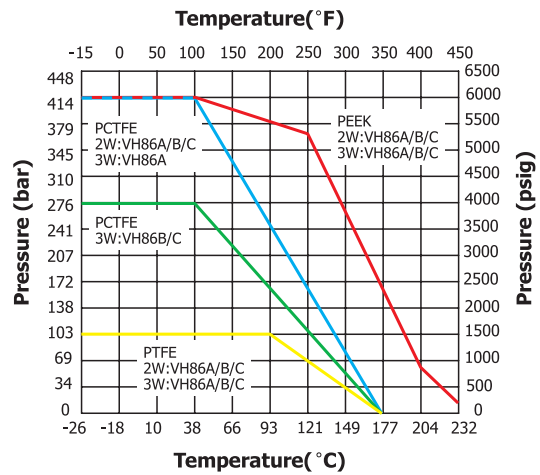
All dimensions shown are for reference only and are subject to change. Dimensions with DK-LOK nuts are in finger-tight position.

3-way Diverter Ball Valves



VH86 3-way Ball Valve is designed to switch media through the bottom port and direct it to out of two outlet ports.

Pressure-Temperature Curve



Legend: 2W:2-Way VH86 ball valves
3W:3-Way VH86 ball valves

Technical Data

Valve Series	Sealing Materials			Pressure Rating @-27 to 37 °C (-20 to 100 °F)	Temperature Rating °C (°F)
	Seat	Stem Packing	Retainer / End Seal		
VH86A-3B	PCTFE	PTFE	PTFE	6000 psig (413 bar)	-30 to 180 (-22 to 355)
	PEEK	PTFE	PTFE	6000 psig (413 bar)	-54 to 230 (-65 to 446)
	PTFE	PTFE	PTFE	1500 psig (103 bar)	-30 to 176 (-22 to 349)
VH86B-3B VH86C-3B	PCTFE	PTFE	PTFE	4000 psig (275 bar)	-50 to 180 (-58 to 355)
	PEEK	PTFE	PTFE	6000 psig (413 bar)	-54 to 230 (-65 to 446)
	PTFE	PTFE	PTFE	1500 psig (103 bar)	-30 to 176 (-22 to 349)

Ordering Information and Dimensions

Basic Ordering Number	End Connections	Orifice		Cv	Dimensions mm (in.)											
		mm	Inch		L1	L2	H1	H2	H	A	D	T				
VH86A-3B-	D-1T-	1/16" Dk-Lok	1.3	0.052	0.06	33.0 (1.30)	33.0 (1.30)	35.3 (1.39)	8.4 (.33)	23.9 (.94)	19.1 (.75)	14.7 (.58)	3.3 (.13)			
	D-2T-	1/8" Dk-Lok	2.4	0.093	0.21	34.5 (1.36)	34.5 (1.36)	36.8 (1.45)								
	F-2N-	1/8" Female NPT	4.2	0.165	0.63	27.2 (1.07)	27.2 (1.07)	29.2 (1.15)								
	M-2N-	1/8" Male NPT	4.2	0.165	0.59	30.0 (1.18)	30.0 (1.18)	32.0 (1.26)								
	D-4T-	1/4" Dk-Lok	4.2	0.165	0.63	37.6 (1.48)	37.6 (1.48)	39.6 (1.56)								
	M-4N-	1/4" Male NPT	4.2	0.165	0.59	34.3 (1.35)	34.3 (1.35)	36.3 (1.43)								
VH86B-3B-	D-2T-	1/8" Dk-Lok	2.4	0.093	0.21	41.9 (1.65)	41.9 (1.65)	45.5 (1.79)	11.9 (.47)	38.9 (1.53)	25.4 (1.00)	19.6 (.77)	6.4 (.25)			
	D-4T-	1/4" Dk-Lok	4.7	0.187	0.70	44.2 (1.74)	44.2 (1.74)	47.8 (1.88)								
	F-4N-	1/4" Female NPT	5.0	0.196	0.87	38.4 (1.51)	38.4 (1.51)	41.9 (1.65)								
	DDM-4T4N-*	1/4" Dk-Lok, 1/4" Male NPT	4.7	0.187	0.70	44.2 (1.74)	44.2 (1.74)	47.8 (1.88)								
	M-4N-	1/4" Male NPT	5.0	0.196	0.87	41.1 (1.62)	41.1 (1.62)	44.7 (1.76)								
	D-6T-	3/8" Dk-Lok				45.7 (1.8)	45.7 (1.8)	49.3 (1.94)								
	M-6N-	3/8" Male NPT	41.1 (1.62)	41.1 (1.62)	44.7 (1.76)											
	D-6M-	6 mm Dk-Lok	4.7	0.187	0.70	44.5 (1.75)	44.5 (1.75)	47.8 (1.88)								
	D-8M-	8 mm Dk-Lok	5.0	0.196	0.87	45.2 (1.78)	45.2 (1.78)	48.5 (1.91)								
	D-10M-	10 mm Dk-Lok				46.0 (1.81)	46.0 (1.81)	49.5 (1.95)								
VH86C-3B-	F-6N-	3/8" Female NPT	10.3	0.406	3.62	49.5 (1.95)	49.5 (1.95)	58.2 (2.29)	17.8 (.70)	44.2 (1.74)	38.1 (1.50)	22.9 (.90)	9.7 (.38)			
	F-8N-	1/2" Female NPT				54.6 (2.15)	54.6 (2.15)	63.2 (2.49)								
	D-8T-	1/2" Dk-Lok				59.4 (2.34)	59.4 (2.34)	68.1 (2.68)								
	DDF-8T8F-*	1/2" Dk-Lok, 1/2" Female NPT				59.4 (2.34)	59.4 (2.34)	63.2 (2.49)								
	M-8N-	1/2" Male NPT				56.4 (2.22)	56.4 (2.22)	65.8 (2.59)								
	D-12T-	3/4" Dk-Lok				59.2 (2.33)	59.2 (2.33)	68.1 (2.68)								
	D-12M-	12 mm Dk-Lok				9.5	0.375	3.46						59.2 (2.33)	59.2 (2.33)	67.8 (2.67)
	D-16M-	16 mm Dk-Lok				10.3	0.406	3.62						56.9 (2.23)	56.9 (2.23)	65.5 (2.67)

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

* VH86 3-way ball valves are described by first the outlet ports (1) and (2) and next the bottom inlet port (3).



P series Rack and Pinion Pneumatic Actuator

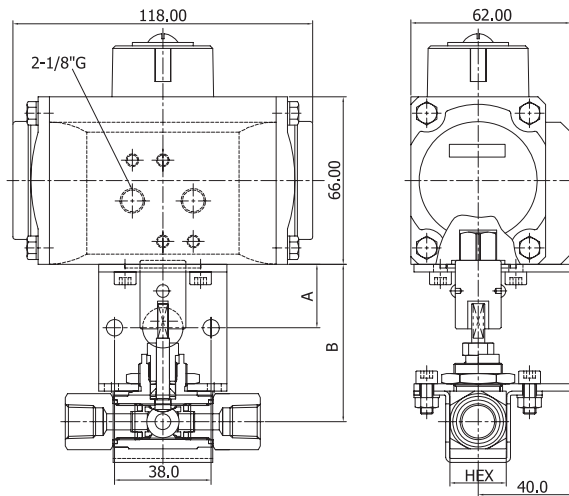


Model shown:
VH86B/C series

A dimension
VH86B: 25.00
VH86C: 27.50

B dimension
VH86B: 62.00
VH86C: 90.90

Unit: mm



Actuator Material of Construction

Parts	Standard Material
Body	Extruded Aluminum Alloy with external & internal corrosion protection
Piston (Rack)	Die Cast Aluminum Alloy Anodized.
Drive Shaft (Pinion)	Steel Alloy Nickel Plated.
Spring	Spring Alloy Steel Nickel Plated. (min. 5, max. 12 spring)
End Cap	Die Cast Aluminum Alloy Polyester Coated.
O-Ring	NBR is standard. Optional FKM and Silicon.

Table 1. Technical Information

Actuator operating temperature (°C)

- Standard: NBR O-Ring - 20 to 80.
- Low Temperature: Silicon O-Ring -40 to 80 (Designator: **LT**).
- High Temperature: FKM O-Ring -15 to 150 (Designator: **HT**).
- Air-pressure: Min. 2.5 bar, Max. 8 bar.
- Air supply end connection: Female G 1/8 inch (ISO 228-1).
- Position indicator is standard.

Table 2. **Single Return 90 Deg. Actuator**

Valve series	Ordering Number		Dimensions L x H x W unit: mm	Weight Kg	Moment Values P=6 bar	Air Consumption Liter	Mounting Bracket Ordering Number	Actuator Operating Temperature Options
	Normal Close	Normal Open			Nm			
VH86A	PCS1	POS1	118x86x62	0.9	3.5	0.1	VH86A-SMB	Nil : Standard Temp. LT : Low Temp. HT : High Temp.
VH86B					VH86B-SMB			
VH86C					PCS2		POS2	

Table 3. **Double Return 90 Deg. Actuator**

Valve series	Ordering Number	Weight Unit: Kg	L x H x W unit: mm	Moment Values P=6 bar	Air Consumption Liter	Mounting Bracket Ordering Number	Actuator Operating Temperature Options
				Nm			
VH86A	PD1	0.75	118x86x62	14.4	0.1	VH86A-DMB	Nil : Standard Temp. LT : Low Temp. HT : High Temp.
VH86B						VH86B-DMB	
VH86C						VH86C-DMB	

Mount bracket: Field assembly kit includes mount bracket, valve to actuator, bracket bolts and assembly manual.

How to Order

Select applicable valve pattern, seat options, pneumatic actuator, and the actuator temperature option from designator listed below.

VH86B-D-6T-
VH86C-D-12T

- PK

- SG

- PCS1

- HT

- S

- S

Seat Material	Sour Gas	Factory Assembled Actuator	Actuator Temperature Options	Valve Body Material
<ul style="list-style-type: none"> • Nil: PCTFE • PK: PEEK • PE: PTFE 	<ul style="list-style-type: none"> • SG: Sour Gas 	For single return, see Table 2. For double return, see Table 3.	<ul style="list-style-type: none"> Nil: Standard Temp. LT: Low Temp. HT: High Temp. 	<ul style="list-style-type: none"> • S: S316

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 Tech accepts no liability for any improper selection, installation, operation or maintenance.

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	<p>Mailing Address</p> <p>826, Naesam-Ri, Juchon-Myeon, Gimhae-City, Gyeong Nam, Korea 621-841</p>			