



# Alfa Laval Unique SSV Long Stroke

## Single seat valves

### Introduction

The Alfa Laval Unique SSV Long Stroke is versatile, reliable pneumatic single seat valve with a single contact surface between the plug and the seat to minimize the risk of contamination. Its compact, modular and hygienic design meets the highest process demands in terms of hygiene and safety. Built on the well-proven Unique SSV platform, it is especially suitable for use with highly viscous products and products containing particles and/or suspended solids due to its larger opening.

### Application

This Unique SSV Long Stroke is designed for use in a broad range of hygienic applications across the dairy, food, beverage, brewery and many other industries.

### Benefits

- Exceptional valve hygiene and durability
- Superior cleanability – smooth inner valve body without crevices
- Extended seal life due to the defined seal compression
- Enhanced product safety thanks to the static seal leak detection
- Protection against full vacuum due to the double lip seal

### Standard design

The Unique SSV Long Stroke is available in a one- or two-body configuration, with easy-to-configure valve bodies, plugs, actuator and clamp rings. The valve can be configured as a shut-off valve with two or three working ports or as a changeover valve with up to five ports.

To ensure flexibility, the valve seat that sits between the two bodies in the changeover version is provided for assembly. The valve seals are optimized for durability and long service life through a defined compression design. The actuator is connected to the valve body using a yoke, and all components are assembled with clamp rings.

The valve can also be fitted with the Alfa Laval ThinkTop V50 and V70 for sensing and control of the valve.

Using the Alfa Laval Anytime configurator, it is easy to customize to meet virtually any process requirement.

### Working principle

The Alfa Laval Unique SSV Long Stroke is operated by means of compressed air from a remote location. The actuator smooths operation and protects process lines against pressure peaks. The valve can be controlled using an Alfa Laval ThinkTop®.

### Certificates



Authorized to carry the 3A symbol



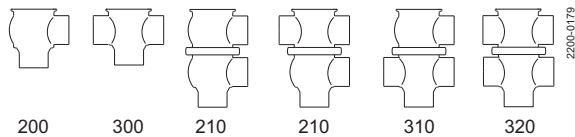
## TECHNICAL DATA

| Temperature        |                        |
|--------------------|------------------------|
| Temperature range: | -10°C to +140°C (EPDM) |

| Pressure               |                             |
|------------------------|-----------------------------|
| Max. product pressure: | 1000 kPa (10 bar)           |
| Min. product pressure: | Full vacuum                 |
| Air pressure:          | 500 to 700 kPa (5 to 7 bar) |

### Valve body combinations



### Actuator function

- Pneumatic downward movement, spring return.
- Pneumatic upward movement, spring return.
- Pneumatic upward and downward movement (AA).

## PHYSICAL DATA

| Materials                   |                                |
|-----------------------------|--------------------------------|
| Product wetted steel parts: | 1.4404 (316L)                  |
| Other steel parts:          | 1.4301 (304)                   |
| External surface finish:    | Semi-bright (blasted)          |
| Internal surface finish:    | Bright (polished), Ra < 0.8 µm |
| Product wetted seals:       | EPDM                           |
| Other seals:                | NBR                            |

### Options

- A. Male parts or clamp liners in accordance with required standard
- B. Control and Indication: ThinkTop and ThinkTop Basic
- C. Product wetted seals in HNBR or FPM
- D. TR2 plug (floating PTFE design)
- E. Service tool for plug seals
- F. External surface finish bright

### Note!

For further details, see instruction ESE00202.

### Other valves in the same basic design

The Unique SSV valve range includes several purpose built valves. Below are some of the valve models available, though please use the Alfa Laval Anytime configurator for full access to all models and options.

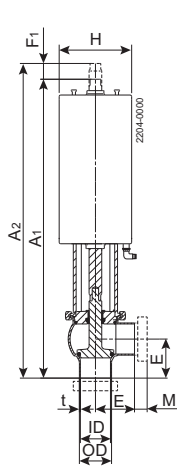
- Reverse acting valve.
- Manually operated valve.
- Tank Outlet valve.
- Tangential valve.

Semi-Maintainable actuator comes with 5 year warranty

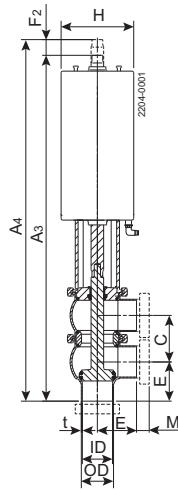
Dimensions (mm)

| Size               | Inch tubes DN/OD |      |      |      |       | DIN tubes DN |     |      |      |       |
|--------------------|------------------|------|------|------|-------|--------------|-----|------|------|-------|
|                    | 38               | 51   | 63.5 | 76.1 | 101.6 | 40           | 50  | 65   | 80   | 100   |
| A <sub>1</sub>     | 415              | 423  | 442  | 539  | 592   | 414          | 422 | 439  | 535  | 591   |
| A <sub>2</sub>     | 440              | 460  | 486  | 597  | 656   | 442          | 461 | 488  | 597  | 657   |
| A <sub>3</sub>     | 458              | 488  | 533  | 645  | 718   | 456          | 487 | 531  | 641  | 717   |
| A <sub>4</sub>     | 484              | 527  | 569  | 689  | 777   | 485          | 528 | 572  | 697  | 779   |
| C                  | 60.8             | 73.8 | 86.3 | 98.9 | 123.6 | 64           | 76  | 92   | 107  | 126.4 |
| OD                 | 38               | 51   | 63.5 | 76.1 | 102   | 41           | 53  | 70   | 85   | 104   |
| ID                 | 34.8             | 47.8 | 60.3 | 72.9 | 97.6  | 38           | 50  | 66   | 81   | 100   |
| t                  | 1.6              | 1.6  | 1.6  | 1.6  | 2     | 1.5          | 1.5 | 2    | 2    | 2     |
| E <sub>1</sub>     | 49.5             | 61   | 81   | 86   | 119   | 49.5         | 61  | 78   | 86   | 120   |
| E <sub>2</sub>     | 49.5             | 61   | 81   | 86   | 119   | 49.5         | 61  | 78   | 86   | 120   |
| F <sub>1</sub>     | 25               | 37   | 44   | 58   | 64    | 28           | 39  | 49   | 62   | 66    |
| F <sub>2</sub>     | 26               | 39   | 36   | 44   | 59    | 29           | 41  | 41   | 56   | 62    |
| H                  | 115              | 115  | 115  | 154  | 154   | 115          | 115 | 115  | 154  | 154   |
| M (ISO clamp)      | 21               | 21   | 21   | 21   | 21    | -            | -   | -    | -    | -     |
| M (/DIN clamp)     | -                | -    | -    | -    | -     | 21           | 21  | 28   | 28   | 28    |
| M (DIN male)       | -                | -    | -    | -    | -     | 22           | 23  | 25   | 25   | 30    |
| M (SMS male)       | 20               | 20   | 24   | 24   | 35    | -            | -   | -    | -    | -     |
| <b>Weight (kg)</b> |                  |      |      |      |       |              |     |      |      |       |
| Shut-off valve     | 6.1              | 6.6  | 7.5  | 14.8 | 17.2  | 6.2          | 6.6 | 7.6  | 15.3 | 17.2  |
| Change-over valve  | 6.8              | 7.9  | 9.8  | 17.9 | 22.2  | 7            | 7.9 | 10.1 | 18.8 | 22.1  |

For exact high pressure actuator dimension (A and F) - please refer to information in Anytime



Shut-off valve.



Change-over valve.

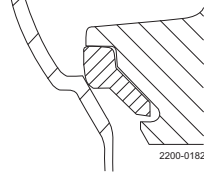
Please note!

Opening/closing time will be affected by the following:

- The air supply (air pressure).
- The length and dimensions of the air hoses.
- Number of valves connected to the same air hose.
- Use of single solenoid valve for serial connected air actuator functions.
- Product pressure.

Air Connections Compressed air:

R 1/8" (BSP), internal thread.



PTFE plug seal (TR2).

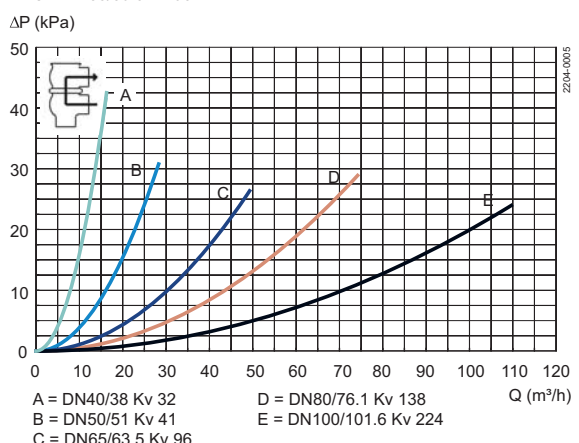
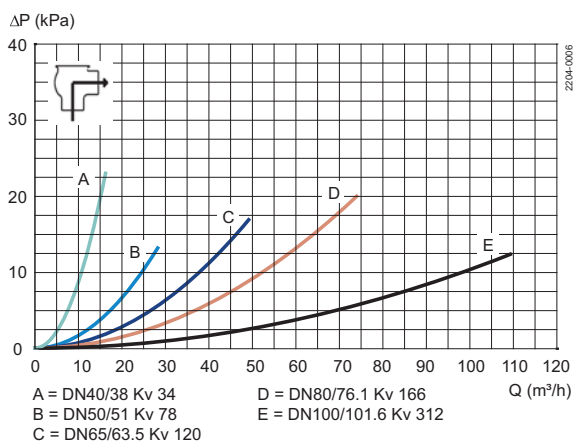
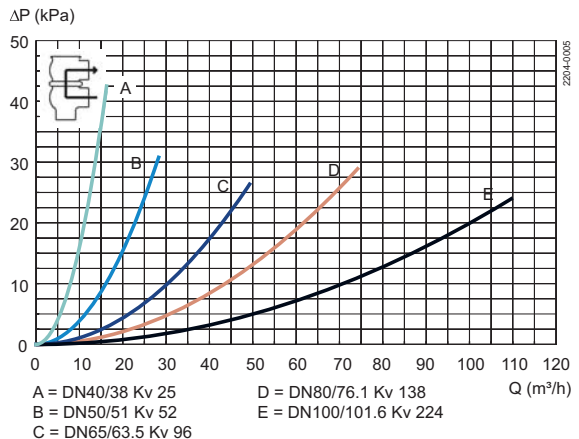
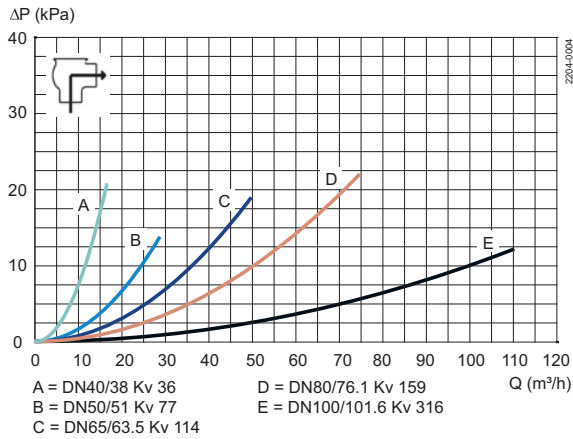
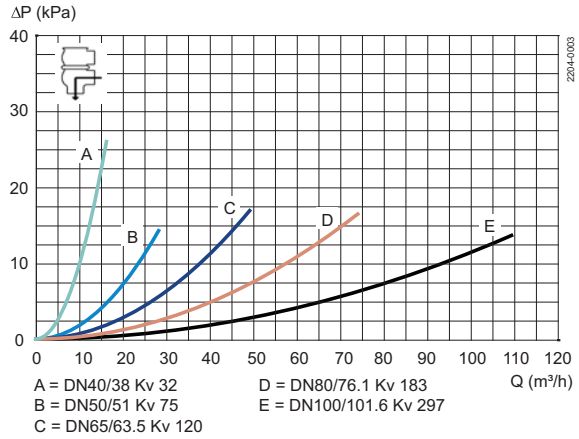
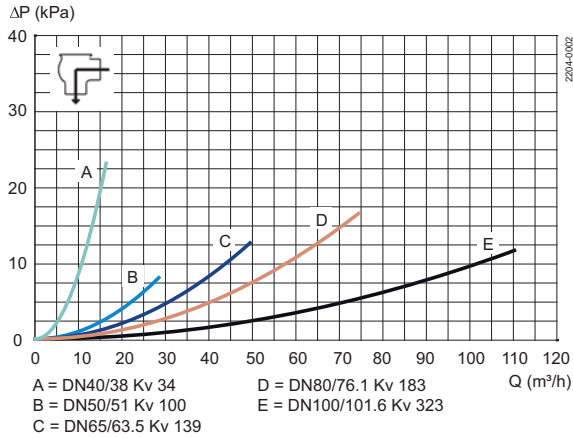
| Max. size of solids (mm)               | Valve size (DN/OD) |       |         |         |          |
|--|--------------------|-------|---------|---------|----------|
|  | 38 mm              | 51 mm | 63.5 mm | 76.1 mm | 101.6 mm |
| Shut-off valve                         | 21                 | 32    | 40      | 54      | 58       |
| Change-over valve (plug up/lower body) | 22                 | 35    | 32      | 43      | 54       |
| Change-over valve (plug down)          | 12                 | 15    | 23      | 30      | 40       |

| Max. size of solids (mm)               | Valve size (DN/OD) |      |      |      |       |
|--|--------------------|------|------|------|-------|
|  | DN40               | DN50 | DN65 | DN80 | DN100 |
| Shut-off valve                         | 24                 | 34   | 45   | 62   | 61    |
| Change-over valve (plug up/lower body) | 25                 | 37   | 37   | 52   | 57    |
| Change-over valve (plug down)          | 12                 | 15   | 23   | 30   | 40    |

**Air consumption (litres free air) for one stroke**

| Size      | DN40-65                  | DN80100                  |
|-----------|--------------------------|--------------------------|
|           | DN/OD 38-63.5 mm         | DN/OD 76.1101.6 mm       |
| NO and NC | 0.8 x air pressure [bar] | 2 x air pressure [bar]   |
| A/A       | 1.4 x air pressure [bar] | 3.9 x air pressure [bar] |

**Pressure drop/capacity diagrams**



**Note!**

For the diagrams the following applies:

Medium: Water (20°C)

Measurement: In accordance with VDI 2173

Pressure drop can also be calculated in Anytime configurator.

Pressure drop can also be calculated with the following formula:

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

Where

Q = Flow in m<sup>3</sup>/h.

Kv = m<sup>3</sup>/h at a pressure drop of 1 bar (see table above).

Δ p = Pressure drop in bar over the valve.

2.5" shut-off valve, where Kv = 111 (See table above).

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

$$40 = 111 \times \sqrt{\Delta p}$$

$$\Delta p = \left(\frac{40}{111}\right)^2 = 0.13 \text{ bar}$$

(This is approx. the same pressure drop by reading the y-axis above)

Pressure data for Unique Single Seat Valve Long Stroke

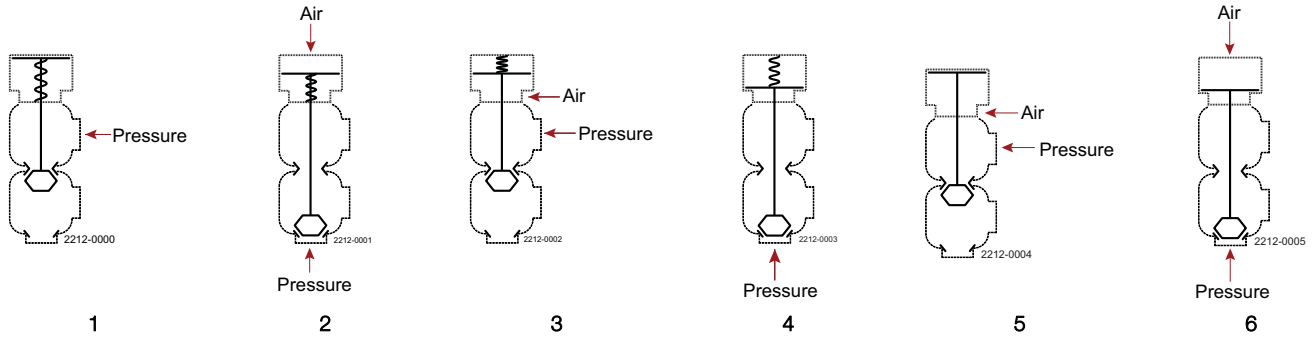


Table 1 - Shut-off and Change-over valves Max. pressure in bar without leakage at the valve seat

| Actuator / Valve body combination and direction of pressure | Air pressure (bar) | Plug position | Valve size  |            |             |             |              |
|---|--------------------|---------------|-------------|------------|-------------|-------------|--------------|
|   |                    |               | DN 40 DN/OD | DN50 DN/OD | DN 65 DN/OD | DN 80 DN/OD | DN 100 DN/OD |
|   |                    |               | 38 mm       | 51 mm      | 63.5 mm     | 76.1 mm     | 101.6 mm     |
| 1   |                    | NO            | 10.0        | 8.9        | 4.8         | 7.1         | 4.6          |
| 2   | 6                  | NO            | 10.0        | 8.6        | 5.0         | 6.8         | 4.4          |
| 3   | 6                  | NC            | 10.0        | 9.9        | 5.4         | 7.2         | 4.6          |
| 4   |                    | NC            | 10.0        | 7.6        | 4.4         | 6.7         | 4.4          |
| 5   | 6                  | A/A           | 10.0        | 10.0       | 10.0        | 10.0        | 10.0         |
| 6   | 6                  | A/A           | 10.0        | 10.0       | 10.0        | 10.0        | 10.0         |

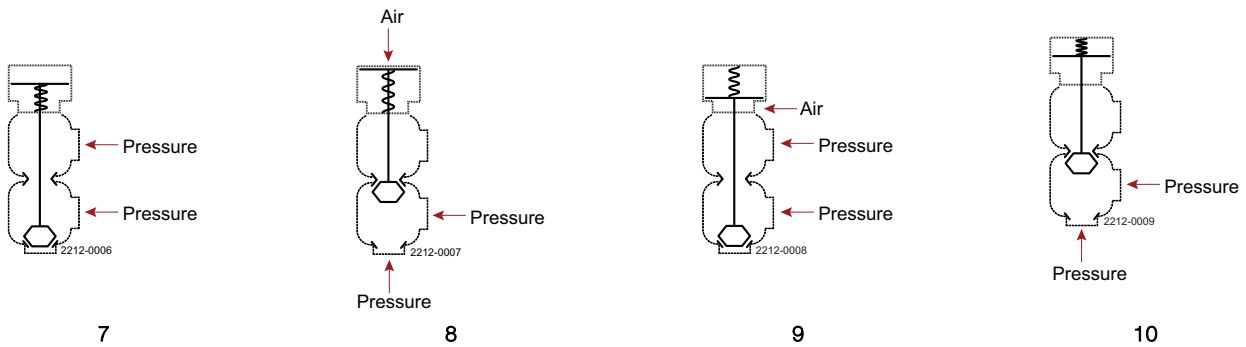


Table 2 Shut-off and Change-over valves Max. pressure in bar against which the valve can open

| Actuator / Valve body combination and direction of pressure | Air pressure (bar) | Plug position | Valve size  |            |             |             |              |
|---|--------------------|---------------|-------------|------------|-------------|-------------|--------------|
|   |                    |               | DN 40 DN/OD | DN50 DN/OD | DN 65 DN/OD | DN 80 DN/OD | DN 100 DN/OD |
|   |                    |               | 38 mm       | 51 mm      | 63.5 mm     | 76.1 mm     | 101.6 mm     |
| 7   |                    | NO            | 10.0        | 10.0       | 8.1         | 10.0        | 6.7          |
| 8   | 6                  | NO            | 10.0        | 10.0       | 8.0         | 9.7         | 6.5          |
| 9   | 6                  | NC            | 10.0        | 10.0       | 8.7         | 10.0        | 6.7          |
| 10  |                    | NC            | 10.0        | 10.0       | 7.5         | 9.6         | 6.4          |





Alfa Laval reserves the right to change specifications without prior notification.

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