V86 Series Ball Valves
VC86 Series CNG/NGV Valves

Pressure Rating up to 689 bar (10 000psig)

Catalog No. V86-7
March 2010

Features

- High pressure up to 10 000 psi (689 bar).
- Blowout proof design with internally loaded stem.
- Handle indicates the flow direction.
- Positive stop with a robust stop pin.
- High flow rate with maximum orifice.
- Various end ports including DK-LOK tube port.
- Various flow control with side and bottom inlet port on 3-way diverter valves.

Optional Oval Handle

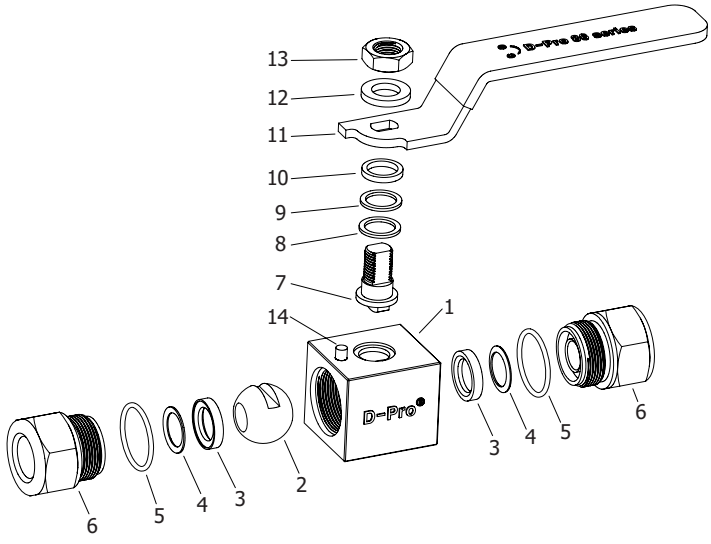


Table 1. Materials of Construction

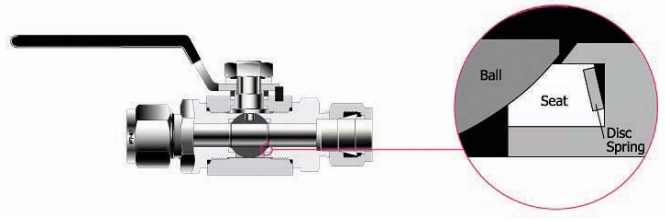
Component		Valve Body Materials Grade/ASTM Specification
1	Body	SS316/A276 or A479
2	Ball	
3	Seat (2)	PVDF, standard for V86 Series Optional PCTFE PEEK, standard for VC86 Series
4	Disc Spring (2)	Type 630/A564, applicable to VC86 Series
5	End Seal (2)	FKM Oring for V86 Series HNBR O-ring for VC86 Series
6	End Connector (2)	SS316/A276 or A479
7	Stem	
8	Bearing	PTFE
9	Packing	
10	Gland	SS316/ ASTM A276 or ASTM A479
11	Lever Handle	SS304 handle with vinyl sleeve
	Optional Oval Handle	
12	Washer	SS304
13	Stem Nut	SS304
14	Stop Pin	SS304

- Wetted parts and lubricants listed in blue.
- Fluorinated-based lubricant

CNC/NGV Certifications

VC86 Series with PEEK seat and HNBR O-rings are available with CNG/NGV certifications.
The sealing material of seat and O-rings are selected for compatible with CNG.

VC86 Series with the live loaded compensation disc spring reacts on ball movement in both low and high pressure systems in CNG and NGV applications.



Valve Series	Certificates	ECE R110	ANSI / AGA NGV 3.1-1995 CGV NGV 12.3-M95	ANSI / IAS NGV 4.6-1999 CSA 12.56-M99	ISO 15500
VC86 Series 2-way ball valves	Certificate No.	110R-000181	2010-REPORT-002 (00)	2010-REPORT-003 (00)	2010-REPORT-001- (00)
	Classification	Class 0	manual valve	manual valve (Class B)	manual valve
	Temperature	-40 to 120 °C (-40 to 250 °F)	-40 to 121 °C (-40 to 250 °F)	-40 to 65 °C (-40 to 150 °F)	-40 to 121 °C (-40 to 250 °F)
	Working Pressure	274 bar @ 120 °C	273 bar @ 121 °C	293 bar @ 65 °C	273 bar @ 121 °C

Operation

- 2-way positive shut off and 3-way directional control of fluids in process, power and instrument application.
- Valves are designed to control fluids in full open or full closed position.
- Valves that have not been actuated for a period of time may have a higher initial actuation torque.
- Valves must be in open position during system test not to damage the valve seat.
- Sour Gas Service NACE MR0175 available.

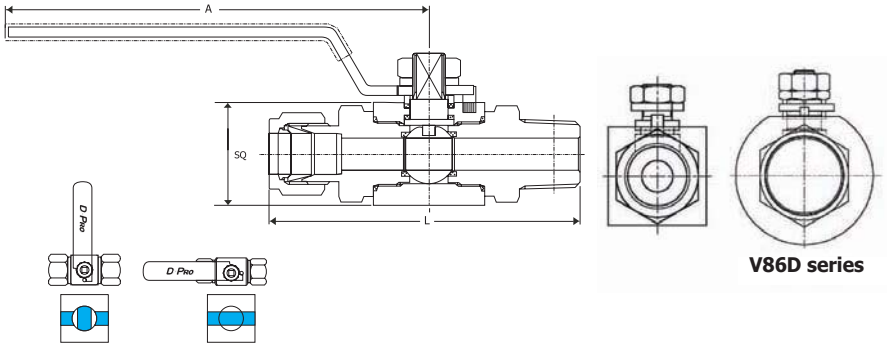
Factory Test

Every valve is tested with nitrogen gas @1000 psig (68 bar) for leakage at the seat to a maximum allowable leak rate of 0.1 SCCM. The stem packing is tested with nitrogen gas @1000 psig for no detectable leakage.

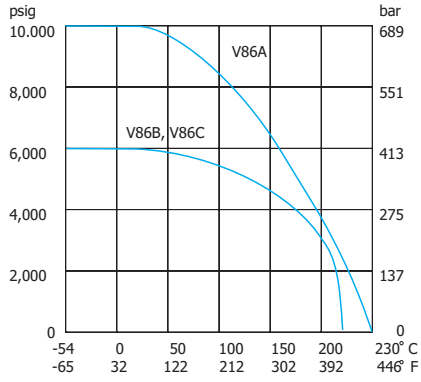
Cleaning and Packaging

Every valve is cleaned and packaged in accordance with DK-LOK cleaning standard DC-01. Special cleaning and packaging in accordance with DK-LOK DC-11 ensures compliance with product cleaning of ASTM G93 Level C is available for valves with PCTFE seat.

2-Way On-off Valves



Pressure/Temperature Ratings
V86 2-way valve with PEEK seat



Ordering Information and Dimensions

Basic Ordering Number		End Connections Inlet & Outlet	Orifice mm (in.)	Cv	Dimensions mm (in.) A	H	L	SQ
V86A-	D-4T	1/4 in. Dk-Lok	4.8 (0.19)	1.2	108.3 (4.26)	38.4 (1.52)	96.00 (3.78)	32.0 (1.26)
	D-6T	3/8 in. Dk-Lok	7.1 (0.28)	3.7			102.50 (4.04)	
	D-8T	1/2 in. Dk-Lok	10.0 (0.39)	7.5			107.60 (4.24)	
	F-4N	1/4 in. Female NPT					74.00 (2.91)	
	F-6N	3/8 in. Female NPT					77.00 (3.03)	
	F-8N	1/2 in. Female NPT					85.00 (3.35)	
	M-4N	1/4 in. Male NPT	7.1 (0.28)	3.7			95.40 (3.76)	
	M-6N	3/8 in. Male NPT	10.0 (0.39)	7.2			95.40 (3.76)	
	M-8N	1/2 in. Male NPT		7.5			100.20 (3.94)	
V86B- VC86B-	F-8N	1/2 in. Female NPT	12.7 (0.50)	10.1	149.0 (5.86)	51.0 (2.00)	89.00 (3.50)	40.0 (1.57)
	F-12N	3/4 in. Female NPT					90.00 (3.54)	
	D-12M	12mm Dk-Lok	10.0 (0.39)				110.00 (4.33)	
	D-16M	16mm Dk-Lok	12.7 (0.50)				116.00 (4.56)	
	D-8T	1/2 in. Dk-Lok	10.4 (0.41)				110.00 (4.33)	
	D-10T	5/8 in. Dk-Lok	12.7 (0.50)				116.00 (4.56)	
	D-12T	3/4 in. Dk-Lok					115.00 (4.52)	
V86C- VC86C-	F-12N	3/4 in. Female NPT	19.0 (0.75)	30.0	149.0 (5.86)	56.0 (2.20)	108.00 (4.25)	50.0 (1.97)
	F-16N	1 in. Female NPT					127.00 (5.00)	
	D-12T	3/4 in. Dk-Lok	15.7 (0.62)	19.0			125.00 (4.92)	
	D-16T	1 in. Dk-Lok	19.0 (0.75)	30.0			134.00 (5.27)	
	M-12N	3/4 in. Male NPT	15.7 (0.62)	19.0			119.00 (4.68)	
	M-16N	1 in. Male NPT	19.0 (0.75)	30.0			129.00 (5.07)	
VC86D	F -16N	1 in. Female NPT	25.0 (0.98)	Full Bore	158.0 (6.22)	84.10 (3.31)	112.90 (4.44)	80.0*(3.15)

* V86D Series: Round bar construction.

CNG/NGV valve ordering number
The basic ordering number listed in black are not for CNG/NGV applicable valves.

Table 2. 2-Way Valve Actuation Torque

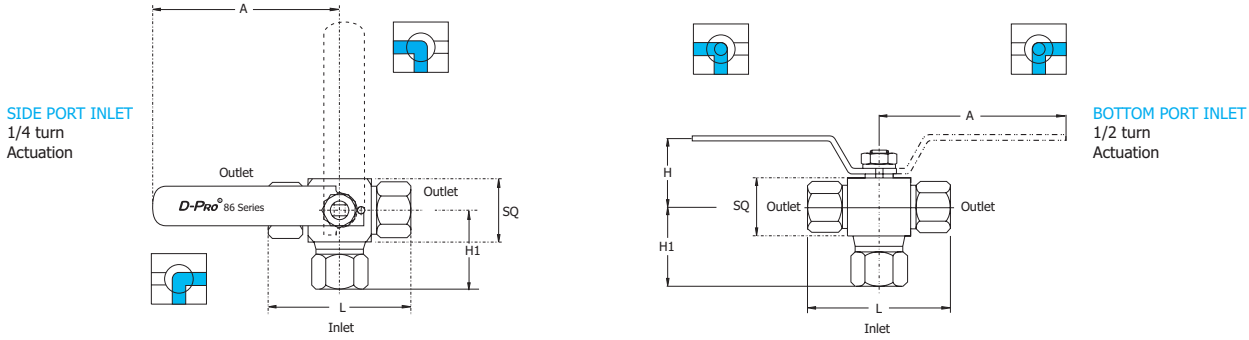
Standard Valves

Valve Series	System Pressures, bar (psig) 0 (0)	344 (5000)	413 (6000)
	Torque	Unit: Nm	
V86A	3.92	-	6.37
V86B	7.35	10.3	-
V86C	12.26	19.61	-

CNG/NGV Valves

Valve Series	System Pressures, bar (psig) 0 (0)	344 (5000)
	Torque	Unit: Nm
VC86B	5.19	10.59
VC86C	2.15	5.88
VC86D	7.35	9.80

3-way Diverter Valves



V86 3-way ball valve is designed to switch media through the inlet port and direct it to out of two outlet ports.

Ordering Information and Dimensions

Basic Ordering Number		End Connections	Orifice mm (in.)	Dimensions mm (in.) A	H	H1	L	SQ
V86A-	3*- D-4T-	1/4 in. Dk-Lok	4.8 (0.19)	108.3 (4.26)	38.4 (1.52)	50.9 (2.00)	96.0 (3.78)	32.0 (1.26)
	3*- D-6T-	3/8 in. Dk-Lok	7.1 (0.28)			53.0 (2.09)	102.5 (4.04)	
	3*- D-8T-	1/2 in. Dk-Lok	10.0 (0.39)			55.8 (2.20)	107.6 (4.24)	
	3*- F-4N -	1/4 in. Female NPT				40.0 (1.57)	74.0 (2.91)	
	3*- F-6N-	3/8 in. Female NPT				41.5 (1.64)	77.0 (3.03)	
	3*- F-8N-	1/2 in. Female NPT				45.5 (1.79)	85.0 (3.35)	
V86B-	3*- F-8N-	1/2 in. Female NPT	12.7 (0.50)	149.0 (5.86)	51.0 (2.00)	55.0 (2.17)	89.0 (3.5)	40.0 (1.57)
	3*- F-12N-	3/4 in. Female NPT				55.0 (2.17)	90.0 (3.54)	
	3*- D-10T-	5/8 in. Dk-Lok				67.2 (2.66)	114.4 (4.5)	
	3*- D-12T-	3/4 in. Dk-Lok				67.7 (2.66)	115.0 (4.52)	
V86C-	3*- D-12T-	3/4 in. Dk-Lok	15.7 (0.62)	149.0 (5.86)	56.0 (2.20)	75.3 (2.96)	125.0 (4.92)	50.0 (1.97)
	3*- D-16T-	1 in. Dk-Lok	19.0 (0.75)			80.0 (3.15)	134.0 (5.27)	
	3*- F-12N-	3/4 in. Female NPT				59.5 (2.34)	96.0 (3.78)	
	3*- F-16N-	1 in. Female NPT				67.0 (2.64)	111.0 (4.37)	

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

Side and Bottom Port Valve Ordering Information

To order side port entry valve, replace * with **S**, to order bottom port entry valve, replace * with B. Examples: V86A-3**S**-D-4T-S, V86A-3**B**-D-4T-S.

Table 3. 3-way Valve Actuation Torque

Valve Series	System Pressures, bar (psig) 0 (0)	206 (3000)	275 (4000)
		Torque	Unit: Nm
V86A	3.92	-	4.90
V86B	7.35	7.85	-

Table 4. 2-way Valve Pressure and Temperature Rating

Valve Series	Seat	Allowable Working Pressure at ambient temperature psig(bar)	Temperature Rating ℃(℉)
V86A	PVDF	6,000 (413)	-30 to 130 (-22 to 266)
	PCTFE		-30 to 180 (-22 to 356)
	PEEK	10,000 (689)	-40 to 230 (-40 to 446)
V86B V86C	PVDF	5,000 (344)	-30 to 110 (-22 to 230)
	PCTFE		-30 to 160 (-22 to 320)
	PEEK	6,000 (413)	-40 to 210 (-40 to 410)
V86D	PCTFE	6,000 (413)	-40 to 160 (-40 to 320)

Table 5. 3-way Valve Pressure and Temperature Rating

Valve Series	Seat	Allowable Working Pressure at ambient temperature psig(bar)	Temperature Rating ℃(℉)
V86A	PVDF	4,000 (275)	-30 to 130 (-22 to 266)
	PCTFE		-30 to 180 (-22 to 356)
	PEEK	6,000 (413)	-40 to 230 (-40 to 446)
V86B V86C	PVDF	3,000 (206)	-30 to 110 (-22 to 230)
	PCTFE		-30 to 160 (-22 to 320)
	PEEK	4,000 (275)	-40 to 210 (-40 to 410)

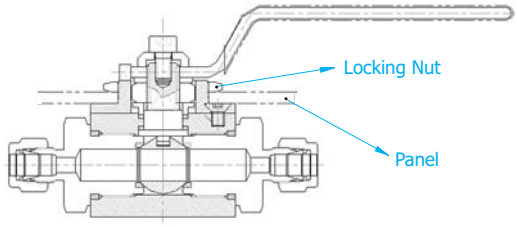
Options

Locking Nut Panel Mounting

Ordering designator : **P1**
Addition locking nut below handle makes the valve panel mountable.
Disassemble the handle prior to panel mounting.

mm (in.)

Valve Series	Panel Hole Drill	Panel Thickness
V86A	30.0 (1.18)	Max. 4.0 (0.157)
V86B	38.0 (1.50)	
V86C	38.0 (1.50)	

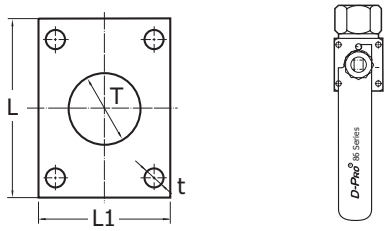


Screw Hole Panel Mounting

Ordering designator : **P2**
Additional four (4) screw holes on the top of valve makes the valve panel mountable.
Disassemble the handle prior to panel mounting.

mm (in.)

Valve Series	L	L1	t	T
V86A	34.0 (1.33)	26.0 (1.02)	4.0 (0.15)	30.0 (1.18)
V86B	36.0 (1.42)	29.0 (1.14)	5.0 (0.20)	38.0 (1.50)
V86C	40.0 (1.57)	35.0 (1.37)	6.0 (0.23)	38.0 (1.50)

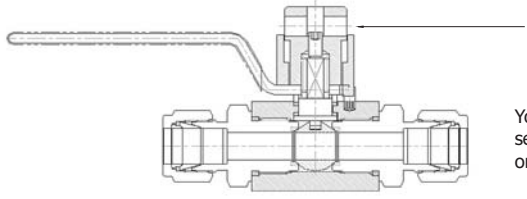


"Lift-Turn" Locking Device

Ordering designator : **LD**

Dk Tech patented "Lift-Turn" safety locking device allows you to lock the valve manually either in open or close position. The locking device consists of study upper and lower locking detents made out of stainless steel.

Note: LD option applicable to 2-way valves.



Pad-Lock applicable 7.2 mm (0.28 in) hole constructed on upper locking detent.

You may apply a pad-lock to secure the valve in the open or close position.

Ordering Information

Select the desired basic ordering number, and options from designators listed below.

V86A-D-4T -PC -OH -S
V86B-F-12N -LD -S
VC86B-D-12M -S

Seat	Panel Mounting	Locking Device	Handle	Body Material
Nil: PEEK, standard for VC86 series Nil: PCTFE, standard for VC86D series Nil: PVDF, standard for V86 series PC: PCTFE PK: PEEK PD: PVDF	P1: Locking nut panel mounting P2: Screw hole panel mounting	LD: Locking Device	Nil: Standard Lever Handle OH: Oval Handle OH option is applicable to 2-way V86A Series valves.	S: SS316

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 responsibillty of the system designer and the user. Dk Tech accepts no liability for any improper selection, installation, operation or maintenance.

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