

# Alfa Laval Safety Valve

## Safety valves

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### Introduction

The Alfa Laval Safety Valve is a versatile hygienic spring-loaded relief valve that prevents pressure buildup in process tanks, vessels and equipment due to blocked discharge, thermal expansion, chemical reactions, or a combination of these events.

### Application

This safety valve is ideal for use in the dairy, food, beverage, biotechnology, pharmaceutical and many other industries.

### Benefits

- Safe, reliable operation
- Hygienic design
- Prevents unsanitary leakage and overflow
- Safeguards both personnel and equipment against accidents due to overpressure
- Optional manual or automated overwrite for valve cleaning

### Standard design

The Alfa Laval Safety Valve comes in sizes from DN25 to DN100 with a spring-loaded set pressure range from 0.2 to 12 bar. The valve can be operated either pneumatically or manually. It is delivered with PED certificate and complies with PED 2014/68/EU and EN 4126-1, fluid group II (non-hazardous fluids). It is available for pressure regulation of both liquids and gases. Please note that manual pressure regulation of gases has a reduced pressure range.

### Working principle

The Alfa Laval Safety Valve prevents inadmissible overpressures of fluids in tanks, containers and plant sections. It is factory-configured with the specified set pressure that is greater than the operating pressure. If the operating pressure rises above the set pressure, the valve opens against the spring force to relieve pressure.

The valve should be installed in a vertical position for optimal performance. If mounted in a horizontal position, the set pressure will be somewhat lower than specified due to the lack of weight from the piston. The highest effect is obtained using DN80 and DN100.



## TECHNICAL DATA

### Temperature

|  |                     |
|--|---------------------|
| Temperature range:                         | +4 °C to +95 °C     |
| Max. sterilisation temperature, dry steam: | 140 °C (Max 30 min) |

## PHYSICAL DATA

### Materials

|                       |  |
|-----------------------|--|
| Product wetted parts: | 1.4404 (316L)  |
| Other steel parts:    | 1.4301 (304)   |
| Seals:                | EPDM   |
| External finish:      | Ra 1.5-2.5 µm  |
| Internal finish:      | Ra 0.8 µm  |
| Connections:          | Inlet: Liner/nut DIN 11851<br>Outlet: Male DIN 11851 |

### Option:

Inductive sensor for feedback is available for standard and pneumatic lifting - see instruction manual for detail.

### Dimensions (mm)

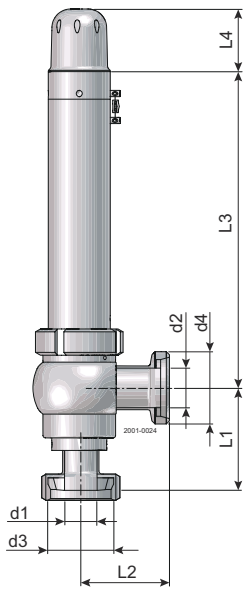


Figure 1. Standard DN25

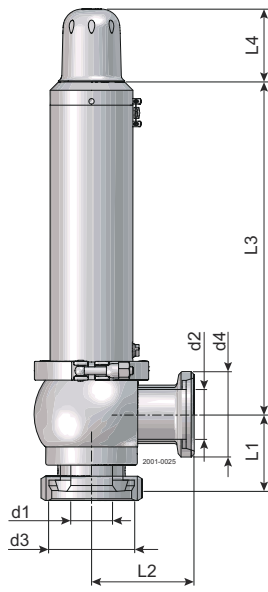


Figure 2. Standard DN40-DN100

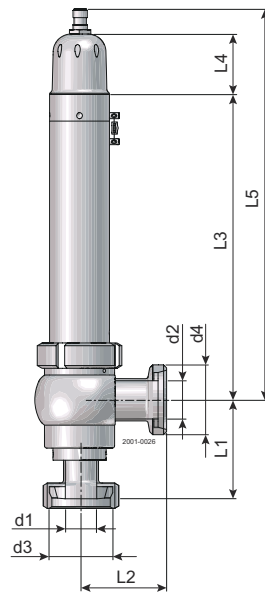


Figure 3. Standard DN25 with inductive sensor for feedback

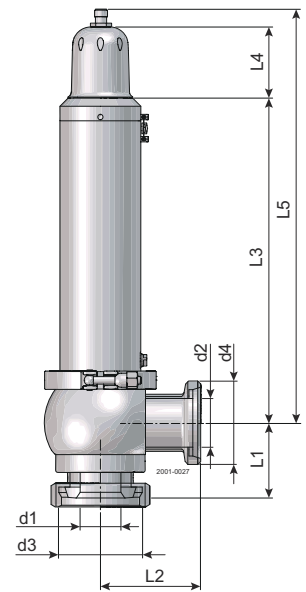


Figure 4. Standard DN40-DN100 with inductive sensor for feedback

### Standard

| Size  | d1 | d2  | d3        | d4        | L1  | L2  | L3    | L4 | Kg   |
|-------|----|-----|-----------|-----------|-----|-----|-------|----|------|
| DN25  | 26 | 32  | Rd52x1/6  | Rd58x1/6  | 82  | 72  | 253   | 50 | 6.8  |
| DN40  | 32 | 38  | Rd65x1/6  | Rd65x1/6  | 68  | 82  | 255   | 66 | 9.1  |
| DN50  | 38 | 50  | Rd78x1/6  | Rd78x1/6  | 70  | 93  | 301   | 66 | 1.3  |
| DN65  | 50 | 66  | Rd95x1/6  | Rd95x1/6  | 85  | 105 | 402   | 66 | 15.0 |
| DN80  | 66 | 81  | Rd110x1/4 | Rd110x1/4 | 100 | 115 | 407.5 | 66 | 22.0 |
| DN100 | 81 | 100 | Rd130x1/4 | Rd130x1/4 | 130 | 130 | 418   | 66 | 28.2 |

### Standard with inductive sensor for feedback

| Size  | d1 | d2  | d3        | d4        | L1  | L2  | L3    | L4 | L5  | Kg   |
|-------|----|-----|-----------|-----------|-----|-----|-------|----|-----|------|
| DN25  | 26 | 32  | Rd52x1/6  | Rd58x1/6  | 82  | 72  | 253   | 50 | 324 | 6.8  |
| DN40  | 32 | 38  | Rd65x1/6  | Rd65x1/6  | 68  | 82  | 255   | 66 | 338 | 9.1  |
| DN50  | 38 | 50  | Rd78x1/6  | Rd78x1/6  | 70  | 93  | 301   | 66 | 384 | 1.3  |
| DN65  | 50 | 66  | Rd95x1/6  | Rd95x1/6  | 85  | 105 | 402   | 66 | 484 | 15.0 |
| DN80  | 66 | 81  | Rd110x1/4 | Rd110x1/4 | 100 | 115 | 407.5 | 66 | 489 | 22.0 |
| DN100 | 81 | 100 | Rd130x1/4 | Rd130x1/4 | 130 | 130 | 418   | 66 | 501 | 28.2 |

Dimensions (mm)

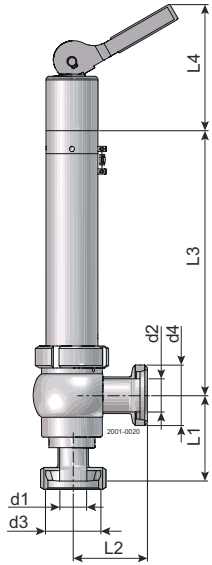


Figure 5. Manual lifting DN25

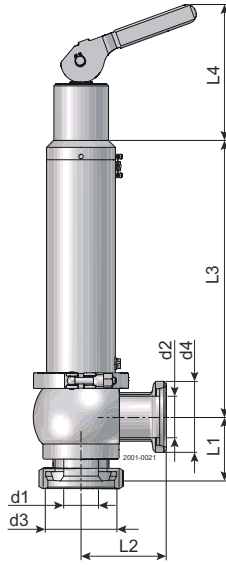


Figure 6. Manual lifting DN40-DN100

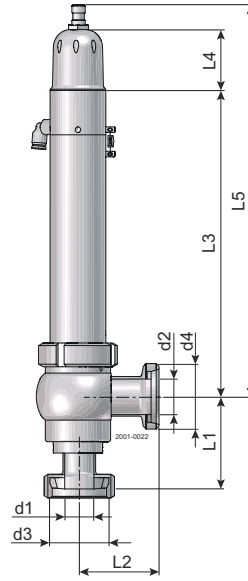


Figure 7. Pneumatic lifting DN25 with inductive sensor for feedback

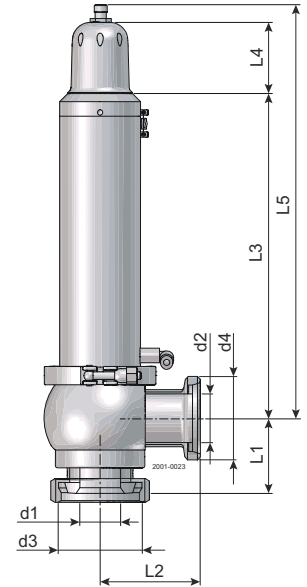


Figure 8. Pneumatic lifting DN40-DN100 with inductive sensor for feedback

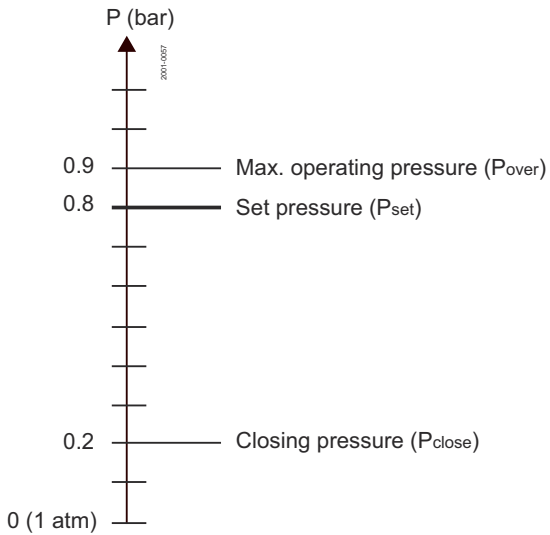
Manual lifting

| Size  | d1 | d2  | d3        | d4        | L1  | L2  | L3    | L4          | Kg   |
|-------|----|-----|-----------|-----------|-----|-----|-------|-------------|------|
| DN25  | 26 | 32  | Rd52x1/6  | Rd58x1/6  | 82  | 72  | 253   | 141-182     | 7.5  |
| DN40  | 32 | 38  | Rd65x1/6  | Rd65x1/6  | 68  | 82  | 255   | 152-232     | 10.3 |
| DN50  | 38 | 50  | Rd78x1/6  | Rd78x1/6  | 70  | 93  | 301   | 154-234     | 15.5 |
| DN65  | 50 | 66  | Rd95x1/6  | Rd95x1/6  | 85  | 105 | 402   | 153-233     | 16.2 |
| DN80  | 66 | 81  | Rd110x1/4 | Rd110x1/4 | 100 | 115 | 407.5 | 152.5-232.5 | 23.2 |
| DN100 | 81 | 100 | Rd130x1/4 | Rd130x1/4 | 130 | 130 | 418   | 152-232     | 29.6 |

Pneumatic lifting with inductive sensor for feedback

| Size  | d1 | d2  | d3        | d4        | L1  | L2  | L3    | L4 | L5  | Kg   |
|-------|----|-----|-----------|-----------|-----|-----|-------|----|-----|------|
| DN25  | 26 | 32  | Rd52x1/6  | Rd58x1/6  | 82  | 72  | 253   | 50 | 324 | 6.8  |
| DN40  | 32 | 38  | Rd65x1/6  | Rd65x1/6  | 68  | 82  | 255   | 66 | 338 | 9.1  |
| DN50  | 38 | 50  | Rd78x1/6  | Rd78x1/6  | 70  | 93  | 301   | 66 | 384 | 1.3  |
| DN65  | 50 | 66  | Rd95x1/6  | Rd95x1/6  | 85  | 105 | 402   | 66 | 484 | 15   |
| DN80  | 66 | 81  | Rd110x1/4 | Rd110x1/4 | 100 | 115 | 407.5 | 66 | 489 | 22   |
| DN100 | 81 | 100 | Rd130x1/4 | Rd130x1/4 | 130 | 130 | 418   | 66 | 501 | 28.2 |

### Opening and closing characteristics for incompressible fluids (Liquid)



#### Max. operating pressure ( $P_{over}$ ):

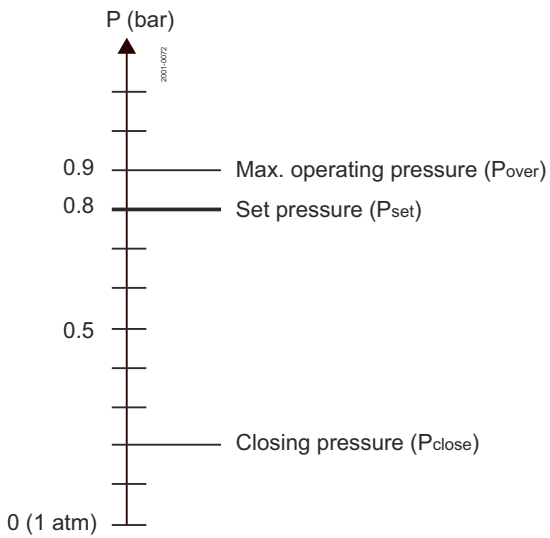
10 % of set pressure or 0.1 bar, whichever is the greater.

#### Closing pressure ( $P_{close}$ ):

Maximum 20% or 0.6 bar below set pressure, whichever is the greater.

(Example: Set pressure = 0.8 bar)

### Opening and closing characteristics for compressible fluids (Gas)



#### Max. operating pressure ( $P_{over}$ ):

10 % of set pressure or 0.1 bar, whichever is the greater.

#### Closing pressure ( $P_{close}$ ):

Maximum 15% or 0.3 bar below set pressure, whichever is the greater.

(Example: Set pressure = 0.8 bar)

### Blow-off performance chart

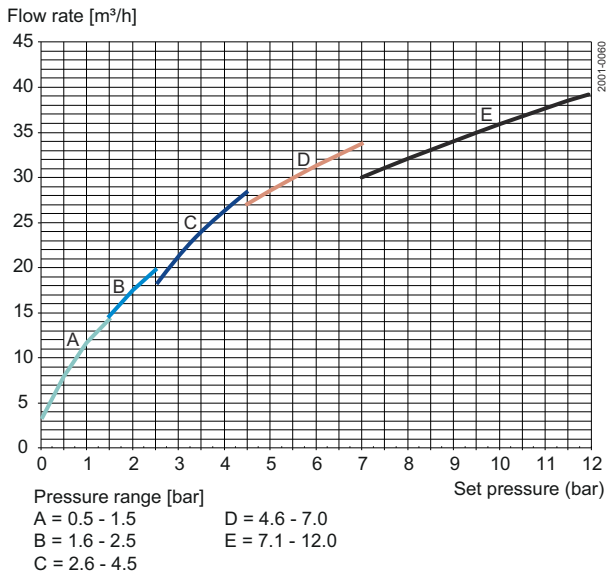


Figure 9. DN25 set pressure: 0.2 - 12.0 bar for liquids (water 20 °C)

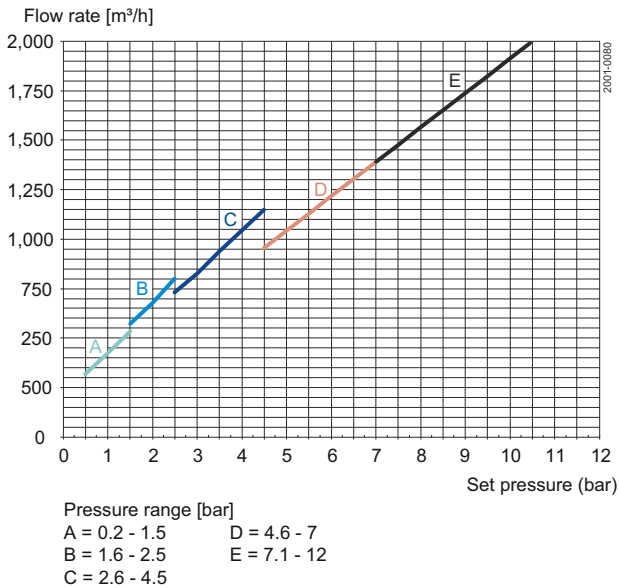


Figure 10. DN 25 set pressure: 0.2 - 12 bar for gases (air 20 °C)



#### Note!

DN25 for gas application up to 1,5 bar fulfills the DIN4126-1 requirements. For higher pressures the valve is approved by TÜV.

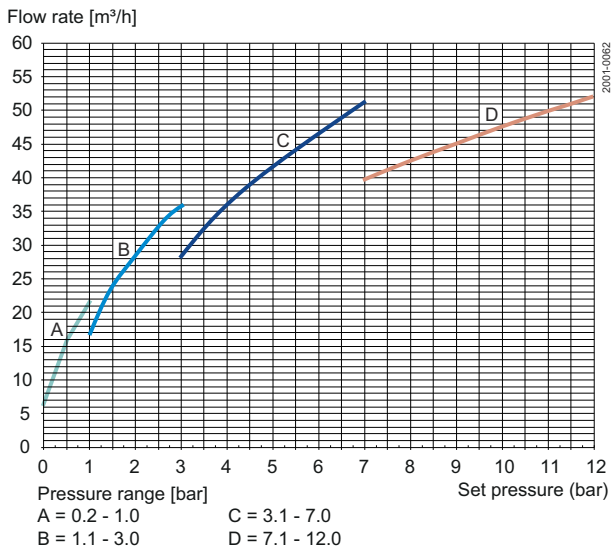


Figure 11. DN 40 set pressure: 0.2 - 12.0 bar for liquids (water 20 °C)

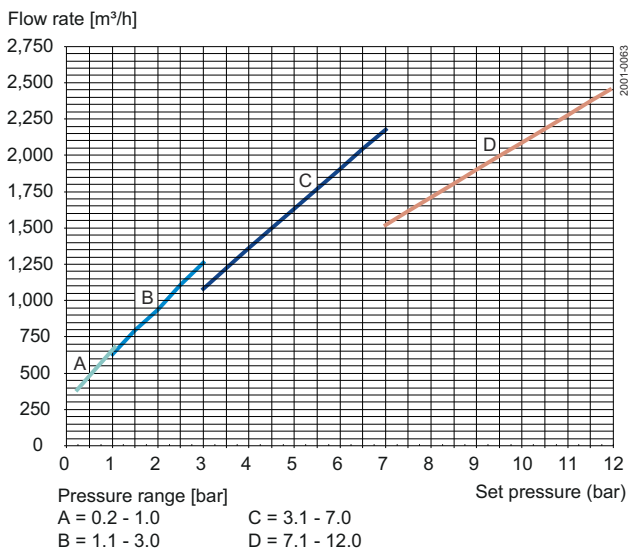


Figure 12. DN 40 set pressure: 0.2 - 12.0 bar for gases (air 20 °C)

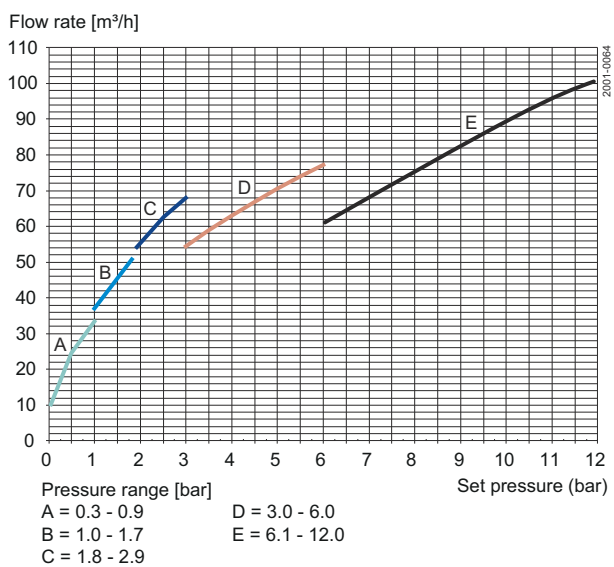


Figure 13. DN 50 set pressure: 0.3 - 12.0 bar for liquids (water 20 °C)

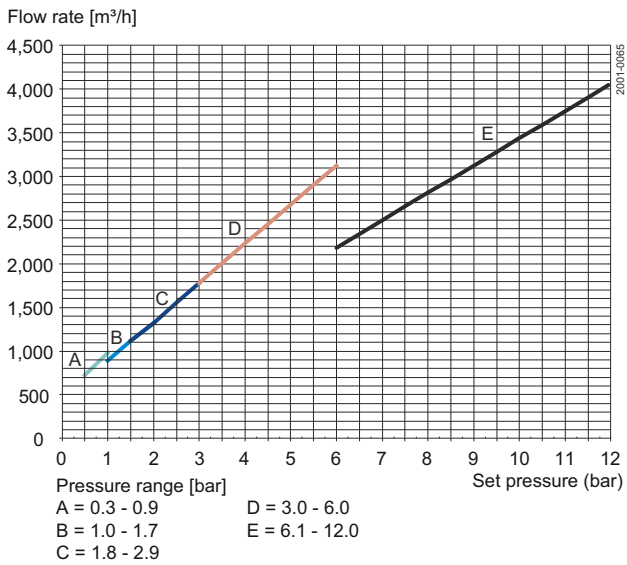


Figure 14. DN50 set pressure: 0.3 - 12.0 bar for gases (air 20 °C)

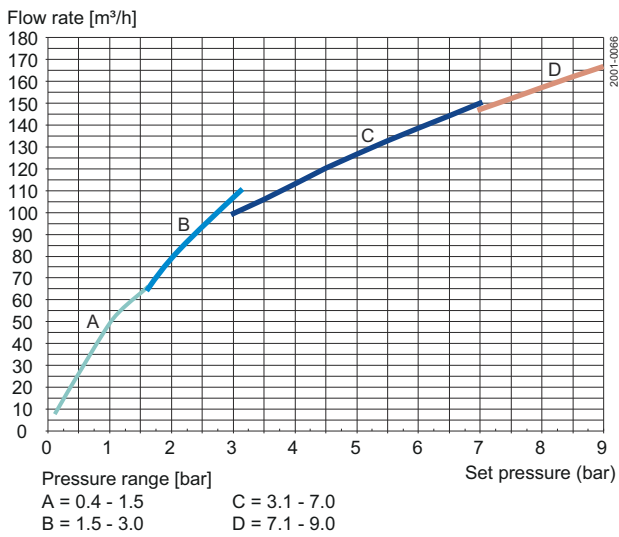


Figure 15. DN65 set pressure: 0.4 - 9.0 bar for liquids (water 20 °C)

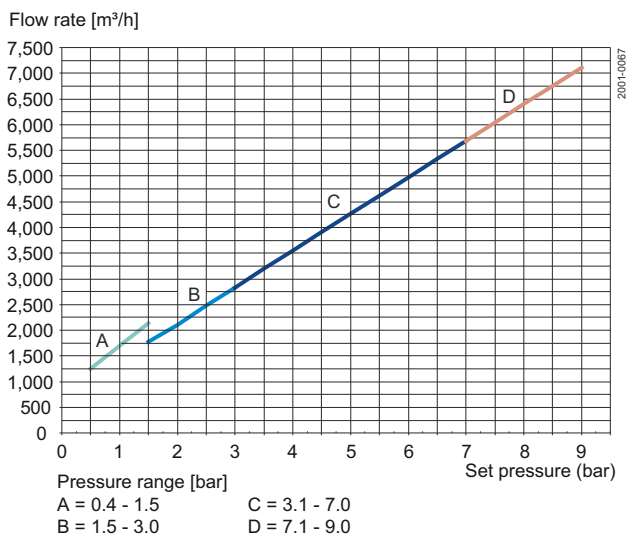


Figure 16. DN65 set pressure: 0.4 - 9.0 bar for gases (air 20 °C)

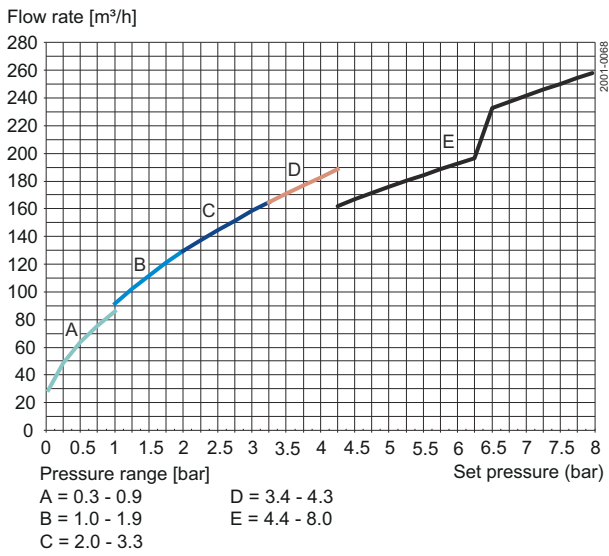


Figure 17. DN80 set pressure: 0.3 - 8.0 bar for liquids (water 20 °C)

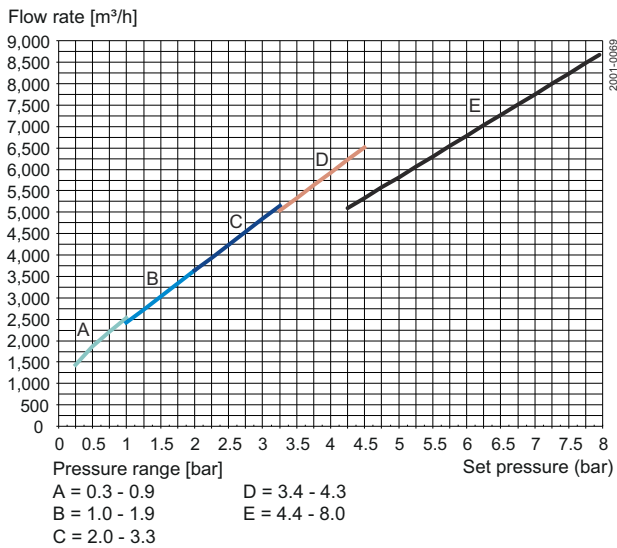


Figure 18. DN80 set pressure: 0.3 - 8.0 bar for gases (air 20 °C)

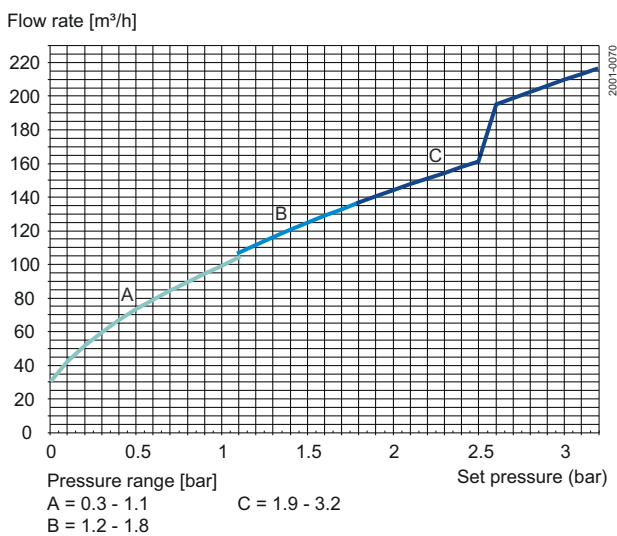


Figure 19. DN100 set pressure: 0.3 - 3.2 bar for liquids (water 20 °C)



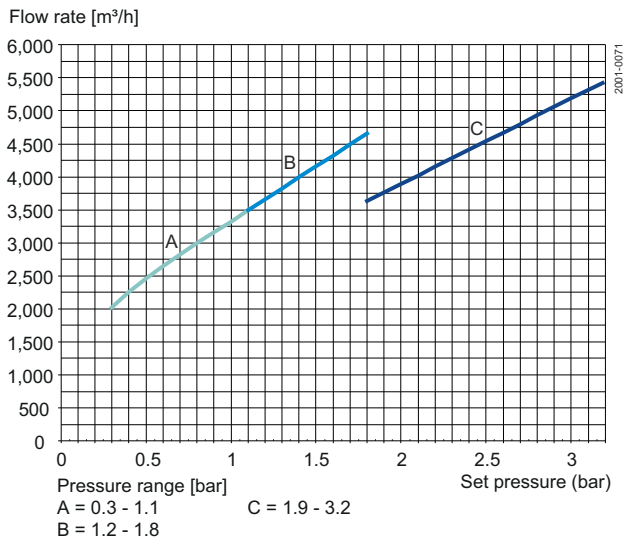


Figure 20. DN100 set pressure: 0.3 - 3.2 bar for gases (air 20 °C)

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