



## DV Series

### Diaphragm Valves



#### Design & Engineering

- 316L Stainless Steel (Single & Double Melt)
- Low and High Pressure Model
- ZCR, Tube Butt Weld, and Hy-Lok Tube End Connections
- Manual Handle or Pneumatic Actuator
- 100% Helium Leak Tested

#### Application

- Ultrahigh Purity Process
- Semiconductor
- Biotech
- Pharmaceutical

# Diaphragm Valves

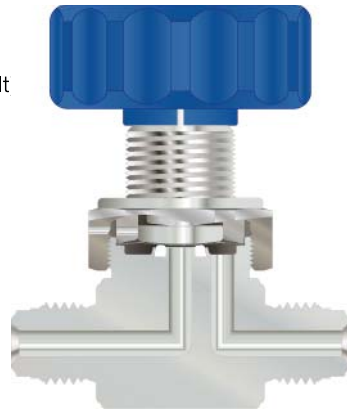
## Features

### Body

- 316L Stainless Steel (Single & Double Melt)
- Minimum dead space
- Maximum flow capacity
- Electro polishing processing

### Diaphragm

- Elgiloy® material
- Excellent corrosion resistance
- Electro polishing processing
- Long cycle life



### Seat

- Excellent chemical resistance
- Low coefficient for thermal expansion
- Minimum particle of contamination
- Long cycle life

## Manual Handle and Pneumatic Actuators

### Manual Handle

- 1/4" Aluminum type handle rotates 90°.
- Otherwise 3/4" Aluminum type and all different size of ABS(100) type handle rotate 180°.
- Low pressure model are applicable blue color handle
- High pressure model are applicable white color handle
- Visually OPEN and CLOSE positions confirm by handle window
- This handle are available on low and high pressure model



Round Handle



Directional Handle



Locking Handle

### Pneumatic Actuator

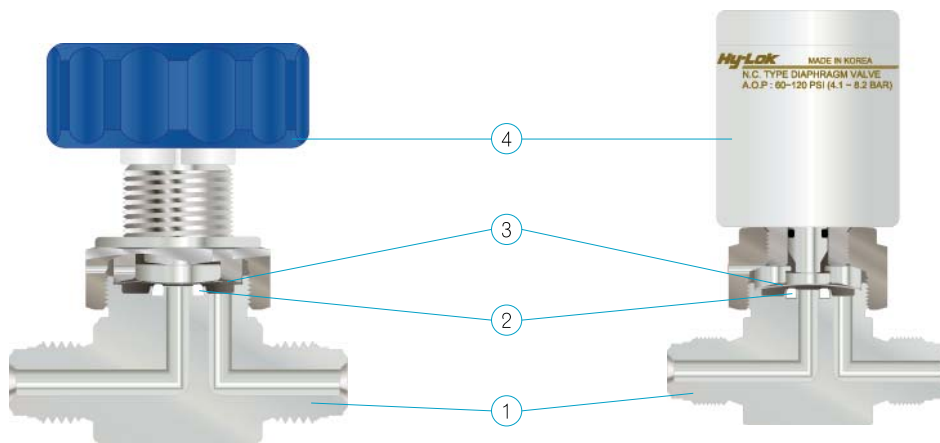
- Low pressure model
- Max. working pressure: 250 psig (17.2 barg)
- Flow coefficient : 0.27
- Actuation pressure : 60~120psig(4.2~8.2barg)



- High pressure model
- Max. working pressure: 3,000 psig (207 barg)
- Flow coefficient : 0.1
- Actuation pressure : 70~120psig(4.9~8.2barg)



## Materials of Construction



No.	Parts	Material / ASTM Specification	
		DV Series	
		Manual	Pneumatic
1*	Body	A182 Type F316L (Single & Double Melt) / A479 Type 316L (Single & Double Melt)	
2*	Seat	PCTFE (D1430)	
3*	Diaphragm	Elgiloy® (F1058, AMS5876)	
4	Actuation	ABS(100) / Aluminum	Aluminum

"\*" marked are wetted parts.  
 ABS(100) Handle are manual actuation and Low pressure only.

## Specification

Model	Size	Pressure Rating (psig)	Temp. Rating C (F)	Flow Coefficient Cv	Orifice (mm)
Low Pressure	1/4"	250 (17.2barg)	-23 ~ 65 (-10 ~ 150)	0.27	4.1
	3/8"			0.7	7.0
	1/2"				
High Pressure	3/4"	3000 (203barg)		0.1	2.5
	1/4"				

# Diaphragm Valves

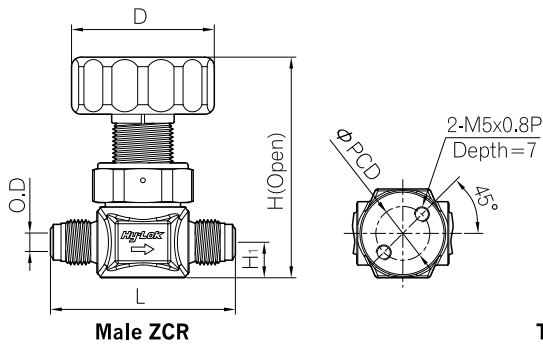
## Dimensions

All dimensions are in millimeters and for reference only. In case of the end connection for Hy-Lok tube fitting, dimensions shown with Hy-Lok nuts in finger-tight position, where applicable.

## Low Pressure Models

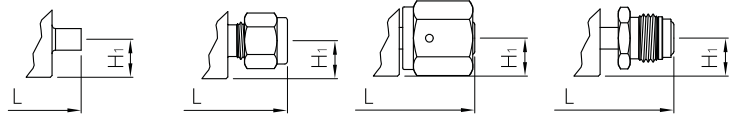
### Manual Round Handle

#### Upper (Handle Operating)



Open Position

Close Position



Tube Butt Weld

Hy-Lok Tube

Female ZCR

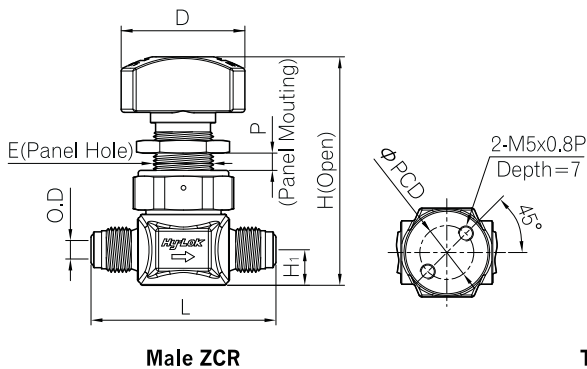
Rotatable Male ZCR

End Connection	Ordering No.	O.D	L	H <sub>1</sub>	H	D	PCD
Male ZCR Fitting	DVVM-4-AH	1/4"	58.4	11.2	70.6	40.0	17.0
	DVVM-8-AH	1/2"	76.0	16.0	78.2		28.0
	DVVM-12-AH	3/4"	88.0	22.0	91.7		
Rotatable Male ZCR Fitting	DVRM-4-AH	1/4"	70.6	11.2	70.6	40.0	17.0
	DVRM-8-AH	1/2"	83.0	16.0	78.2		28.0
	DVRM-12-AH	3/4"	106.0	22.0	91.7		
Female ZCR Fitting	DVVF-4-AH	1/4"	70.6	11.2	70.6	40.0	17.0
	DVVF-8-AH	1/2"	83.0	16.0	78.2		28.0
	DVVF-12-AH	3/4"	106.0	22.0	91.7		
Hy-Lok Tube Fitting	DVH-4-AH	1/4"	64.4	11.2	70.6	40.0	17.0
	DVH-8-AH	1/2"	81.8	16.0	78.2		28.0
	DVH-12-AH	3/4"	80.8	22.0	91.7		
Tube Butt Weld	DVBW-4-AH	1/4"	44.2	11.2	70.6	40.0	17.0
	DVBW-8-AH	1/2"	68.0	16.0	78.2		28.0
	DVBW-12-AH	3/4"	73.6	22.0	91.7		

Handle color for Low pressure model is Blue.

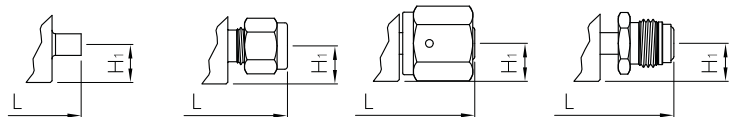
### Manual Directional Handle

#### Upper (Handle Operating)



Open Position

Close Position



Tube Butt Weld

Hy-Lok Tube

Female ZCR

Rotatable Male ZCR

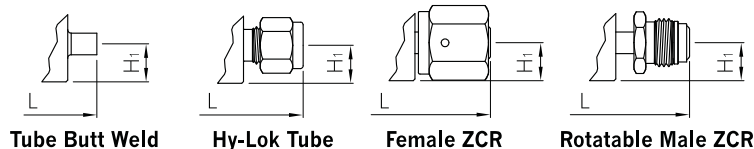
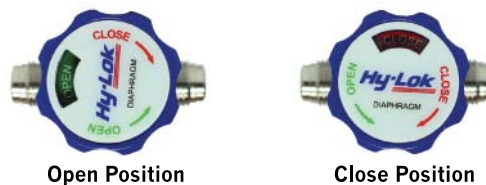
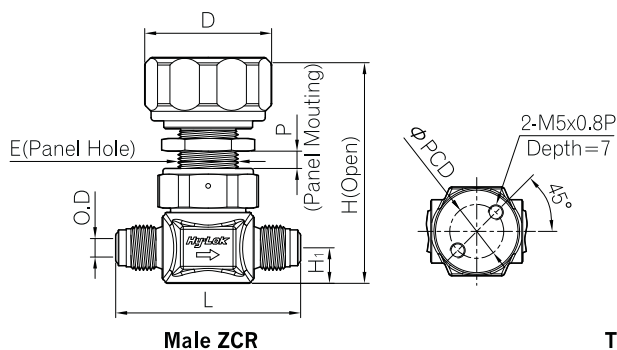
End Connection	Ordering No.	O.D	L	H <sub>1</sub>	H	D	E	P	PCD
Male ZCR Fitting	DVVM-4-DR	1/4"	58.4	11.2	73.0	39.0	20.0	6.0	17.0
Rotatable Male ZCR Fitting	DVRM-4-DR		70.6						
Female ZCR Fitting	DVVF-4-DR		70.6						
Hy-Lok Tube Fitting	DVH-4-DR		64.4						
Tube Butt Weld	DVBW-4-DR		44.2						

Handle color for low pressure model is Blue.

## Low Pressure Models

### Manual Round Handle

#### Upper (Handle Operating)

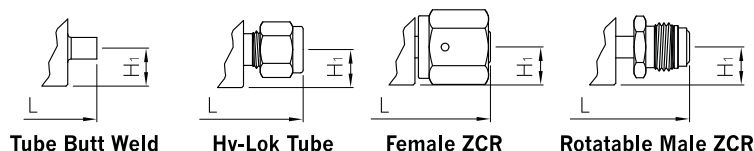
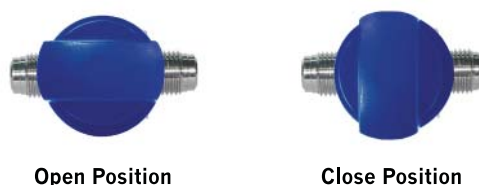
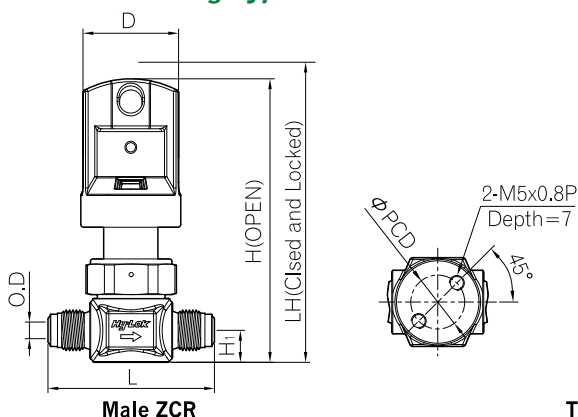


End Connection	Ordering No.	O.D	L	H <sub>1</sub>	H	D	E	P	PCD
Male ZCR Fitting	DVVM-4	1/4"	58.4	11.2	72.1	40.0	20.0	6.0	17.0
	DVVM-8	1/2"	76.0	16.0	80.2		23.1	7.0	28.0
	DVVM-12	3/4"	88.0	22.0	93.1				
Rotatable Male ZCR Fitting	DVRM-4	1/4"	70.6	11.2	72.1	40.0	20.0	6.0	17.0
	DVRM-8	1/2"	83.0	16.0	80.2		23.1	7.0	28.0
	DVRM-12	3/4"	106.0	22.0	93.1				
Female ZCR Fitting	DVVF-4	1/4"	70.6	11.2	72.1	40.0	20.0	6.0	17.0
	DVVF-8	1/2"	83.0	16.0	80.2		23.1	7.0	28.0
	DVVF-12	3/4"	106.0	22.0	93.1				
Hy-Lok Tube Fitting	DVH-4	1/4"	64.4	11.2	72.1	40.0	20.0	6.0	17.0
	DVH-8	1/2"	81.8	16.0	80.2		23.1	7.0	28.0
	DVH-12	3/4"	80.8	22.0	93.1				
Tube Butt Weld	DVBW-4	1/4"	44.2	11.2	72.1	40.0	20.0	6.0	17.0
	DVBW-8	1/2"	68.0	16.0	80.2		23.1	7.0	28.0
	DVBW-12	3/4"	73.6	22.0	93.1				

Handle color for Low pressure model is Blue.

### Manual Locking Type Handle

#### Upper (Handle Operating)



End Connection	Ordering No.	O.D	L	H <sub>1</sub>	H	D	PCD
Male ZCR Fitting	DVVM-4-LK	1/4"	58.4	11.2	73.0	39.0	17.0
Rotatable Male ZCR Fitting	DVRM-4-LK		70.6				
Female ZCR Fitting	DVVF-4-LK		70.6				
Hy-Lok Tube Fitting	DVH-4-LK		64.4				
Tube Butt Weld	DVBW-4-LK		44.2				

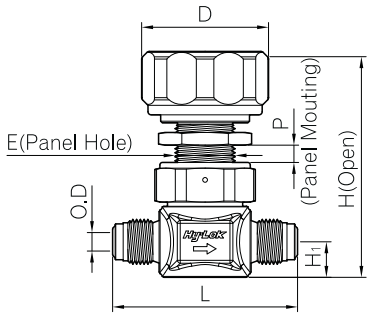
Handle color for low pressure model is Blue.

# Diaphragm Valves

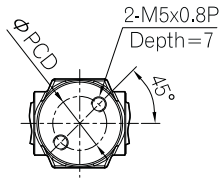
## High Pressure Models

### Manual Round Handle

#### Upper (Handle Operating)



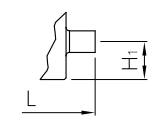
Male ZCR



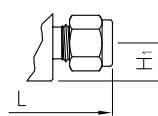
Open Position



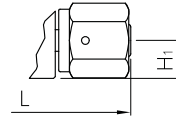
Close Position



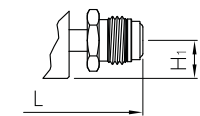
Tube Butt Weld



Hy-Lok Tube



Female ZCR



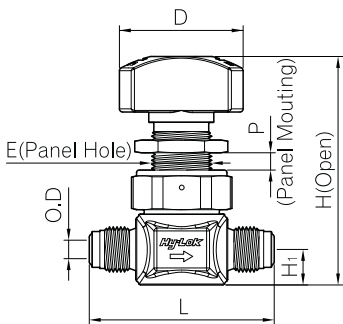
Rotatable Male ZCR

End Connection	Ordering No.	O.D	L	H <sub>1</sub>	H	D	E	P	PCD
Male ZCR Fitting	DVHPVM-4	1/4"	58.4	11.2	72.1	40.0	20.0	6.0	17.0
Rotatable Male ZCR Fitting	DVHPRM-4		70.6						
Female ZCR Fitting	DVHPVF-4		70.6						
Hy-Lok Tube Fitting	DVHPH-4		64.4						
Tube Butt Weld	DVHPBW-4		44.2						

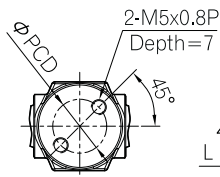
Handle cap color for high pressure model is Gold.

### Manual Directional Handle

#### Upper (Handle Operating)



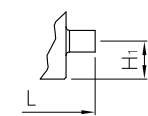
Male ZCR



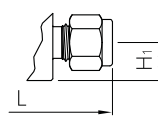
Open Position



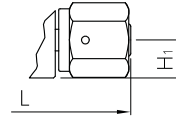
Close Position



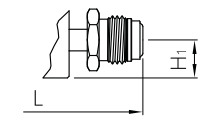
Tube Butt Weld



Hy-Lok Tube



Female ZCR



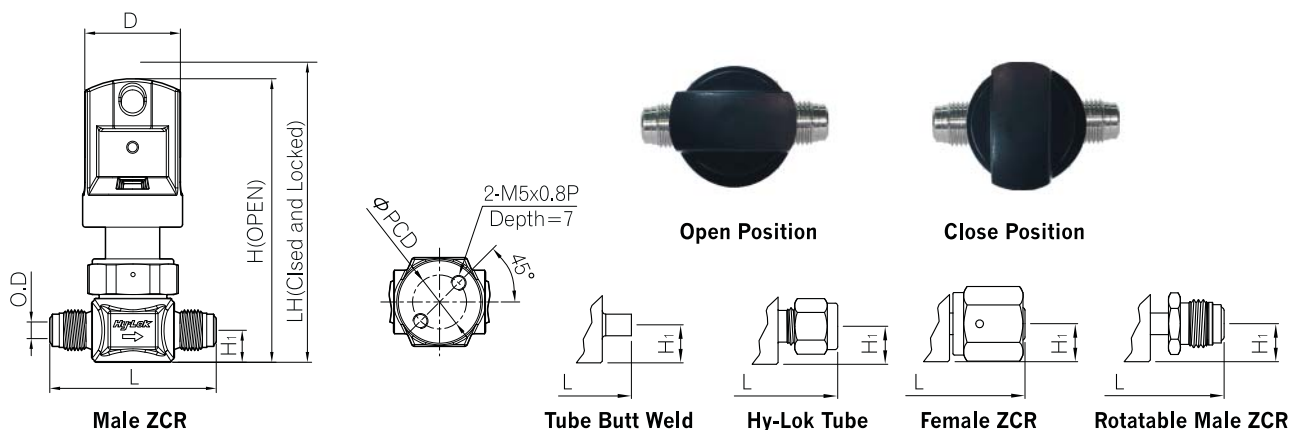
Rotatable Male ZCR

End Connection	Ordering No.	O.D	L	H <sub>1</sub>	H	D	E	P	PCD
Male ZCR Fitting	DVHPVM-4-DR	1/4"	58.4	11.2	73.0	39.0	20.0	6.0	17.0
Rotatable Male ZCR Fitting	DVHPRM-4-DR		70.6						
Female ZCR Fitting	DVHPVF-4-DR		70.6						
Hy-Lok Tube Fitting	DVHPH-4-DR		64.4						
Tube Butt Weld	DVHPBW-4-DR		44.2						

Handle cap color for high pressure model is Gold.

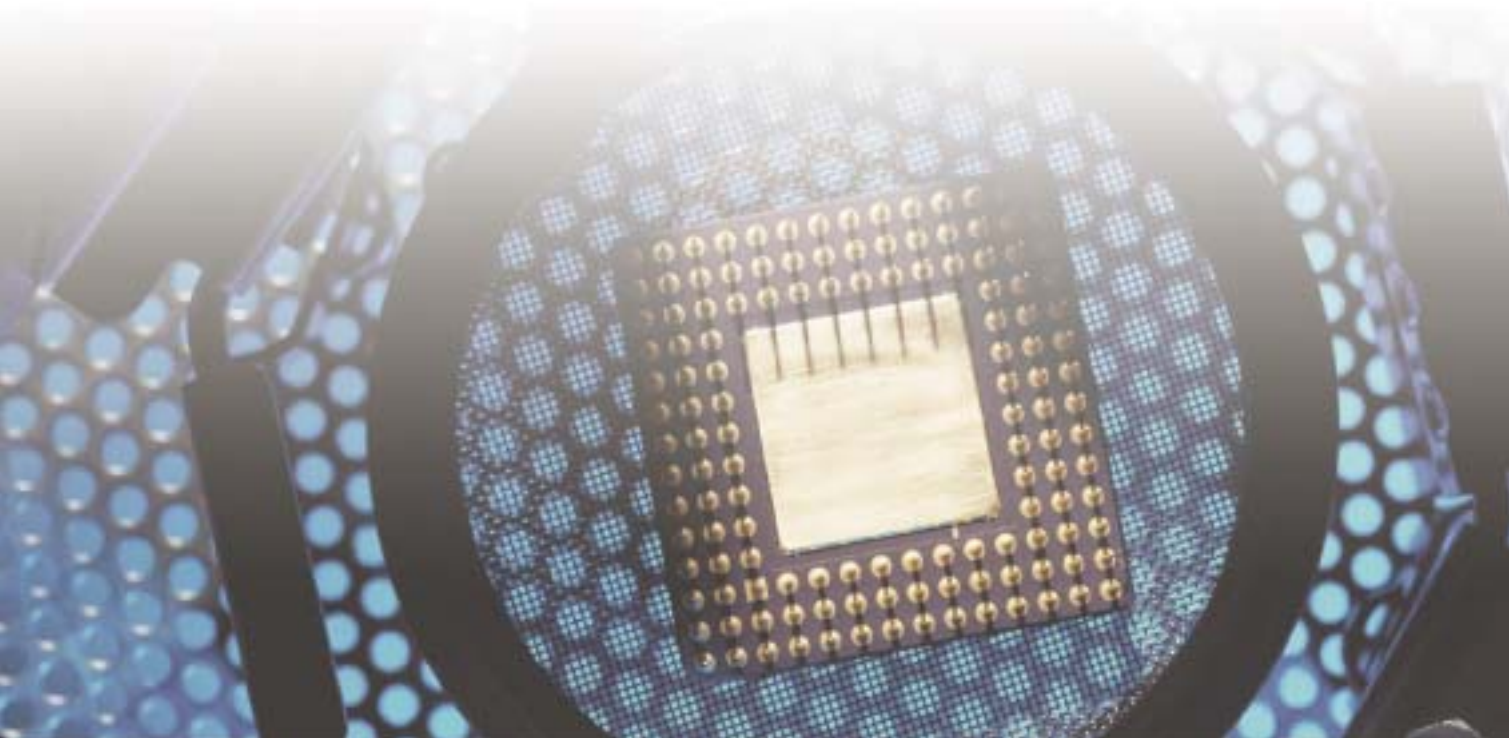
**Manual Locking Type Handle**

**Upper (Handle Operating)**



End Connection	Ordering No.	O.D	L	H <sub>1</sub>	H	D	PCD
Male ZCR Fitting	DVHPVM-4-LK	1/4"	58.4	11.2	99.5	39.0	17.0
Rotatable Male ZCR Fitting	DVHPRM-4-LK		70.6				
Female ZCR Fitting	DVHPVF-4-LK		70.6				
Hy-Lok Tube Fitting	DVHPH-4-LK		64.4				
Tube Butt Weld	DVHPBW-4-LK		44.2				

Handle cap color for high pressure model is Gold.

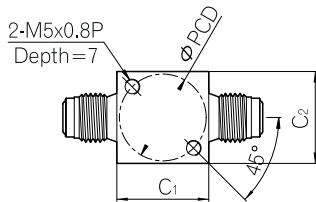
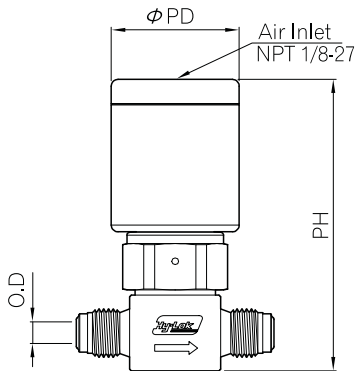


# Diaphragm Valves

## Dimensions

All dimensions are in millimeters and for reference only. In case of the end connection for Hy-Lok tube fitting, dimensions shown with Hy-Lok nuts in finger-tight position, where applicable.

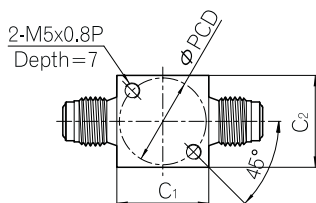
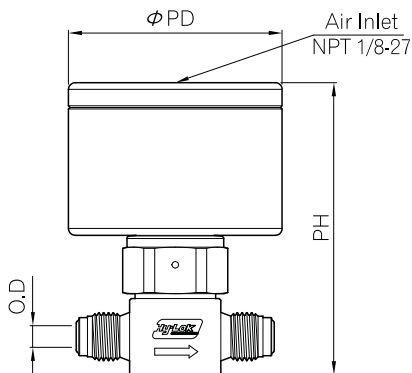
### Low Pressure Models Pneumatic Actuator



Ordering No.	O.D	Description	PH	PD
DVWM - 4 - PC	1/4"	Normally Close	86	38
DVWM - 8 - PC	1/2"		94	45
DVWM - 12 - PC	3/4"		104	
DVWM - 4 - PO	1/4"	Normally Open	86	38
DVWM - 8 - PO	1/2"		94	45
DVWM - 12 - PO	3/4"		104	

For end connection types and dimensions are same as manual Handle.

### High Pressure Models Pneumatic Actuator



Ordering No.	O.D	Description	PH	PD
DVHPVM - 4 - PC	1/4"	Normally Close	98.8	63
DVHPVM - 4 - PO		Normally Open		

For end connection types and dimensions are same as manual Handle.



## Multiport Diaphragm Valves

To customize this model to meet your system requirements, select designators for :

- multiport flow path
- end connector for each port
- internal surface grade
- manual handle or pneumatic actuator

### Multiport Flow Path

Ports No.	Designator	Schematic	Flow Path	
			Close	Open
4	L			
	N			
3	C			
	E			
	R			
	T			
	Y			
2	J			
	Q			
	U			

- The flow path is shown as viewed from the top of the valve body.
- The "a" next to the port number indicate that a port is above the valve seat.
- The "b" next to the port number indicate that a port is below the valve seat.

### Example Ordering Information

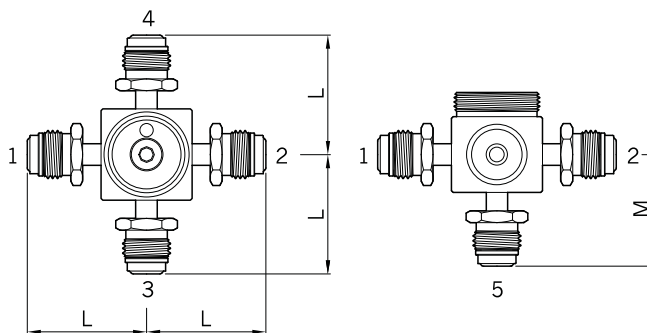
Ordering No.	DVLMFMF-4-H	DVHPCFWF-4-H	DVJWW-4-PC-H
Material	316L Stainless Steel (Single & Double Melt)		
Model Series	Low Pressure, 1/4"	High Pressure, 1/4"	Low Pressure, 1/4"
Flow Path	4 ports, L	3 ports, C	2 ports, J
Port No. 1 End Connection	Rotatable Male ZCR Fitting	Female ZCR Fitting	Tube Butt Weld
Port No. 2 End Connection	Female ZCR Fitting	Tube Butt Weld	-
Port No. 3 End Connection	Rotatable Male ZCR Fitting	Female ZCR Fitting	-
Port No. 4 End Connection	Female ZCR Fitting	-	Tube Butt Weld
Actuation Method	Manual Handle, Color Blue	Manual Handle, Color White	Normally Close

Handle cap color for low pressure model is Blue.



### Dimension

All dimensions are in millimeters and for reference only. In case of the end connection for Hy-Lok tube fitting, dimensions shown with Hy-Lok nuts in finger-tight position, where applicable.



End Connection	O.D	L	M
Tube Butt Weld (Tube wall, 0.035 in.)		22.1	19.3
Female ZCR Fitting	1/4"	35.3	41.4
Rotatable Male ZCR Fitting		35.3	41.4

The end connection designators are reference on page 8. The dimension of four bottom mounting holes are same as standard 2 port valve body on page 4. The flow path designator "Q" is no mounting holes.

# Diaphragm Valves

## Manifolds Diaphragm Valves

To customize this model to meet your system requirements, select designators for :  
 manifold flow path end connector for each port  
 internal surface grade manual handle or pneumatic actuator

### Manifold Flow Path

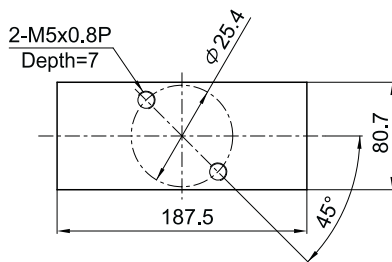
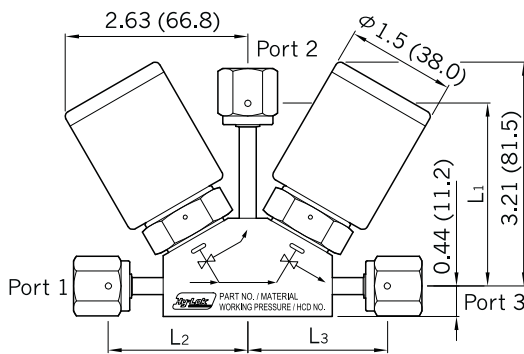
Manifold	Designator	Schematic	Flow Path
2 Valve & 3 Port Mono Block	M1		
	M2		
2 Valve & 3 Port Double Pattern	M3		



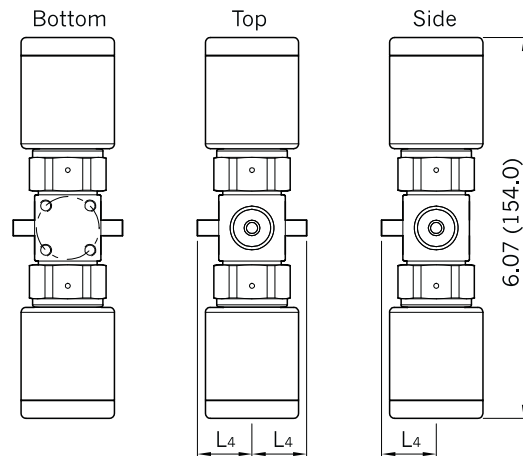
### Dimension

All dimensions are in inches(millimeters) and for reference only. In case of the end connection for Hy-Lok tube fitting, dimensions shown with Hy-Lok nuts in finger-tight position, where applicable.

#### 2 Valve & 3 Port Monoblock



#### 2 Valve & 3 Port Double Pattern



End Connection	O.D	2 Valve & 3 Port Mono Block			2 Valve & 3 Port Double Pattern
		L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>
Tube Butt Weld (Tube wall, 0.035 in.)		46.0	70.9	46.0	22.1
Female ZCR Fitting	1/4"	51.6	67.6	51.6	35.3
Rotatable Male ZCR Fitting		60.7	85.1	60.7	35.3

The end connection designators are reference on next page.

### Example Ordering Information

Ordering No.	DVM1FMF-4-PCO-H	DVHPM2WWW-4-H	DVM3MFF-4-H
Material	316L VIM / VAR Stainless Steel		
Model Series	Low Pressure, 1/4"	High Pressure, 1/4"	Low Pressure, 1/4"
Flow Path	2 Valve & 3 port Monoblock, M1	2 Valve & 3 port Monoblock, M2	2 Valve & 3 port Double Pattern, M3
Port No. 1 End Connection	Female ZCR Fitting	Tube Butt Weld	Rotatable Male ZCR Fitting
Port No. 2 End Connection	Rotatable Male ZCR Fitting	Tube Butt Weld	Female ZCR Fitting
Port No. 3 End Connection	Female ZCR Fitting	Tube Butt Weld	Female ZCR Fitting
Valve 1 Actuation Method	Normally Close	Manual Handle, Color White	Manual Handle, Color Blue
Valve 2 Actuation Method	Normally Open	Manual Handle, Color White	Manual Handle, Color Blue

## Maintenance Kits

To disassemble or assemble the maintenance kits, refer to the Hy-Lok Corporation document no. H-DV100-IM.

### Diaphragm Kits



- Two diaphragms are maintenance kits.
- Ordering number is DVDM-4-KITS(1/4" size)  
DVDM-8-KITS(1/2" and 3/4" size)  
DVHPDM-4-KITS(1/4" High Pressure)

### Pneumatic Actuator Kits

- Ordering number is the following.

Model	Ordering No.	O.D Size	Description
Low Pressure	DV-4-PO	1/4"	Normally Open
	DV-4-PC		Normally Close
	DV-8-PO	1/2", 3/4"	Normally Open
	DV-8-PC		Normally Close
High Pressure	DVH-4-PO	1/4"	Normally Open
	DVH-4-PC		Normally Close

⚠ Do not interchange high pressure actuator and low pressure actuator.

## Ordering Information

**DV**

**Valve Series Designator**

- DV - Forged Diaphragm Valve
- DV2 - Square Diaphragm Valve

**HP**

**Flow Path**

- Nil - Standard (page 3-8)
- Multiport & Manifold flow path Designators are reference on page 9,10

**M1**

**Model**

- Nil - Low Pressure
- HP - High Pressure

**VFF**

**End Connection**

End Connection	Standard	Multiport & Manifold
Male ZCR Fitting	VM	-
Tube Butt Weld	BW	W
Female ZCR Fitting	VF	F
Hy-Lok Tube Fitting	H	-
Rotatable Male ZCR	RM	M

**4**

**Size**

- 4 - 1/4"
- 6 - 3/8"
- 8 - 1/2"
- 12 - 3/4"

**PCO**

**Actuation**

- Nil - Standard Round Handle
- PO - Pneumatic Actuator (Normally Open)
- PC - Pneumatic Actuator (Normally Close)
- PCO - Valve 1: Normally Close, Valve 2: Normally Open
- POC - Valve 1: Normally Open, Valve 2: Normally Close
- DR - Directional Handle
- LK - Loking Handle
- AH - ABS(100) Handle

**H**

**Surface Grade**

- Nil - B.A(Bright Anealing)
- H - EP(Electro polishing)

**VV6L**

**Body Material Designator**

- SM6L : Single Melting 316L
- VV6L : Double Melting 316L



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