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Catalog No. H-DV100  
Jan. 2011



## 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



**HY-LOK CORPORATION**

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## 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

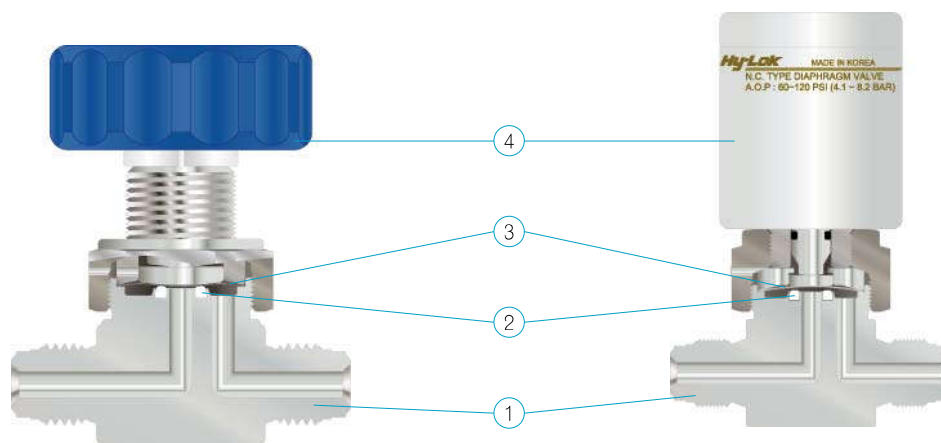
- Low pressure model
- Max. working pressure: 250 psig (17.2 barg)
- Flow coefficient : 0.27
- Actuation pressure : 60~120psig(4.2~8.2barg)



- 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<br>(-10 ~ 150) | 0.27                | 4.1          |
|               | 3/8" |                        |                         | 0.7                 | 7.0          |
|               | 1/2" |                        |                         |                     |              |
|               | 3/4" |                        |                         |                     |              |
| High Pressure | 1/4" | 3000 (203barg)         |                         | 0.1                 | 2.5          |

## Diaphragm Valves

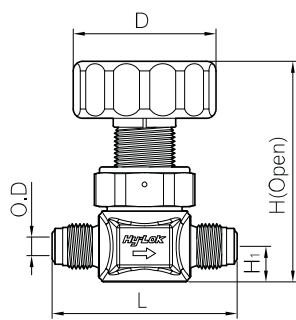
### Dimensions

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.

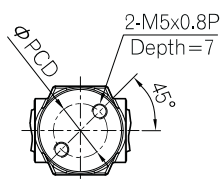
### Low Pressure Models

#### Manual Round Handle

#### Upper (Handle Operating)



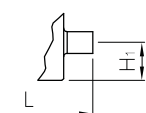
Male ZCR



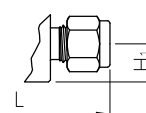
Open Position



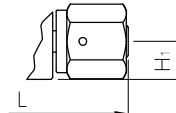
Close Position



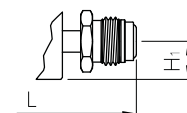
Tube Butt Weld



Hy-Lok Tube



Female ZCR



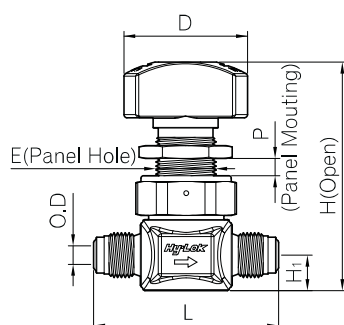
Rotatable Male ZCR

| End Connection             | Ordering No. | O.D  | L     | H <sub>1</sub> | H    | D    | 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 |      |      |

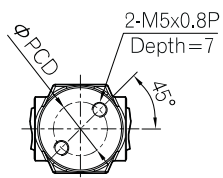
Handle color for Low pressure model is Blue.

#### Manual Directional Handle

#### Upper (Handle Operating)



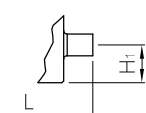
Male ZCR



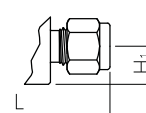
Open Position



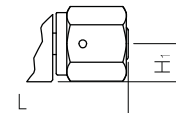
Close Position



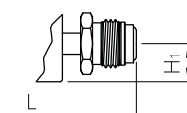
Tube Butt Weld



Hy-Lok Tube



Female ZCR



Rotatable Male ZCR

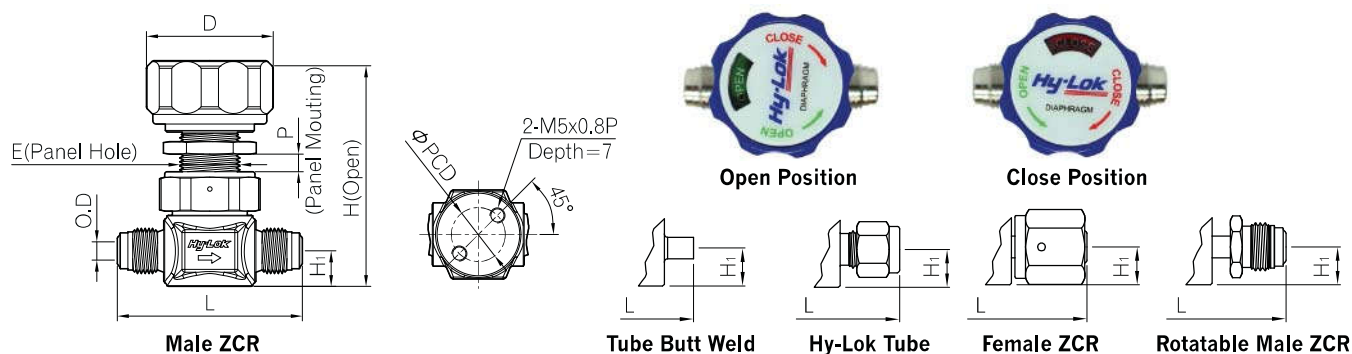
| End Connection             | Ordering No. | O.D  | L    | H <sub>1</sub> | H    | D    | E    | P   | PCD  |
|----------------------------|--------------|------|------|----------------|------|------|------|-----|------|
| Male ZCR Fitting           | DVVM-4-DR    | 1/4" | 58.4 | 11.2           | 73.0 | 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)

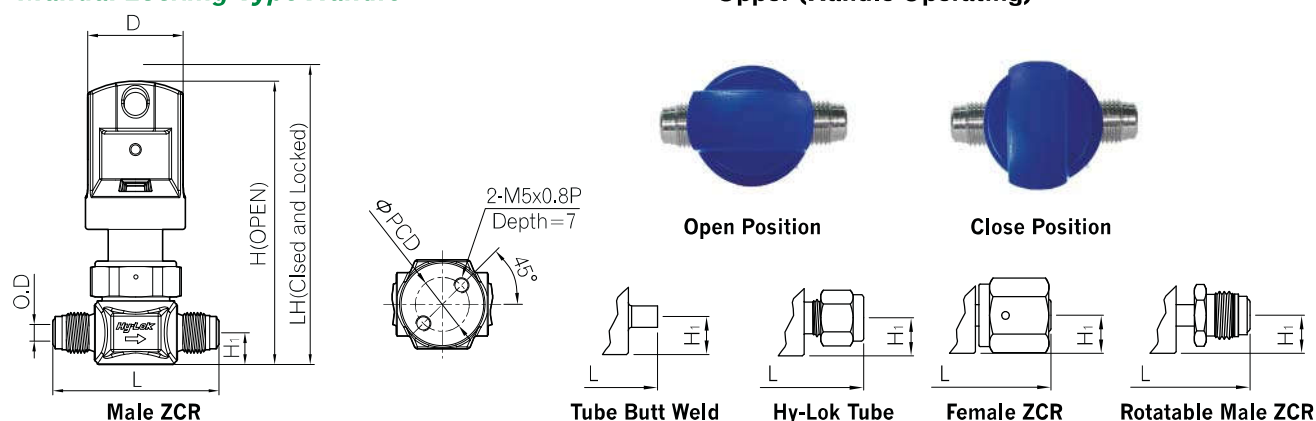


| End Connection             | Ordering No. | O.D  | L     | H <sub>1</sub> | H    | D    | E    | P   | PCD  |
|----------------------------|--------------|------|-------|----------------|------|------|------|-----|------|
| Male ZCR Fitting           | DVVM-4       | 1/4" | 58.4  | 11.2           | 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 |                |      |      |      |

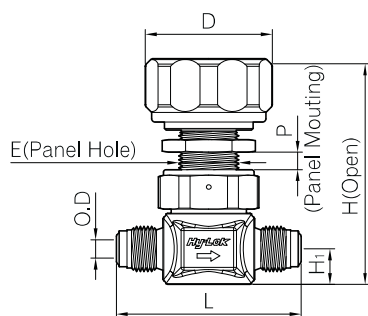
Handle color for low pressure model is Blue.

All dimensions are in millimeters and for reference only.

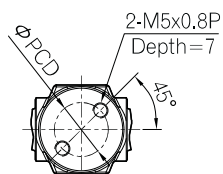
## Diaphragm Valves

### High Pressure Models

#### Manual Round Handle



Male ZCR



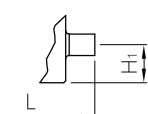
#### Upper (Handle Operating)



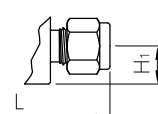
Open Position



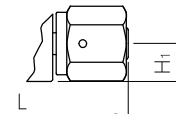
Close Position



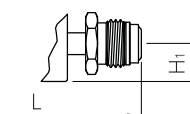
Tube Butt Weld



Hy-Lok Tube



Female ZCR

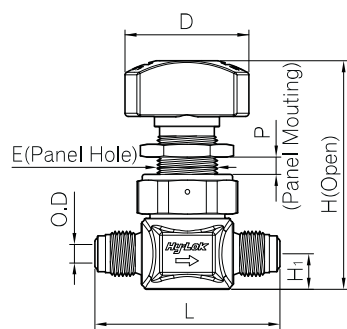


Rotatable Male ZCR

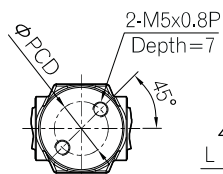
| End Connection             | Ordering No. | O.D  | L    | H <sub>1</sub> | H    | D    | E    | P   | PCD  |
|----------------------------|--------------|------|------|----------------|------|------|------|-----|------|
| Male ZCR Fitting           | DVHPVM-4     | 1/4" | 58.4 | 11.2           | 72.1 | 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



Male ZCR



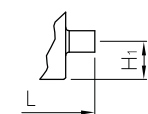
#### Upper (Handle Operating)



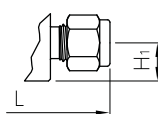
Open Position



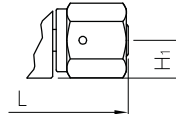
Close Position



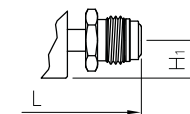
Tube Butt Weld



Hy-Lok Tube



Female ZCR



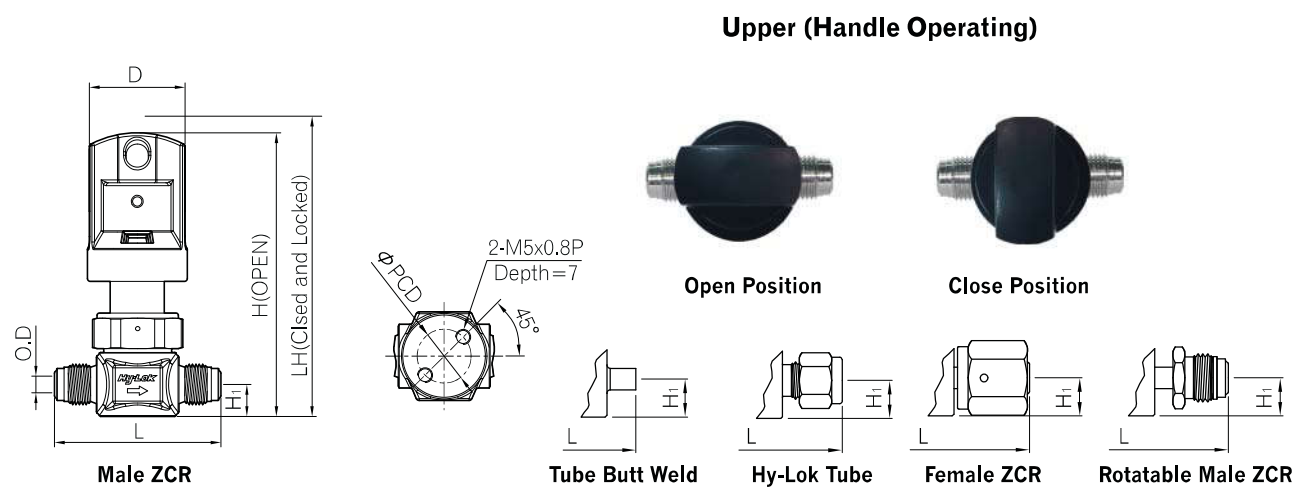
Rotatable Male ZCR

| End Connection             | Ordering No. | O.D  | L    | H <sub>1</sub> | H    | D    | E    | P   | PCD  |
|----------------------------|--------------|------|------|----------------|------|------|------|-----|------|
| Male ZCR Fitting           | 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.

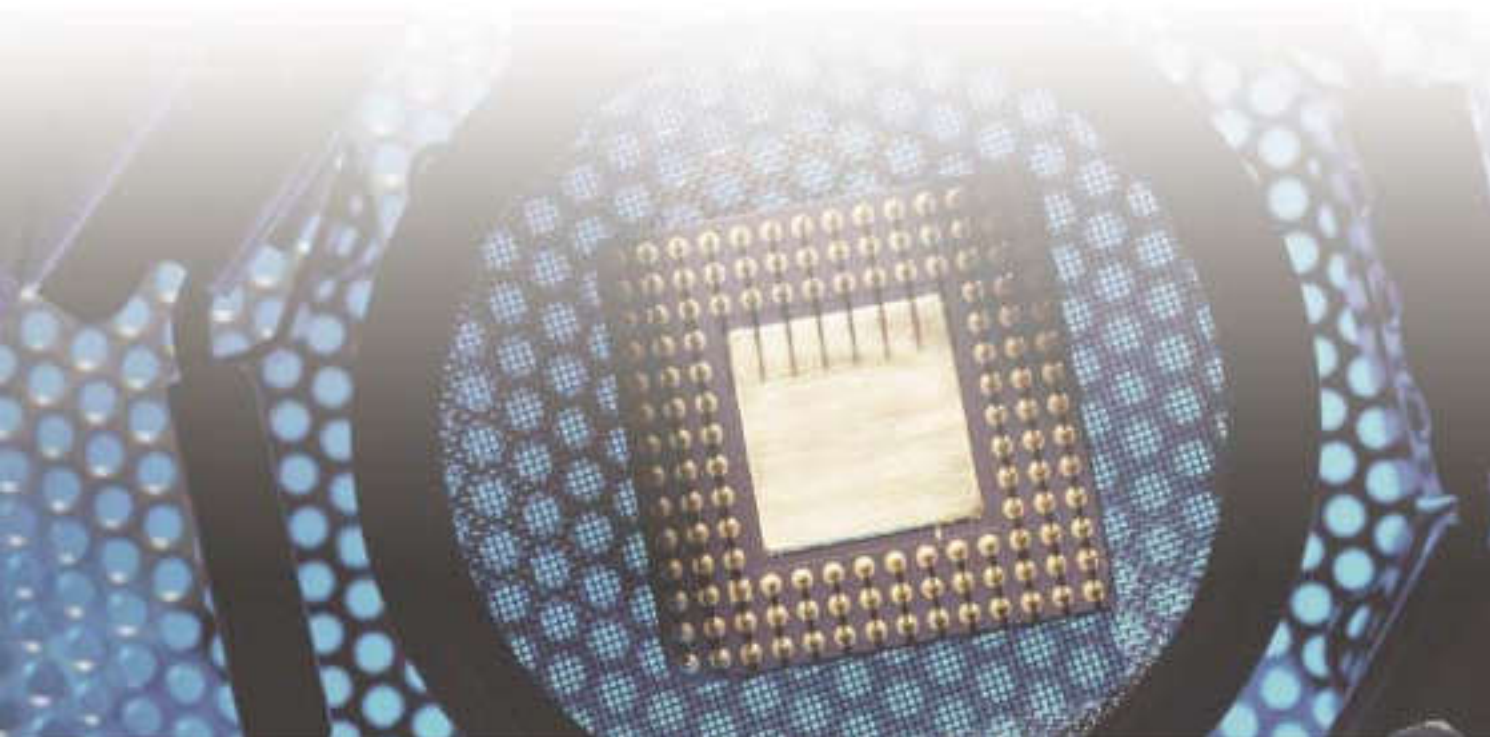


### Manual Locking Type Handle



| 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.

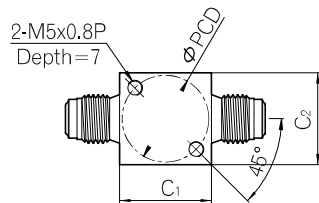
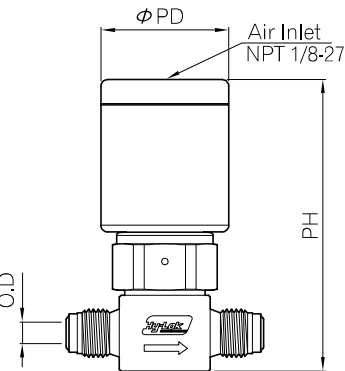


## Diaphragm Valves

### 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.

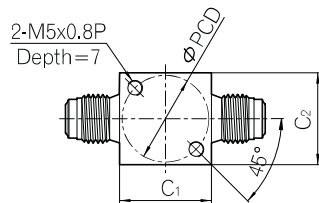
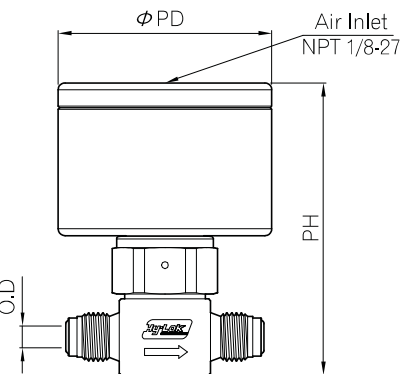
#### Low Pressure Models Pneumatic Actuator



| 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     |

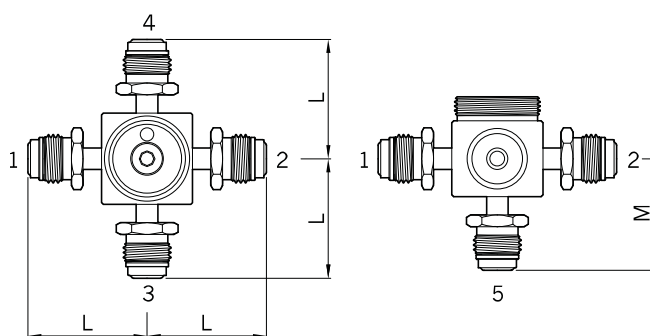
Handle cap color for low pressure model is Blue.



### 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.) | 1/4" | 22.1 | 19.3 |
| Female ZCR Fitting                    |      | 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

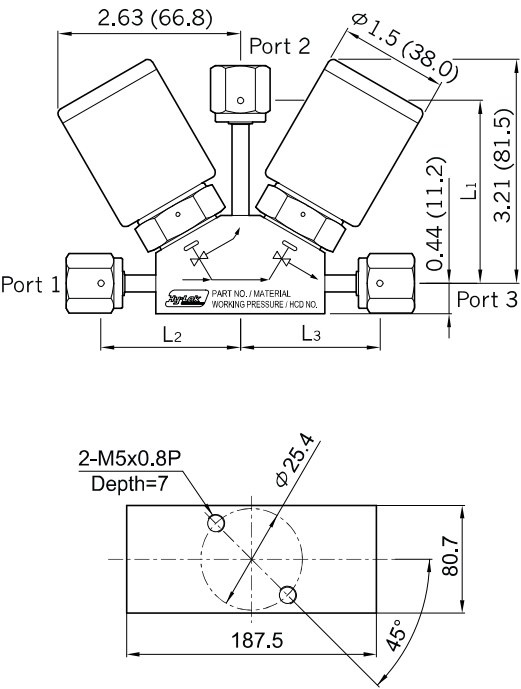
| Manifold                        | Designator | Schematic | Flow Path |
|---------------------------------|------------|-----------|-----------|
| 2 Valve & 3 Port Mono Block     | M1         |           |           |
|                                 | M2         |           |           |
| 2 Valve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



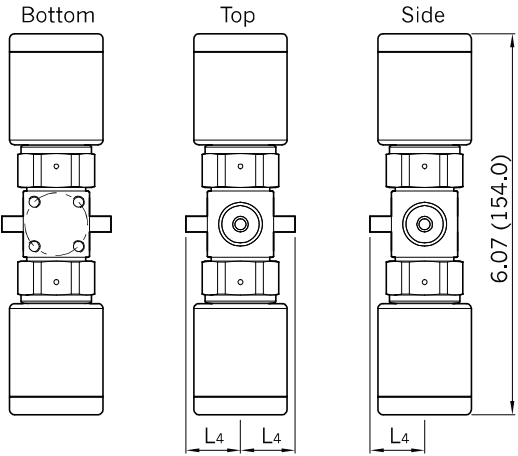
Dimension

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 |
|--|------|-----------------------------|------|------|---------------------------------|
|  |      | L1                          | L2   | L3   | L4                              |
| Tube Butt Weld<br>(Tube wall, 0.035 in.) | 1/4" | 46.0                        | 70.9 | 46.0 | 22.1                            |
| Female ZCR Fitting                       |      | 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<br>Monoblock, M1 | 2 Valve & 3 port<br>Monoblock, M2 | 2 Valve & 3 port<br>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 Hv-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)

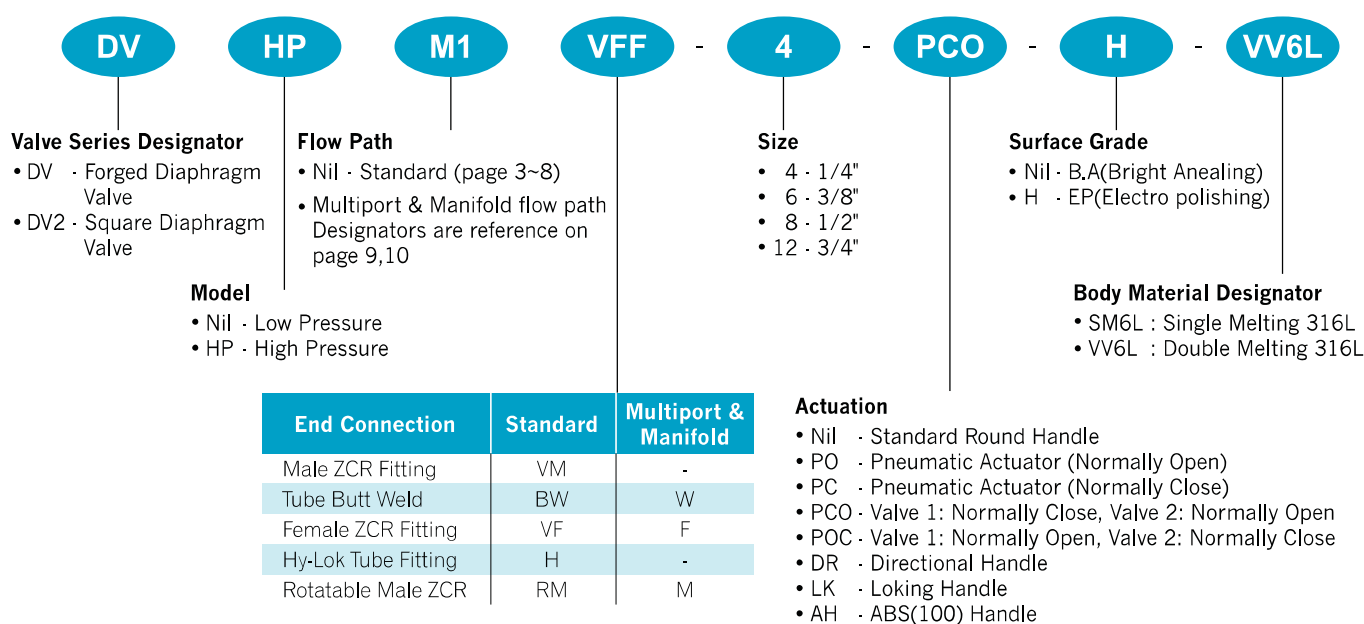
## Pneumatic Actuator Kits

- 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





Distributed by :

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