



# Simply Unique Single Seat

## Unique 7000 Aseptic Manually Operated Valve

### Concept

The Unique 7000 Aseptic Manual Valve meets the highest demands of your process in terms of hygiene and safety. Built on the well-proven Unique 7000 platform it features a one-piece diaphragm to ensure hermetic sealing towards the atmosphere. The valve is designed for aseptic processing and it is available in a one or two body configuration as well as an tank outlet valve configuration.

### Working principle

The valve is a manual operated seat valve in an aseptic and modular design for a wide field of duties, e.g. as a shut-off valve, as a change-over valve, as a tank outlet valve or as regulating valve. The Regulating Valve is used for control of pressure and flow and the plug can be fixed in the adjusted position with a lock screw.

### Standard design

The Unique 7000 Aseptic Manual Valve comes in a one or two body configuration. With its module built structure it is designed for flexibility and easy customization through the electronic configurator (CAS).

The Unique 7000 Aseptic Manual Tank Outlet Valve comes in a one body configuration, which can be delivered with or without a tank flange. The valve body is clamped to the tank flange and can be turned in any position if the clamps are slightly loosened. The tank flange is welded directly into the tank.



### TECHNICAL DATA

#### Temperature

Temperature range: . . . . . 14°F to 284°F (EPDM)

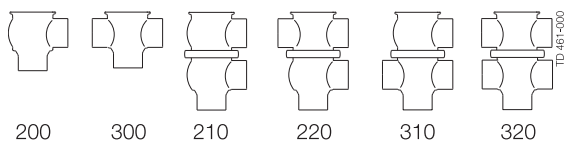
#### Pressure

Pressure range: . . . . . 0 - 116 PSI (8 bar)

Max. sterilization temperature . . . . . 302°F / 55 PSI (3.8 bar)

**Note!** Vacuum is not recommended in aseptic applications.

#### Valve body combinations



### PHYSICAL DATA

#### Materials

Product wetted steel parts: . . . . . 1.4404 (316L)

Other steel parts: . . . . . 1.4301 (304)

External surface finish: . . . . . Bright (polished)

Internal surface finish: . . . . . Bright (polished), Ra < 32 µ inch

Product wetted seal . . . . . EPDM

Other seals: . . . . . HNBR

Diaphragm . . . . . PTFE (Product wetted side) / EPDM

### Options

- A. Male parts or clamp liners in accordance with required standard
- B. Product wetted seals in HNBR or FPM  
(only for Unique SSV aseptic manually tank outlet valve)
- C. Plug seal HNBR, FPM
- D. Tangential body  
(only for Unique SSV aseptic manually tank outlet valve and for Unique SSV aseptic manually operated valve)
- E. External surface bright

### Notel

For further details, see instruction ESE02421.

### Other valves in the same basic design

The Unique SSV valve range includes several purpose built valves. Please use the Alfa Laval computer aided selection tool (CAS) for full access to all models and options.

### Pressure drop/capacity diagram:

The plugs have linear characteristics. This means that a certain amount of throttling, by reducing the stroke, results in a proportional reduction of the flow if the pressure drop remains unchanged.

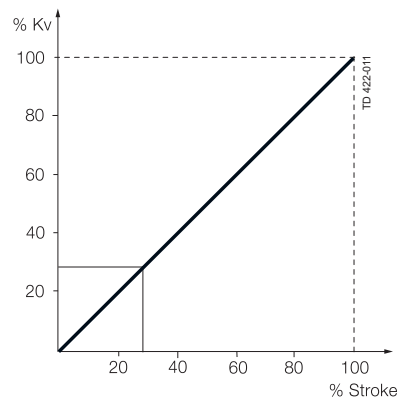
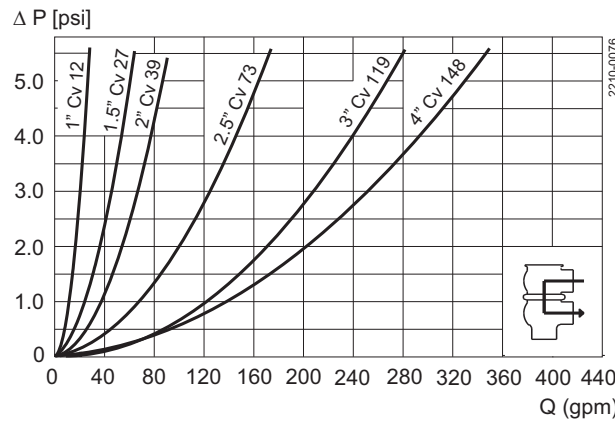
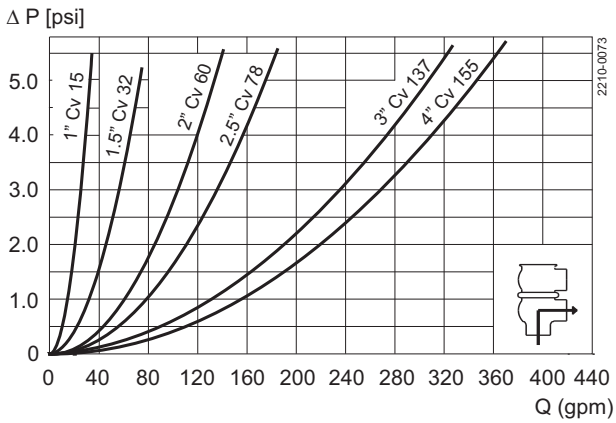
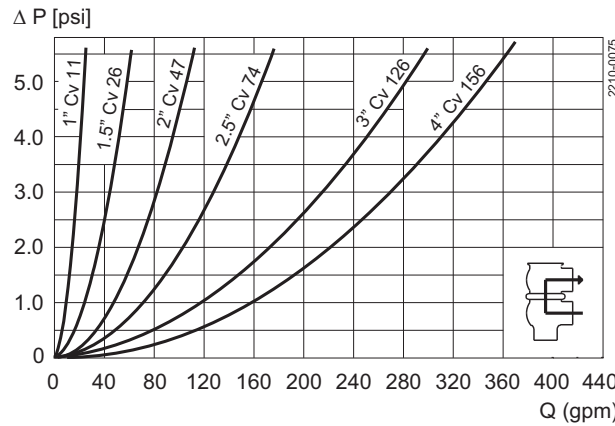
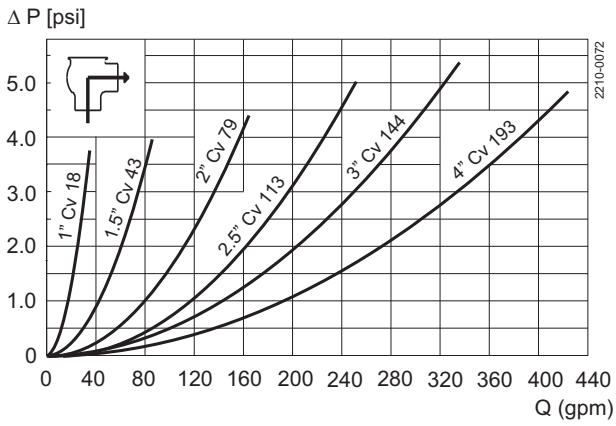
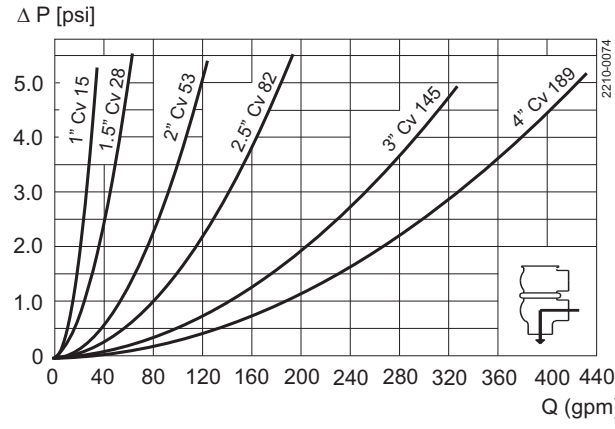
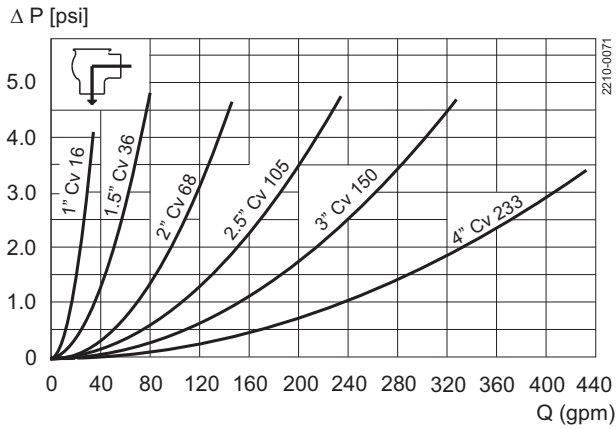


Fig. 3. The flow in % of the total flow at a pressure drop of 1 bar.

Pressure drop/capacity diagrams



**Notel**

For the diagrams the following applies:

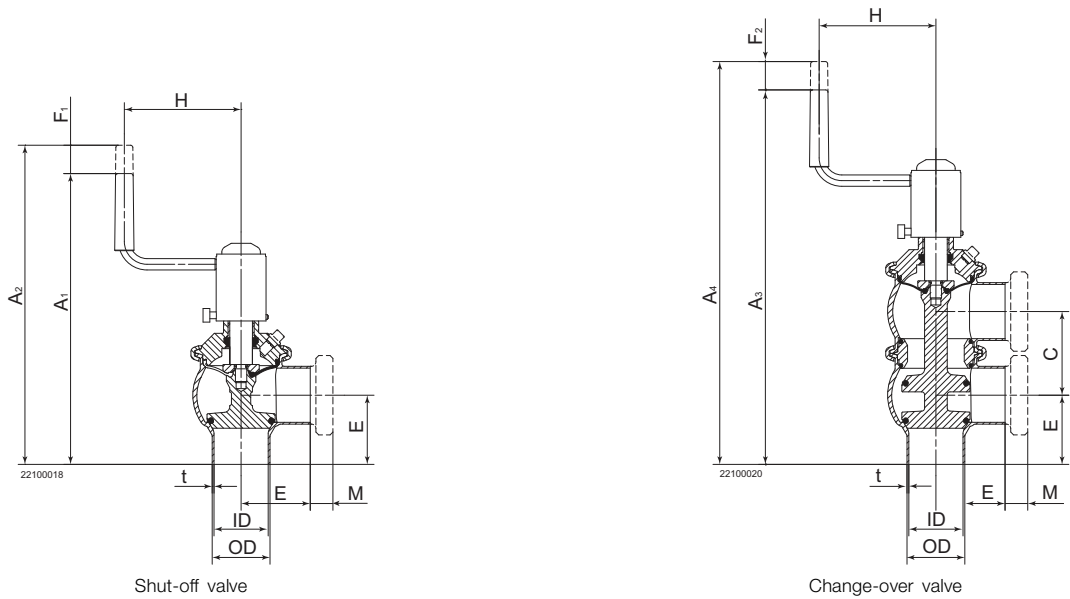
Medium: Water (20°C)

Measurement: In accordance with VDI 2173

Pressure drop can also be calculated in CAS.

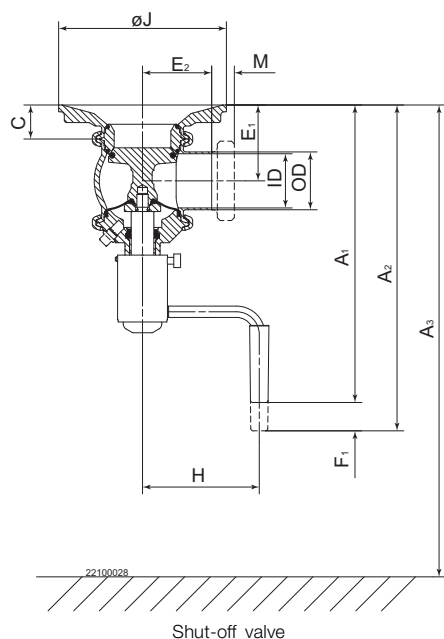
Dimensions for Unique 7000 aseptic manually operated valve

| Size              | 1<br>inch | 1.5<br>inch | 2<br>inch | 2,5<br>inch | 3<br>inch | 4<br>inch |
|-------------------|-----------|-------------|-----------|-------------|-----------|-----------|
| A1                | 9.25      | 9.53        | 10.20     | 11.18       | 11.54     | 13.54     |
| A2                | 9.65      | 9.92        | 10.71     | 11.70       | 12.20     | 14.17     |
| A3                | 11.18     | 11.93       | 13.03     | 14.53       | 15.43     | 18.35     |
| A4                | 11.54     | 12.28       | 13.50     | 15.04       | 16.02     | 18.98     |
| C                 | 1.88      | 2.39        | 2.91      | 3.40        | 3.89      | 4.87      |
| OD                | 0.98      | 1.50        | 2.01      | 2.50        | 3.00      | 4.00      |
| ID                | 0.86      | 1.37        | 1.88      | 2.37        | 2.87      | 3.84      |
| t                 | 0.06      | 0.06        | 0.06      | 0.06        | 0.06      | 0.08      |
| E1                | 1.97      | 1.95        | 2.40      | 3.19        | 3.39      | 4.69      |
| F1                | 0.43      | 0.43        | 0.55      | 0.59        | 0.67      | 0.67      |
| F2                | 0.35      | 0.35        | 0.47      | 0.51        | 0.59      | 0.59      |
| H                 | 4.13      | 4.13        | 4.13      | 4.13        | 4.13      | 4.13      |
| M (Tri-clamp)     | 0.50      | 0.50        | 0.50      | 0.50        | 0.50      | 0.63      |
| Weight (kg)       |           |             |           |             |           |           |
| Shut off valve:   | 3.97      | 4.41        | 5.73      | 7.94        | 10.14     | 15.43     |
| Change-over valve | 5.73      | 6.61        | 9.26      | 12.35       | 16.09     | 25.13     |



# Dimensions for Unique 7000 aseptic manually tank outlet valve

| Size            | 2<br>inch | 2.5<br>inch | 3<br>inch | 4<br>inch |
|-----------------|-----------|-------------|-----------|-----------|
| A1              | 10.40     | 10.87       | 11.14     | 12.17     |
| A2              | 10.87     | 11.40       | 11.93     | 12.91     |
| A3              | 13.39     | 14.96       | 15.35     | 17.32     |
| C               | 1.18      | 1.20        | 1.18      | 1.18      |
| OD              | 2.01      | 2.50        | 3.00      | 4.00      |
| ID              | 1.88      | 2.37        | 2.87      | 3.84      |
| t               | 0.06      | 0.06        | 0.06      | 0.08      |
| E1              | 2.40      | 3.19        | 3.39      | 4.69      |
| E2              | 2.64      | 2.87        | 3.13      | 3.62      |
| F               | 0.55      | 0.59        | 0.67      | 0.67      |
| H               | 4.13      | 4.13        | 4.13      | 4.13      |
| øJ              | 5.83      | 6.42        | 7.01      | 7.80      |
| M (Tri-clamp)   | 0.50      | 0.50        | 0.50      | 0.63      |
| Weight (lb)     |           |             |           |           |
| Shut off valve: | 8.60      | 11.24       | 13.89     | 19.40     |



## Cv-Factors

| Valve size | Kv  | Cv  |
|------------|-----|-----|
| 2"         | 60  | 71  |
| 2½"        | 95  | 112 |
| 3"         | 125 | 148 |
| 4"         | 180 | 212 |

Cv = US gal/min. at 1 psi pressure drop

For other pressure drops than 1 psi the flow can be calculated with the following formula:

$$Q = Kv \times \sqrt{\Delta p}$$

Where

Q = Flow in m³/h.

Kv = See above.

Δ p = Pressure drop in bar over the valve.

Conversion factors:

Cv = US gal/min. at 1 psi pressure drop

Cv = Kv x 1.18

Q (gal/min) = 4.4 x Q(m³/h)

## Example:

How to calculate the pressure drop for an ISO 63.5 tank outlet valve if the flow is 176 gal/min.

ISO 63.5 tank outlet valve where Cv = 112 (See table above)

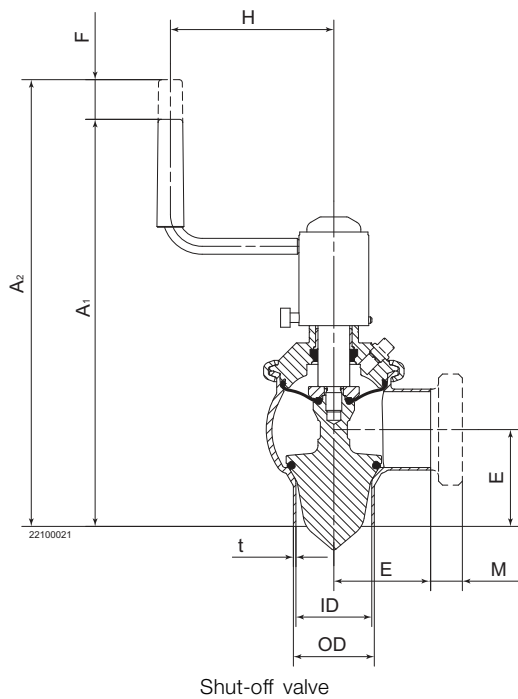
$$Q = Cv \times \sqrt{\Delta p}$$

$$176 = 112 \times \sqrt{\Delta p}$$

$$\Delta p = \left(\frac{176}{112}\right)^2 = 2.5 \text{ psi}$$

# Dimensions for Unique 7000 aseptic manual regulating valve

| Size            | 1.5<br>inch | 2<br>inch | 2.5<br>inch | 3<br>inch | 4<br>inch |
|-----------------|-------------|-----------|-------------|-----------|-----------|
| A1              | 9.50        | 10.20     | 11.20       | 11.50     | 13.50     |
| A2              | 9.90        | 10.70     | 11.70       | 12.20     | 14.20     |
| OD              | 1.50        | 2.01      | 2.50        | 3.00      | 4.00      |
| ID              | 1.37        | 1.88      | 2.37        | 2.87      | 3.84      |
| t               | 0.063       | 0.063     | 0.063       | 0.063     | 0.079     |
| E               | 1.95        | 2.40      | 3.19        | 3.39      | 4.69      |
| F               | 0.43        | 0.55      | 0.59        | 0.67      | 0.67      |
| H               | 4.10        | 4.10      | 4.10        | 4.10      | 4.10      |
| M (Tri-clamp)   | 0.50        | 0.50      | 0.50        | 0.50      | 0.63      |
| Weight (lb)     |             |           |             |           |           |
| Stut-off valve: | 4.63        | 6.39      | 8.81        | 11.90     | 18.88     |



## Cv-Factors

| Valve size | Kv  | Cv  |
|------------|-----|-----|
| 1½"        | 21  | 25  |
| 2"         | 40  | 47  |
| 2½"        | 90  | 106 |
| 3"         | 90  | 106 |
| 4"         | 130 | 153 |

For other pressure drops than 1 bar the flow can be calculated with the following formula:

$$Q = Kv \times \sqrt{\Delta p}$$

Where

Q = Flow in m³/h.

Kv = See above.

Δ p =Pressure drop in bar over the valve.

Conversion factors:

Cv = US gal/min. at 1 psi pressure drop

$$Cv = Kv \times 1,18$$

$$Q \text{ (gal/min)} = 4.4 \times Q \text{ (m³/h)}$$

## Example:

How to calculate the flow, if the pressure drop is 29 PSI bar for an Iso51 regulating valve.

Plug Kv 40

Plug Cv= 47

$$Q = Cv \times \sqrt{\Delta p} = 47 \times \sqrt{\Delta p} = 66 \text{ gal/min}$$

or at 50% stroke:

$$Q = 0.5 \times 66 = 33 \text{ gal/min}$$



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