

# True Union Diaphragm Valve Type 14 (Manual Type)

## Features

- Near-linear flow characteristics.
- Newly equipped with bottom stand with insert hole to ensure easy and secure installation.
- The valve body can be removed from the line.



## Basic specifications

- Valve Type : True Union Diaphragm Valve Type 14
- Size : 15 mm - 50 mm ( 1/2 inch – 2 inch)
- Body Material : U-PVC (Conforming to ASTM D1784 Cell Classification 12454A)  
C-PVC (Conforming to ASTM D1784 Cell Classification 23567-A)  
PP (Conforming to ASTM D4101 Cell Classification PP0210B67272)  
PVDF (Conforming to ASTM D3222 Cell Classification Type II)
- Seal Material / Diaphragm : EPDM, PTFE  
O-RING : EPDM, FKM
- Connection / Socket : JIS, DIN, ASTM D2466 SCH80, BS 4346  
\* For BS, contact us.  
Threaded : Rc, Rp, NPT  
Spigot : DIN

| Body Material | Ambient Temperature<br>°C { °F } | Fluid Temperature<br>°C { °F } | Maximum working pressure<br>(Normal temperature)<br>MPa { psi } | Connection method |        |          |
|---------------|----------------------------------|--------------------------------|---|-------------------|--------|----------|
|               |                                  |                                |   | SOCKET            | SPIGOT | THREADED |
| U-PVC         | -10 ~ 50 { 14 ~ 122 }            | 0 ~ 50 { 32~122 }              | 1.0 { 150 }   | ○                 | ○      | ○        |
| C-PVC         | -10 ~ 50 { 14 ~ 122 }            | 0 ~ 90 { 30~195 }              | 1.0 { 150 }   | ○                 | -      | ○        |
| PP            | -10 ~ 50 { 14 ~ 122 }            | -20 ~ 80 { -5~175 }            | 1.0 { 150 }   | ○                 | ○      | ○        |
| PVDF          | -10 ~ 50 { 14 ~ 122 }            | -20 ~ 100 { -68~210 }          | 1.0 { 150 }   | ○                 | ○      | ○        |

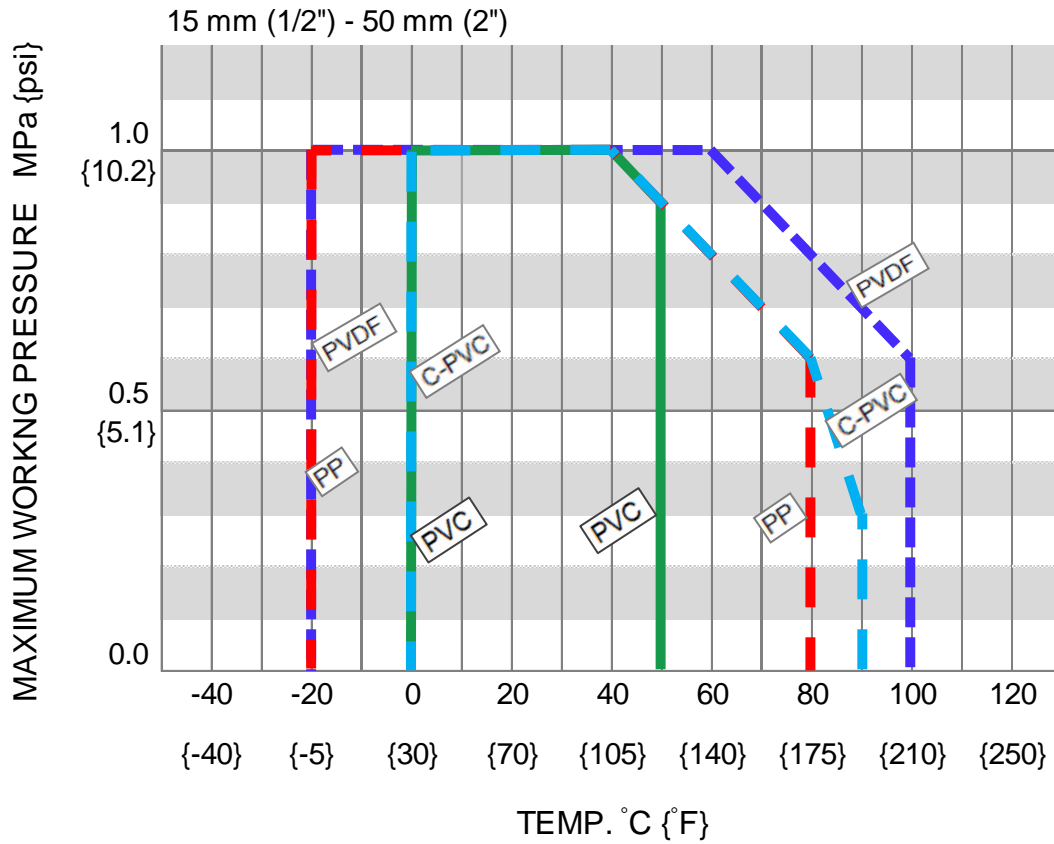
Note: The maximum working pressure is the value including the water hammer pressure. Be careful that the maximum working pressure is not exceeded during use.

- \* Concerning the allowable pressure for each temperature, material and actuator type, see the technical documents at the next page of this sheet.
- \* The diaphragm may become loose due to temperature changes during long storage, operation stop or while in use. Check the conditions and then retighten the bolts and nut between the bonnet and the body to the "bonnet tightening torque". (Failure to do so may cause fluid leakage.)

## Certificate / Approval

**PED** "For details of applicable products, please consult us."

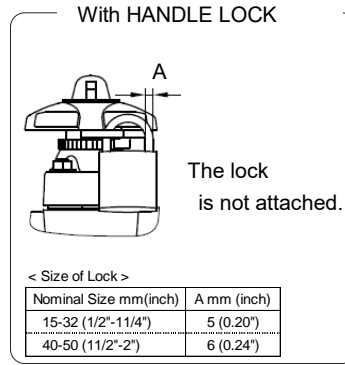
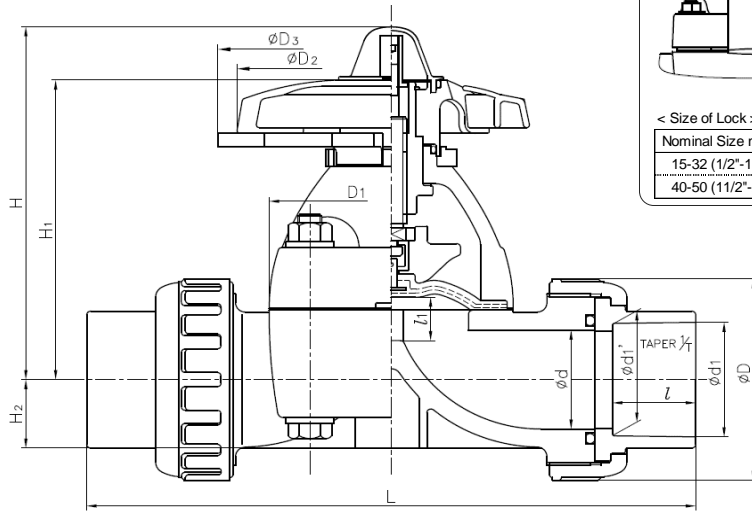
### Working pressure vs. Temperature



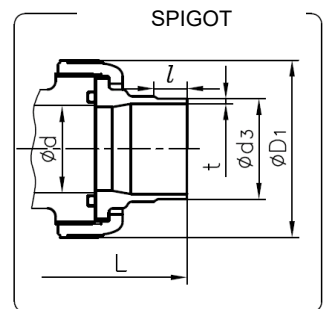
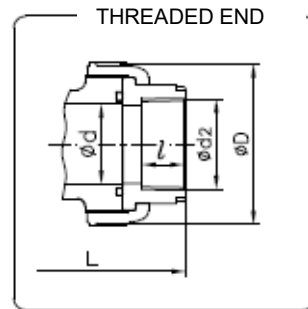
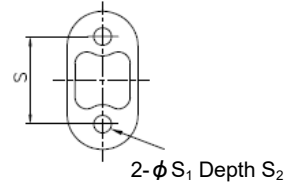
Note : Make sure that the temperature and pressure are within the working range during operation.  
 (If the tolerance range is exceeded during use, the valve may be damaged.)

Product dimension

SOCKET END



(Detail of Holes for Metallic Insert.)



■ JIS, DIN (Unit :mm)

| mm | d  | D   | D <sub>1</sub> | D <sub>2</sub> | D <sub>3</sub> | l <sub>1</sub> | H   | H <sub>1</sub> | H <sub>2</sub> | S  | S <sub>1</sub> | S <sub>2</sub> | JIS            |    |      |     |                |                  |    |     |                |    |           |         |
|----|----|-----|----------------|----------------|----------------|----------------|-----|----------------|----------------|----|----------------|----------------|----------------|----|------|-----|----------------|------------------|----|-----|----------------|----|-----------|---------|
|    |    |     |                |                |                |                |     |                |                |    |                |                | SOCKET         |    |      |     |                |                  |    |     | THREADED       |    |           |         |
|    |    |     |                |                |                |                |     |                |                |    |                |                | d <sub>1</sub> | l  | 1/T  | L   | d <sub>1</sub> | d <sub>1</sub> ' | l  | L   | d <sub>2</sub> | l  | L         |         |
|    |    |     |                |                |                |                |     |                |                |    |                |                | PVC, C-PVC     |    |      |     | PP, PVDF       |                  |    |     |                |    | PVC C-PVC | PP PVDF |
| 15 | 16 | 48  | 54x66          | 100            | 120            | 10             | 104 | 86             | 19.5           | 25 | 7              | 13             | 22.11          | 20 | 1/34 | 134 | 21.2           | 20.2             | 20 | 134 | Rc 1/2         | 15 | 128       | 128     |
| 20 | 20 | 60  | 54x66          | 100            | 120            | 10             | 106 | 88             | 17.5           | 25 | 7              | 13             | 26.13          | 24 | 1/34 | 156 | 26.2           | 25.2             | 23 | 154 | Rc 3/4         | 17 | 148       | 148     |
| 25 | 25 | 70  | 67x80          | 100            | 120            | 12             | 111 | 93             | 18.5           | 25 | 7              | 13             | 32.16          | 27 | 1/34 | 186 | 33.0           | 32.0             | 25 | 182 | Rc 1           | 20 | 172       | 172     |
| 32 | 32 | 82  | 67x80          | 100            | 120            | 12             | 116 | 97             | 22.5           | 25 | 7              | 13             | 38.19          | 30 | 1/34 | 200 | -              | -                | -  | -   | Rc 1 1/4       | 22 | 188       | 188     |
| 40 | 40 | 100 | 108x108        | 156            | 187            | 21             | 177 | 144            | 27.5           | 45 | 9              | 15             | 48.21          | 37 | 1/37 | 271 | 47.0           | 46.0             | 28 | 253 | Rc 1 1/2       | 25 | 245       | 245     |
| 50 | 52 | 106 | 123x123        | 156            | 187            | 25             | 191 | 158            | 36             | 45 | 9              | 15             | 60.25          | 42 | 1/37 | 303 | 59.0           | 58.0             | 28 | 275 | Rc 2           | 28 | 281       | 278     |

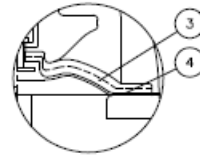
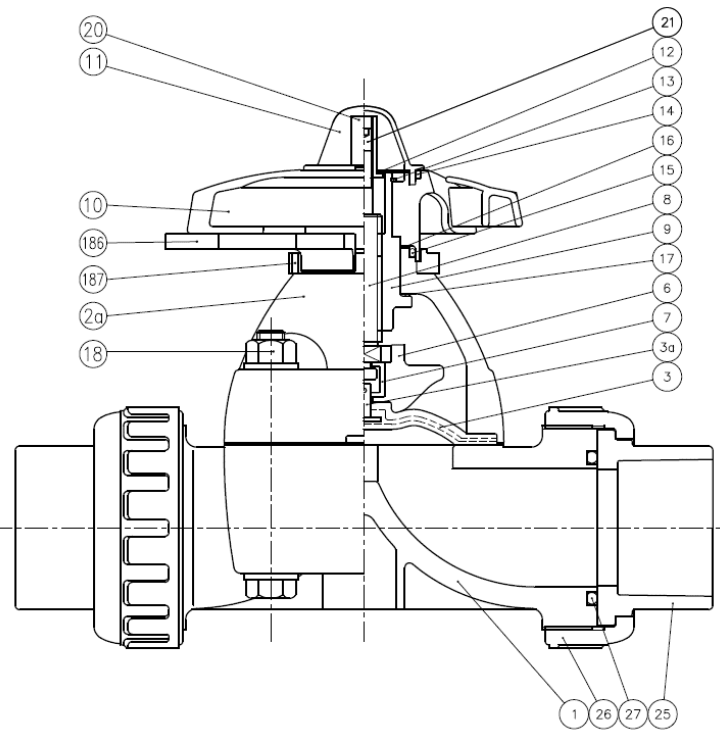
| mm | DIN            |    |     |                |                  |      |           |                |    |         |            |                |        |     |                |      |     |     |          |
|----|----------------|----|-----|----------------|------------------|------|-----------|----------------|----|---------|------------|----------------|--------|-----|----------------|------|-----|-----|----------|
|    | SOCKET         |    |     |                |                  |      | THREADED  |                |    |         |            |                | SPIGOT |     |                |      |     |     |          |
|    | d <sub>1</sub> | l  | L   | d <sub>1</sub> | d <sub>1</sub> ' | l    | L         | d <sub>2</sub> | l  | L       |            | d <sub>3</sub> | l      | L   | d <sub>3</sub> | l    | L   | t   |          |
|    | PVC, C-PVC     |    |     | PP, PVDF       |                  |      | PVC C-PVC |                |    | PP PVDF | PVC, C-PVC |                |        |     |                |      |     |     | PP, PVDF |
| 15 | 20             | 16 | 128 | 19.5           | 19.3             | 14.5 | 125       | Rp 1/2         | 15 | 128     | 128        | 20             | 18.5   | 150 | 20             | 18.5 | 150 | 2.5 | 1.9      |
| 20 | 25             | 19 | 147 | 24.5           | 24.3             | 16   | 141       | Rp 3/4         | 17 | 148     | 148        | 25             | 24.0   | 172 | 25             | 22.0 | 172 | 2.7 | 1.9      |
| 25 | 32             | 22 | 172 | 31.5           | 31.3             | 18   | 164       | Rp 1           | 20 | 172     | 172        | 32             | 24.5   | 195 | 32             | 22.5 | 195 | 3.0 | 2.4      |
| 32 | 40             | 26 | 188 | 39.45          | 39.2             | 20.5 | 177       | Rp 1 1/4       | 22 | 188     | 188        | 40             | 28.0   | 212 | 40             | 26.0 | 212 | 3.7 | 2.4      |
| 40 | 50             | 31 | 246 | 49.45          | 49.2             | 23.5 | 231       | Rp 1 1/2       | 25 | 245     | 245        | 50             | 34.0   | 276 | 50             | 32.0 | 276 | 4.6 | 3.0      |
| 50 | 63             | 38 | 294 | 62.5           | 62.1             | 27.5 | 274       | Rp 2           | 28 | 284     | 278        | 63             | 38.5   | 308 | 63             | 36.0 | 307 | 5.8 | 3.0      |

■ ANSI (Unit :inch)

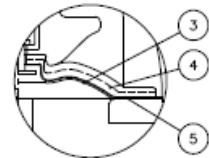
| inch  | mm | d    | D    | D <sub>1</sub> | D <sub>2</sub> | D <sub>3</sub> | l <sub>1</sub> | H    | H <sub>1</sub> | H <sub>2</sub> | S    | S <sub>1</sub> | S <sub>2</sub> | ANSI           |                  |       |       |                |      |       |                 |                |       |         |  |
|-------|----|------|------|----------------|----------------|----------------|----------------|------|----------------|----------------|------|----------------|----------------|----------------|------------------|-------|-------|----------------|------|-------|-----------------|----------------|-------|---------|--|
|       |    |      |      |                |                |                |                |      |                |                |      |                |                | SOCKET         |                  |       |       |                |      |       |                 | THREADED       |       |         |  |
|       |    |      |      |                |                |                |                |      |                |                |      |                |                | ASTM SCH80     |                  |       |       |                |      |       |                 | d <sub>2</sub> | l     | L       |  |
|       |    |      |      |                |                |                |                |      |                |                |      |                |                | d <sub>1</sub> | d <sub>1</sub> ' | l     | L     | d <sub>1</sub> | l    | L     | PVC C-PVC       |                |       | PP PVDF |  |
| 1/2   | 15 | 0.63 | 1.89 | 2.13x2.60      | 3.94           | 4.72           | 0.39           | 4.09 | 3.39           | 0.77           | 0.98 | 0.28           | 0.51           | 0.848          | 0.836            | 0.875 | 5.47  | 0.83           | 0.87 | 5.43  | 1/2-14NPT       | 0.59           | 5.04  | 5.04    |  |
| 3/4   | 20 | 0.79 | 2.36 | 2.13x2.60      | 3.94           | 4.72           | 0.39           | 4.17 | 3.46           | 0.69           | 0.98 | 0.28           | 0.51           | 0.058          | 1.046            | 1.000 | 6.18  | 1.03           | 1.00 | 6.09  | 3/4-14NPT       | 0.67           | 5.83  | 5.83    |  |
| 1     | 25 | 0.98 | 2.76 | 2.64x3.15      | 3.94           | 4.72           | 0.47           | 4.37 | 3.66           | 0.73           | 0.98 | 0.28           | 0.51           | 1.325          | 1.310            | 1.125 | 7.32  | 1.30           | 1.13 | 7.24  | 1-11 1/2NPT     | 0.79           | 6.77  | 6.77    |  |
| 1 1/4 | 32 | 1.26 | 3.23 | 2.64x3.15      | 3.94           | 4.72           | 0.47           | 4.57 | 3.82           | 0.89           | 0.98 | 0.28           | 0.51           | 1.670          | 1.655            | 1.250 | 7.95  | 1.65           | 1.25 | 7.80  | 1 1/4-11 1/2NPT | 0.87           | 7.40  | 7.40    |  |
| 1 1/2 | 40 | 1.57 | 3.94 | 4.25x4.25      | 6.14           | 7.36           | 0.83           | 6.97 | 5.67           | 1.08           | 1.77 | 0.35           | 0.59           | 1.912          | 1.894            | 1.375 | 10.47 | 1.89           | 1.37 | 10.28 | 1 1/2-11 1/2NPT | 0.98           | 9.65  | 9.65    |  |
| 2     | 50 | 2.05 | 4.17 | 4.84x4.84      | 6.14           | 7.36           | 0.98           | 7.52 | 6.22           | 1.42           | 1.77 | 0.35           | 0.59           | 2.387          | 2.369            | 1.500 | 11.54 | 2.36           | 1.50 | 11.54 | 2-11 1/2NPT     | 1.10           | 11.06 | 10.95   |  |

Parts list

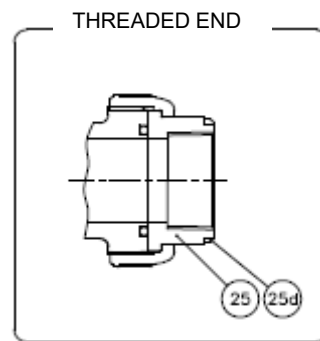
SOCKET END



In case material of Diaphragm is PTFE.



In case material of Diaphragm is PTFE with cushion cover.



THREADED END

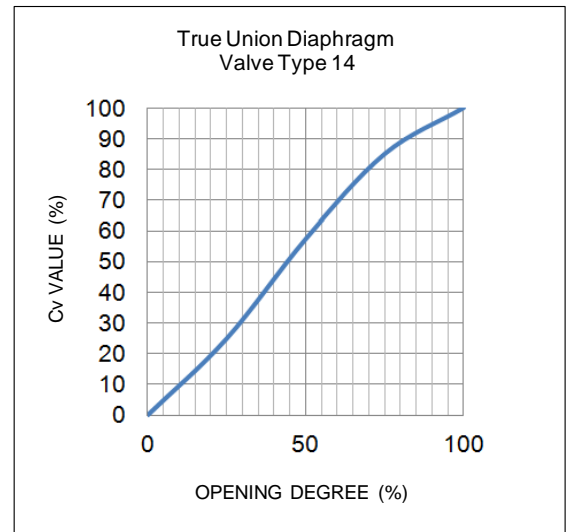
| PART NO./NAME                  | QTY | MATERIAL                | PART NO./NAME                  | QTY | MATERIAL        | PART NO./NAME           | QTY   | MATERIAL                  |
|--------------------------------|-----|-------------------------|--------------------------------|-----|-----------------|-------------------------|-------|---------------------------|
| 1 BODY                         | 1   | BODY-UNION NUT / BONNET | 5 CUSHION COVER <sup>(1)</sup> | 1   | Nothing, PVDF   | 16 THRUST RING(A)       | 1     | UHMWPE                    |
| 2a BONNET                      |     | PVC / PVC               | 6 COMPRESSOR                   | 1   | PVDF            | 17 THRUST RING(B)       | 1     | UHMWPE                    |
|                                |     | C-PVC / PP              | 7 JOINT                        | 1   | STAINLESS STEEL | 18 BOLT · NUT (A)       | 4Sets | STAINLESS STEEL           |
| 25 END CONNECTOR               | 2   | PP / PP                 | 8 STEM                         | 1   | COPPER ALLOY    | 20 STOPPER              | 1     | COPPER ALLOY              |
| 26 UNION NUT                   |     | PVDF / PPG              | 9 SLEEVE                       | 1   | COPPER ALLOY    | 21 SCREW                | 1     | Cr.Mo.STEEL               |
| 3 DIAPHRAGM                    | 1   | PVDF / PVDF             | 10 HANDLE WHELL                | 1   | PP              | 25d RING <sup>(2)</sup> |       | STAINLESS STEEL           |
|                                |     | EPDM, PTFE, Others( )   | 11 GAUGE COVER                 | 1   | PC              | 27 O-RING(C)            |       | EPDM, Others( )           |
| 3a INSERTED METAL OF DIAPHRAGM | 1   |                         | 12 NAME PLATE                  | 1   | U-PVC           | 186 LOCKING LEVER       | 1     | ABS                       |
|                                |     | STAINLESS STEEL         | 13 RETAINING RING-C TYPE       | 1   | STAINLESS STEEL |                         |       | Used for with handle lock |
| 4 CUSHION <sup>(1)</sup>       | 1   |                         | 14 O-RING (A)                  | 1   | EPDM            | 187 LOCKING PLATE       | 1     | ABS                       |
|                                |     | EPDM                    | 15 O-RING (B)                  | 1   | EPDM            |                         |       | Used for with handle lock |

Note : (1) Used for PTFE Diaphragm.  
 (2) Used for C-PVC Body. Threaded End: 15-25mm(1/2"-1")

## Cv value for each opening degree

| mm                    | 15  | 20  | 25  | 32    | 40    | 50 |
|-----------------------|-----|-----|-----|-------|-------|----|
| inch                  | 1/2 | 3/4 | 1   | 1 1/4 | 1 1/2 | 2  |
| FULL-OPEN<br>Cv VALUE | 4.8 | 5.3 | 8.5 | 11    | 26    | 43 |

The values shown are reference values, not guaranteed values.



## Handle rotation [Full open (rotation/lift) Full close]

| SIZE |       | ROTATION |
|------|-------|----------|
| mm   | inch  |          |
| 15   | 1/2   | 3.3      |
| 20   | 3/4   | 3.3      |
| 25   | 1     | 4.0      |
| 32   | 1 1/4 | 4.0      |
| 40   | 1 1/2 | 5.0      |
| 50   | 2     | 6.0      |

## Operating torque at maximum working pressure

Unit:N-m { ib-inch }

| mm                       | 15              | 20              | 25              | 32              | 40             | 50             |
|--------------------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|
| inch                     | 1/2             | 3/4             | 1               | 1 1/4           | 1 1/2          | 2              |
| Operating<br>torque(O→S) | 3.0<br>{ 26.5 } | 3.0<br>{ 26.5 } | 4.0<br>{ 35.5 } | 4.0<br>{ 35.5 } | 10<br>{ 88.5 } | 10<br>{ 88.5 } |

## Bonnet tightening torque

Unit:N-m { ib-inch }

| mm                  | 15              | 20              | 25              | 32              | 40              | 50              |
|---------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| inch                | 1/2             | 3/4             | 1               | 1 1/4           | 1 1/2           | 2               |
| RUBBER<br>DIAPHRAGM | 3.0<br>{ 26.5 } | 3.0<br>{ 26.5 } | 5.0<br>{ 44.5 } | 5.0<br>{ 44.5 } | 12.0<br>{ 106 } | 15.0<br>{ 133 } |
| PTFE<br>DIAPHRAGM   | 5.0<br>{ 44.5 } | 5.0<br>{ 44.5 } | 8.0<br>{ 71 }   | 8.0<br>{ 71 }   | 15.0<br>{ 133 } | 20.0<br>{ 177 } |

## Product weight

Unit : kg

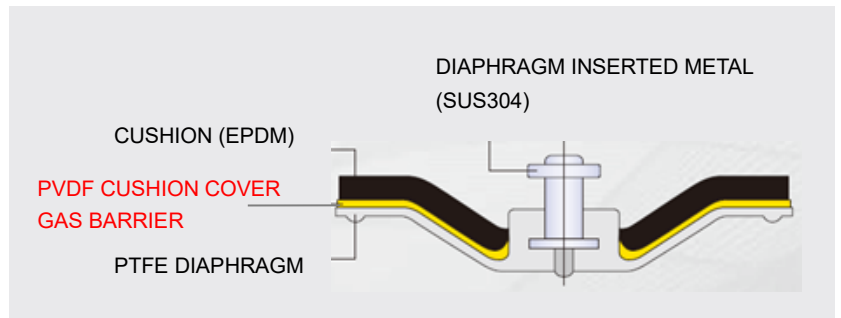
| mm | inch  | Body material   |       |     |      |      |
|----|-------|-----------------|-------|-----|------|------|
|    |       | PVC             | C-PVC | PP  | PVDF | PVDF |
|    |       | Bonnet material |       |     |      |      |
|    |       | PVC             | PP    | PP  | PPG  | PVDF |
| 15 | 1/2   | 0.5             | 0.5   | 0.4 | 0.6  | 0.6  |
| 20 | 3/4   | 0.6             | 0.6   | 0.5 | 0.7  | 0.7  |
| 25 | 1     | 0.9             | 0.9   | 0.7 | 1.0  | 1.1  |
| 32 | 1 1/4 | 1.1             | 1.1   | 0.8 | 1.2  | 1.3  |
| 40 | 1 1/2 | 2.6             | 2.5   | 2.0 | 2.7  | 2.9  |
| 50 | 2     | 2.9             | 2.8   | 2.3 | 3.1  | 3.3  |

## Options

In addition to the standard product, the following options are also available according to your requirements.

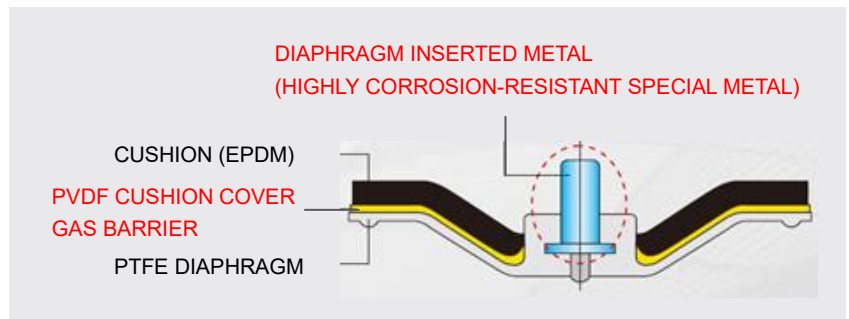
### ① PVDF Cushion Cover Model

For corrosive fluid transport lines, we offer PVDF cushion cover accessories having excellent gas barrier performance to prevent deterioration due to permeation of gas from the diaphragm.



### ② Electrolytic Model

For chlorine gas lines in electrolysis plants, we offer electrolytic options using highly corrosion resistant special metal to prevent corrosion of inserted diaphragm fittings.

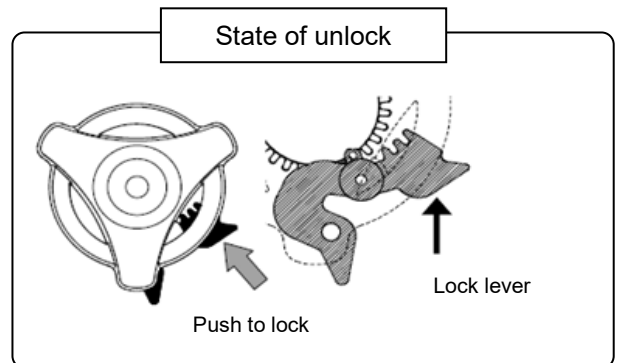
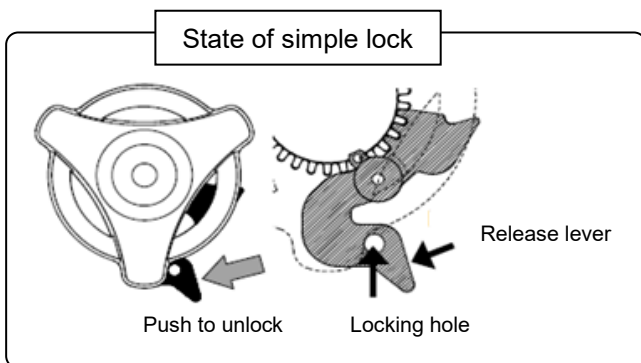
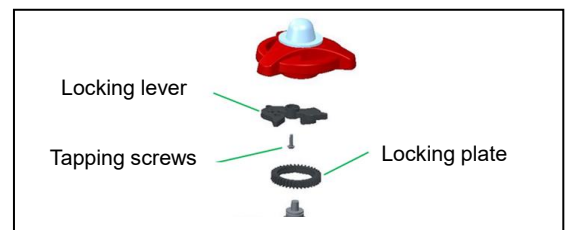


## Locking Device

### Operating Procedure

- Do not exert excessive force in turning the handle.(It can be deformed, or destroyed.)
- Please lock using a padlock for miss operation prevention.
- The valve is simple locked at the time of shipment.
- Please operate valve after release simple lock.
- Do not disassemble the LOCKING DEVICE. (Injury may occur.)

- 1- Push the release lever with the locking hole to release the simple lock.
- 2- Operate the valve to the desired valve lift.
- 3- Push the lock lever without the locking hole to lock the simple lock.
- 4- The location hole for the lock is already installed in the handle.  
Please lock using padlock as necessary. (Refer to Table 1 for the size of lock.)



Note: The lock is not attached.

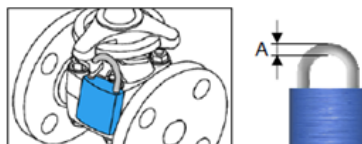


Table 1 <Size of Lock>

| Nominal Size mm (inch)   | A mm (inch) |
|--------------------------|-------------|
| 15 ~ 32 ( 1/2" - 1 1/4") | 5 ( 0.20")  |
| 40 ~ 50 ( 1 1/2" - 2")   | 6 ( 0.24")  |

### Product model code list

| ACTUATION         | TYPE                     | OPERATING SYSTEM                       | BODY MATERIAL                                    | SEAL MATERIAL                                 | CONNECTION                                      | STANDARD                          | SIZE                       |
|-------------------|--------------------------|--|--|---|---|-----------------------------------|----------------------------|
| V                 | 14                       | **                                     | *  | *   | *   | *                                 | ***                        |
| V<br>MANUAL VALVE | T1<br>TRUE UNION TYPE 14 | MH ROUND HANDLE<br>HL WITH HANDLE LOCK | U PVC<br>C C-PVC<br>P PP<br>F PVDF<br>G PVDF+PPG | E EPDM<br>T PTFE<br>1 PTFE+EPDM<br>2 PTFE+FKM | F FLANGED<br>S SOCKET<br>N THREADED<br>P SPIGOT | J JIS<br>1 10K<br>D DIN<br>A ANSI | 015 15mm<br>50<br>050 50mm |

### Installation, Operation and Maintenance Manual

For details of Installation, Operation and Maintenance, please contact our nearest distribution agent or sales office.