# Frese OPTIMA Compact DN10-DN50 - pressure independent balancing & control valve

## Application

Frese OPTIMA Compact pressure independent balancing & control valve (PIBCV) is used in heating and cooling systems in applications with Fan Coil Units, Chilled Beams or other terminal unit applications.

Frese OPTIMA Compact provides modulating control with full authority regardless of any fluctuations in the differential pressure of the system.

Frese OPTIMA Compact combines an externally adjustable automatic balancing valve, a differential pressure control valve and a full authority modulating control valve.

Frese OPTIMA Compact makes it simple to achieve 100% control of the water flow in the building, while creating high comfort and energy savings at the same time.
An additional benefit is that no balancing is required if further stages are added to the system, or if the dimensioned capacity is changed.

Energy saving due to optimal control, lower flow and pump pressure. Maximized ΔT due to faster response and increased system stability.

## Benefits

Design
- Less time to define the necessary equipment for a hydraulic balanced system (only flow data are required)
- No need to calculate valve authority. Always one.
- Flexibility if the system is modified after the initial installation

Installation
- No further regulating valves required in the distribution pipework when Frese OPTIMA Compact is installed at terminals.
- Total number of valves minimized due to the 3-in-1 design
- Minimized commissioning time due to automatic balancing of the system
- No minimum straight pipe lengths required before or after the valve.

Operation
- High comfort for the end-users due to high precision temperature control
- Longer life due to less movements of the actuator

## Features

- The presetting function has no impact on the stroke; Full stroke modulation at all times, regardless the preset flow.
- The constant differential pressure across the modulating control component guarantees 100% authority.
- Automatic balancing eliminates overflows, regardless of fluctuating pressure conditions in the system.
- Thermal actuator On/Off or 0-10V, normally closed.
- Motoric actuator 0-10V, (Linear or Logarithmic) or 3 point control, normally closed.
- Differential pressure operating range up to 400 kPa
- High flows with minimal required differential pressure due to advanced design of the valve
- Small dimensions due to compact housing
- Higher presetting precision due to stepless analogue scale

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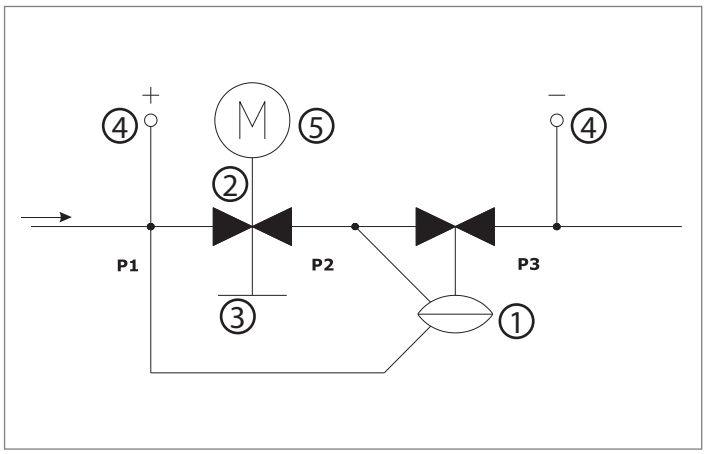
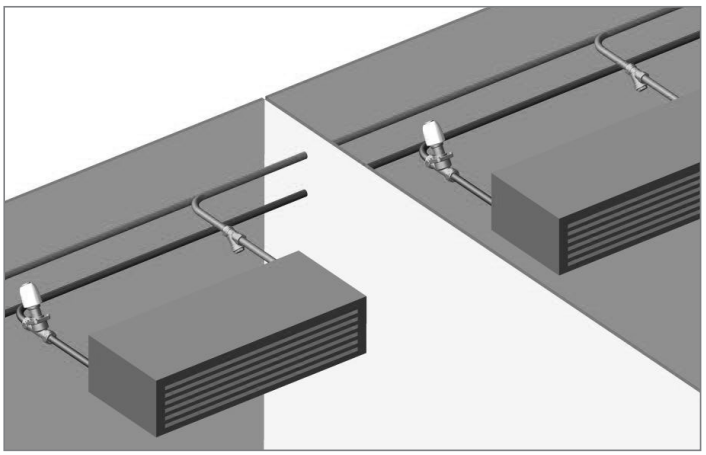


## Design

The design of Frese OPTIMA Compact combines high performance with small size and compact construction. The main components of the valve are:

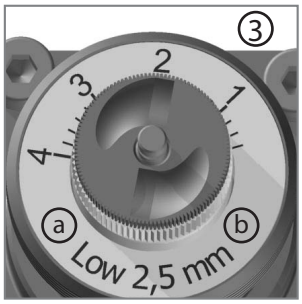
① Differential pressure control

② Modulating control component

③ Presetting scale (not accessible when the actuator is mounted)

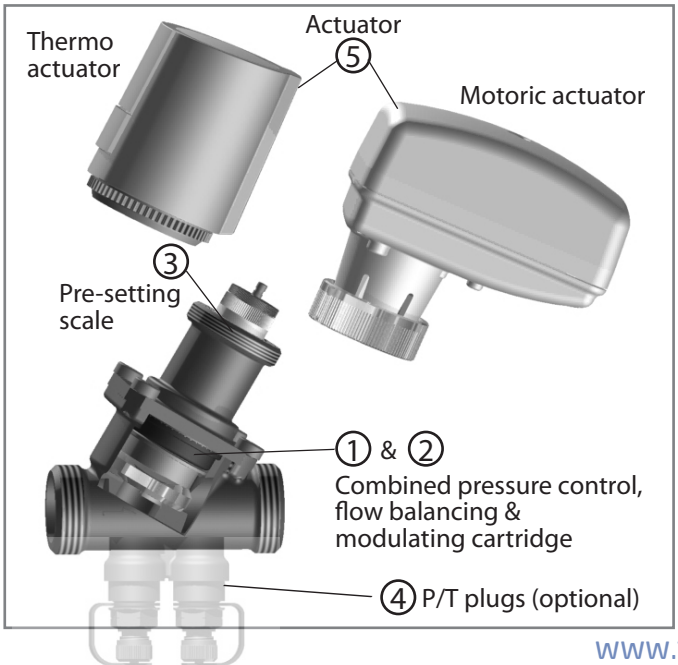
ⓐ Flow range: Low-High

ⓑ Stroke: 2,5 - 5,0 - 5,5mm




④ P/T Plugs (Optional)

⑤ Actuator




## Function

Frese OPTIMA Compact can be flushed and commissioned before the actuator is installed.

The presetting of the dial is user-friendly requiring only a simple flow vs. presetting graph.

Once the flow is set, the actuator can be mounted and the valve ready to operate.

For lowest energy consumption, check the differential pressure at the index valve to set the pump at minimum speed.

## Manual operation

**Motoric actuators**
The actuator can be operated manually with the help of a 3mm hex key.

**Note**
If the operation is performed manually without disconnecting from the power, the supply must be disconnected and then reconnected, whereby the actuator will start the calibration process and correctly adjust itself.

# Frese OPTIMA Compact DN10-DN50 - pressure independent balancing & control valve

## Operation principle

The innovative design of Frese OPTIMA Compact features a modulating control component that retains 100% authority at all times.

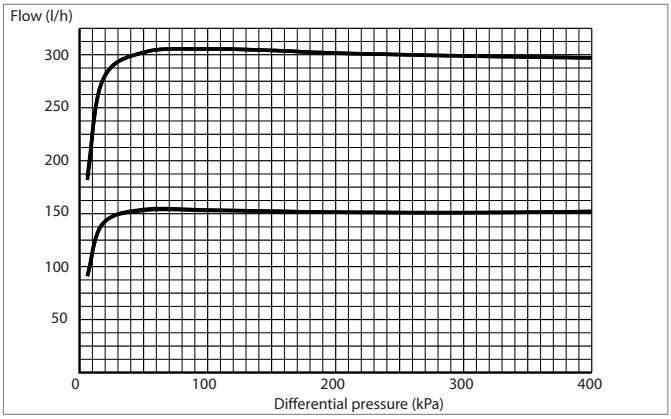
With the Frese OPTIMA Compact, there are two independent movements for the presetting and the modulating function. During presetting, the inlet area moves radially without interfering with the length of the stroke. During modulating, the inlet area moves axial taking advantage of the full stroke.

Whilst the control component provides proportional modulation irrespective of the preset flow, the automatic balancing guarantees that the flow will never exceed the maximum preset flow.

Regardless of pressure fluctuations in the system, the maximum flow is kept constant up to a maximum differential pressure of 400kPa.

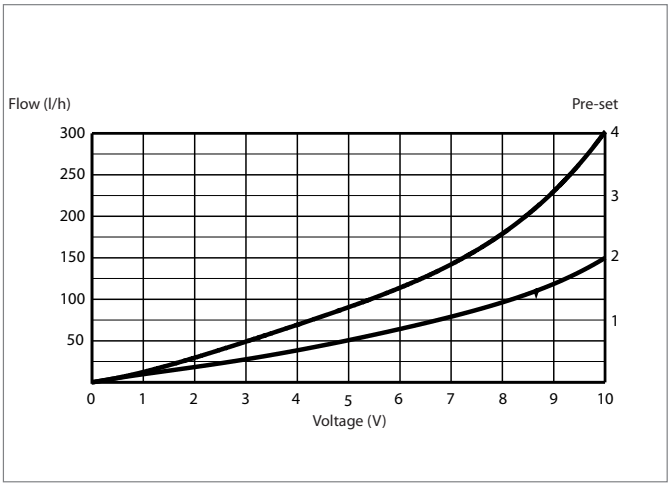
## Flow rate vs. Differential Pressure

**(Preset flow: 300 l/h, 150 l/h)**



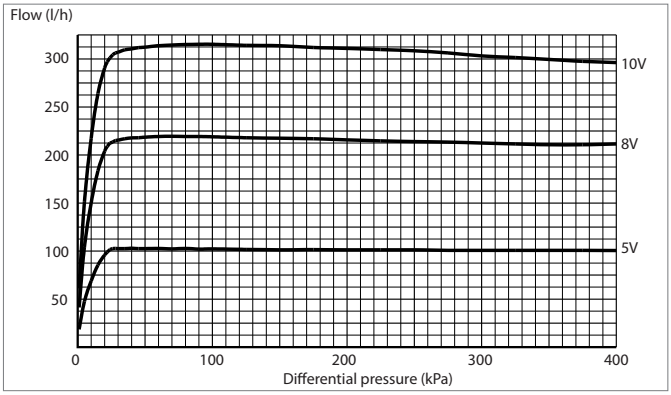

## Flow rate vs. Voltage

**(Preset flow: 300 l/h, 150 l/h)**




## Flow rate vs. Differential Pressure

**(Voltage: 10V, 8V, 5V)**



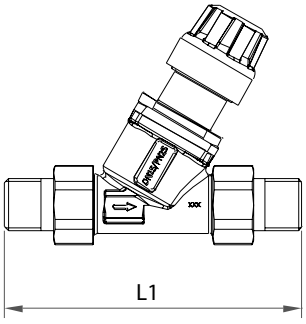
# Frese OPTIMA Compact DN10-DN50
# - pressure independent balancing & control valve

## Technical data

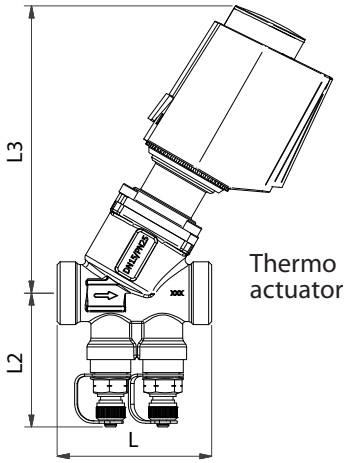
**Valve housing:**
- **DN10-15-20-25-32** DZR Brass
- **DN40-50** Ductile Iron

**DP controller:** PPS 40% glass
**Spring:** Stainless steel
**Diaphragm:** HNBR
**O-rings:** EPDM
**Pressure class:** PN25
**Max. differential pressure:** 400 kPa
**Medium temperature range:** 0°C to 120°C
**Thread** ISO 228

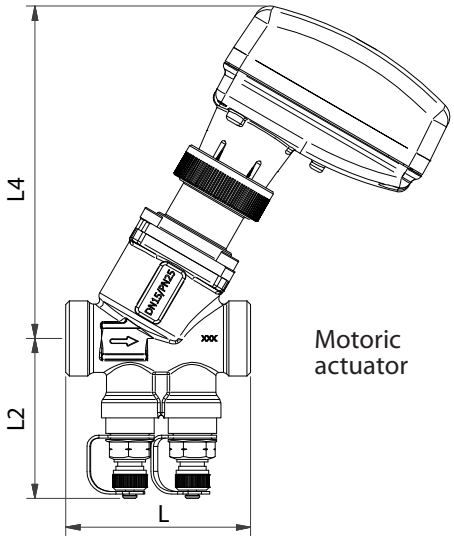
The pipe system shall be properly ventilated to avoid risk of air pockets. Glycolic mixtures up to 50% are applicable (both ethylene and propylene).
Frese A/S can accept no responsibility if another actuator is used instead of the Frese actuator



M/M with couplings



Thermo actuator



Motoric actuator

## Dimension & Weight

| Valve Size | | DN10 | | DN15 | | DN20 | | DN25 | | DN32 | | DN40 | DN50 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Thread | | M/M G 1/2 | F/F G 3/8 | M/M G 3/4 | F/F G 1/2 | M/M G 1 | F/F G 3/4 | M/M G 1-1/4 | F/F G 1 | M/M G 1-1/2 | F/F G 1-1/4 | F/F G 1-1/2 | F/F G 2 |
| Length | L | 65 | - | 65 | 75 | 70 | 79 | 104 | 100 | 104 | 104 | 138 | 138 |
| | L1 | 114 | - | 122 | - | 131 | - | - | - | - | - | - | - |
| | L2 | 57 | 57 | 57 | 57 | 57 | 57 | 63 | 63 | 68 | 68 | 71 | 77 |
| | L3 | 121 | 121 | 121 | 121 | 121 | 121 | 139 | 139 | 139 | 139 | - | - |
| | L4 | 117 | 117 | 117 | 117 | 117 | 117 | 135 | 135 | 135 | 135 | 304 | 304 |
| Weight kg | Basic | 0.36 | - | 0.38 | 0.42 | 0.40 | 0.45 | 1.02 | 1.04 | 1.17 | 1.17 | - | - |
| | P/T plugs | 0.45 | - | 0.47 | 0.52 | 0.50 | 0.54 | 1.12 | 1.14 | 1.27 | 1.27 | 3.28 | 3.71 |

## Flow

| | | DN10 - DN15 - DN20 | | | | DN25 | DN32 | DN40 | DN50 |
|---|---|---|---|---|---|---|---|---|---|
| Type Cartridge | | Low | | High | | - | - | - | - |
| Stroke | mm | 2.5 | 5.0 | 2.5 | 5.0 | 5,5 | 5,5 | 15 | 15 |
| Flow | l/h | 30 - 200 | 65 - 370 | 100 - 575 | 220 - 1330 | 600-3609 | 550-4001 | 1370-9500 | 1400-11500 |
| | l/s | 0.008-0.056 | 0.018-0.103 | 0.028-0.160 | 0.061-0.369 | 0.167-1.003 | 0.153-1.111 | 0.381-2.639 | 0.389-3.194 |
| | gpm | 0.13 - 0.88 | 0.29 - 1.63 | 0.44 - 2.53 | 0.97 - 5.85 | 2.64-15.89 | 2.42-17.62 | 6.03-41.83 | 6.16-50.63 |

# Frese OPTIMA Compact DN10-DN50
# - pressure independent balancing & control valve

## Technical data actuators DN 10-15-20-25-32

**Characteristics:** Thermo actuators, normally closed
**Protection class:** IP 54 to EN 60529
**Frequency:** 50/60 Hz
**Control signal:** 0-10V AC-DC or On/Off
**Actuating force:** 100 N
**Stroke:** 2.5 - 5.0 - 5.5 mm
**Running time:** 120 s 0-10V/180 s On/Off
**Ambient operating conditions:** 0°C to 60°C
**Cable length:** 1.0 m
**Weight:** 100 g

| | |
|---|---|
| On/Off actuator 2.5 mm stroke, 24V AC-DC/ On/Off 180s | 48-5525 |
| On/Off actuator 2.5 mm stroke 230V AC/ On/Off 180s | 48-5526 |
| On/Off actuator 5.0-5.5 mm stroke, 24V AC-DC/ On/Off 180s | 48-5527 |
| On/Off actuator 5.0-5.5 mm stroke 230V AC/ On/Off 180s | 48-5528 |
| Modulating actuator 2.5-5.0-5.5 mm stroke 24V AC/0-10V DC 30 s/min | 48-5529 |

**Characteristics:** Electrical, modulating
**Protection class:** IP 43 to EN 60529
**Frequency:** 50/60 Hz
**Control signal:** 0-10V DC or 3 position
**Actuating force:** 120 N
**Stroke max:** 5.5 mm (Dip switch setting 2.5-5.0-5.5mm)
**Running time 5.5 mm:** 75 s 0-10V / 150 s 3-pos
**Ambient operating conditions:** +1°C to 50°C
**Cable length:** 1.5 m
**Weight:** 215 g

| | |
|---|---|
| Modulating actuator 5.0 - 5.5 mm, 24V AC-DC/ 0-10V DC/ 8 s/mm | 53-1180 |
| Modulating actuator 2.5 - 5.0 - 5.5 mm, 24 V AC/ 3 pos / 13 s/mm | 53-1181 |
| Modulating actuator 2.5 - 5.0 - 5.5 mm, 230 V AC/ 3 pos. / 13 s/mm | 53-1182 |
| Modulating actuator 2.5 mm, 24V AC-DC/ 0-10V DC/ 8 s/mm | 53-1183 |

## Technical data actuator DN 40-50
## - actuator included with the valve

**Characteristics:** Electrical, modulating, normally closed
**Protection class:** IP 54 to EN 60529
**Frequency:** 50/60 Hz
**Supply voltage:** 24V AC
**Control signal:** 0-10V DC or 3 position
**Actuating force:** 400 N
**Stroke max:** 32 mm, selfcalibrating
**Running time:** 60 s
**Ambient operating conditions:** -10°C to 50°C
**Manual operation:** Manual handle
**Cable:** Not included
**Weight:** 1.80 kg

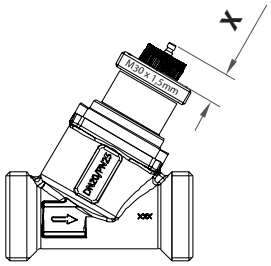
# Frese OPTIMA Compact DN10-DN50
# - pressure independent balancing & control valve

## Actuator requirements DN 10-15-20-25-32

Dimension "X" in closed position
2.5 mm stroke = 11.4 mm
5.0 mm stroke = 9.3 mm
5.5 mm stroke = 8.8 mm

Actuator minimum force: 100N

Actuator connection: M30 x 1,5mm




## Combination matrix: Frese OPTIMA Compact DN10-15-20-25-32 / Actuators

Frese OPTIMA Compact can be combined with both Thermo actuators and Motoric actuators.

The design of the valve, combined with the Frese actuator, produces a perfect control characteristic that utilises the full control range of the system.

| | | | | | Thermo Actuators | | | | | Motoric Actuators | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | |
| | | | | | On/Off | | | | 0.....10V | 0.....10V | | 3-pos | |
| Male/Male ISO 228 | Type | Stroke | Flow l/h | Dim | 24 V 2,5mm | 230V 2,5mm | 24V 5,0 - 5,5mm | 230V 5,0 - 5,5mm | 24V 2,5 - 5,0 - 5,5 mm | 24V 2,5 mm | 24V 5,0 - 5,5mm | 24V | 230V |
| | DN10 M/M LOW 2.5 | 2.5 | 30-200 | DN10 | • | • | | | • | • | | • | • |
| | DN10 M/M LOW 5.0 | 5.0 | 65-370 | DN10 | | | • | • | • | | • | • | • |
| | DN15 M/M LOW 2.5 | 2.5 | 30-200 | DN15 | • | • | | | • | • | | • | • |
| | DN15 M/M LOW 5.0 | 5.0 | 65-370 | DN15 | | | • | • | • | | • | • | • |
| | DN15 M/M HIGH 2.5 | 2.5 | 100-575 | DN15 | • | • | | | • | • | | • | • |
| | DN20 M/M HIGH 2.5 | 2.5 | 100-575 | DN20 | • | • | | | • | • | | • | • |
| | DN20 M/M HIGH 5.0 | 5.0 | 220-1330 | DN20 | | | • | • | • | | • | • | • |
| | DN25 M/M 5.5 | 5.5 | 600-3609 | DN25 | | | • | • | • | | • | • | • |
| | DN32 M/M 5.5 | 5.5 | 550-4001 | DN32 | | | • | • | • | | • | • | • |
| Female/Female ISO 228 | Type | Stroke | Flow l/h | Dim | | | | | | | | | |
| | DN15 F/F LOW 2.5 | 2.5 | 30-200 | DN15 | • | • | | | • | • | | • | • |
| | DN15 F/F LOW 5.0 | 5.0 | 65-370 | DN15 | | | • | • | • | | • | • | • |
| | DN15 F/F HIGH 2.5 | 2.5 | 100-575 | DN15 | • | • | | | • | • | | • | • |
| | DN20 F/F HIGH 2.5 | 2.5 | 100-575 | DN20 | • | • | | | • | • | | • | • |
| | DN20 F/F HIGH 5.0 | 5.0 | 220-1330 | DN20 | | | • | • | • | | • | • | • |
| | DN25 F/F 5.5 | 5.5 | 600-3609 | DN25 | | | • | • | • | | • | • | • |
| | DN32 F/F 5.5 | 5.5 | 550-4001 | DN32 | | | • | • | • | | • | • | • |

# Frese OPTIMA Compact DN10-DN50
# - pressure independent balancing & control valve

## Types and operation data actuator DN40-DN50

| Type | Valve Dimension | Function | Supply voltage | Power Consumtion |
|---|---|---|---|---|
| Type-01 | DN40-DN50 | 0-10 V / 3-pos | 24 V AC +25%/- 35% | 6 VA |

## Product programme

| Size | Cartridge | Flow l/h | M/M | M/M PT plugs | F/F | F/F PT plugs |
|---|---|---|---|---|---|---|
| DN10 | Low 2.5 mm | 30-200 | 53-1300 | 53-1320 | - | - |
| | Low 5.0 mm | 65-370 | 53-1309 | 53-1329 | - | - |
| DN15 | Low 2.5 mm | 30-200 | 53-1302 | 53-1322 | 53-1342 | 53-1362 |
| | Low 5.0 mm | 65-370 | 53-1310 | 53-1330 | 53-1350 | 53-1370 |
| | High 2.5 mm | 100-575 | 53-1304 | 53-1324 | 53-1344 | 53-1364 |
| DN20 | High 2.5 mm | 100-575 | 53-1312 | 53-1332 | 53-1352 | 53-1372 |
| | High 5.0 mm | 220-1330 | 53-1308 | 53-1328 | 53-1348 | 53-1368 |
| DN25 | 5.5 mm | 600-3609 | 53-1313 | 53-1333 | 53-1353 | 53-1373 |
| DN32 | 5.5 mm | 550-4001 | 53-1314 | 53-1334 | 53-1354 | 53-1374 |
| DN40 | 15 mm | 1370-9500 | - | - | - | 53-1375-01 |
| DN50 | 15 mm | 1400-11500 | - | - | - | 53-1376-01 |

## Accessories

### Couplings 2 pcs, incl gasket

**Material:** DZR Brass, CW602N

| Size | Thread | Item no. |
|---|---|---|
| DN10 | G 1/2 - R3/8 | 43-1330 |
| DN15 | G 3/4 - R1/2 | 43-2330 |
| DN20 | G 1 - R3/4 | 43-3330 |

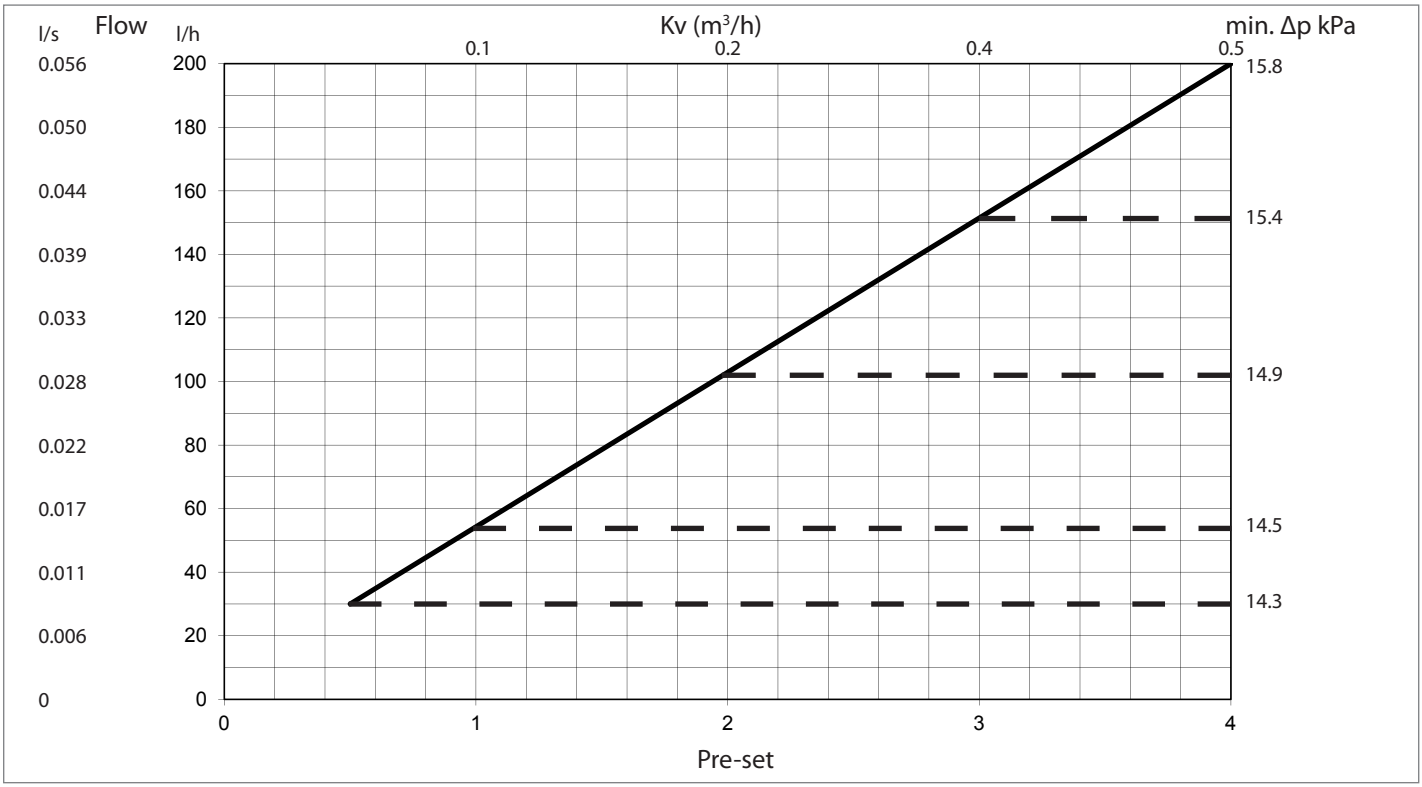
### Insulation

**Material:** EPS, Max temperature 80°C

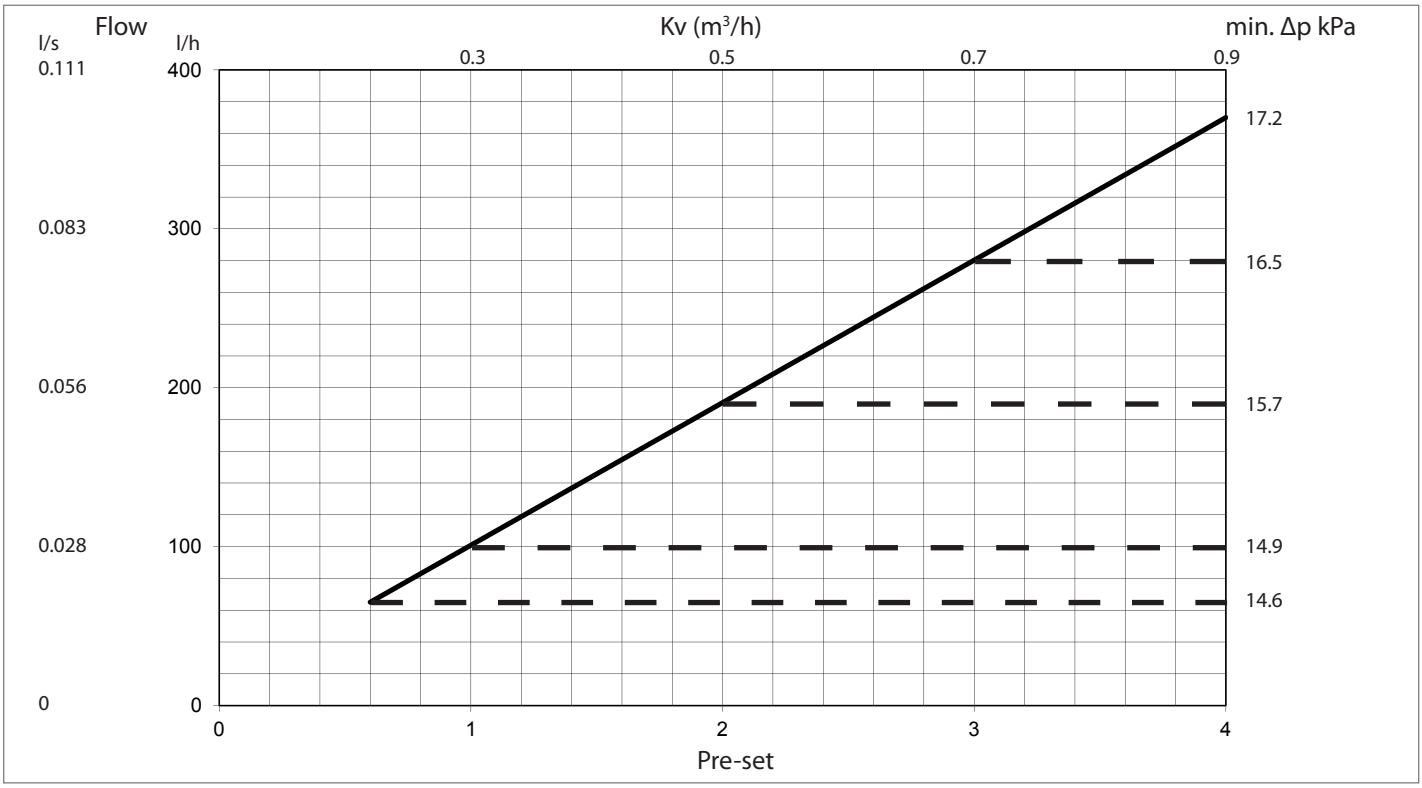
| Size | |
|---|---|
| DN10-15-20 | 38-0855 |

# Frese OPTIMA Compact DN10-DN50
# - pressure independent balancing & control valve

## Frese OPTIMA Compact Low 2.5 DN10/15

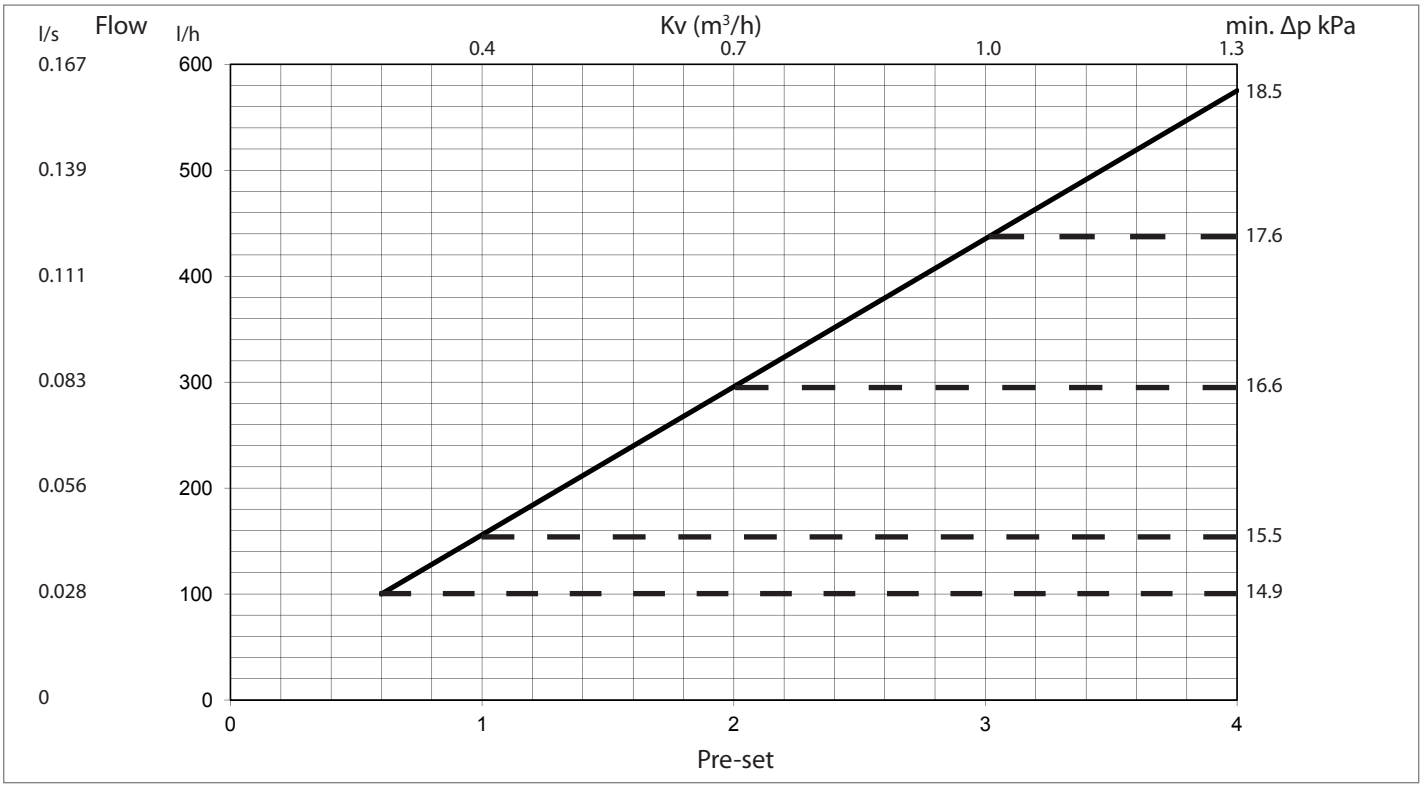



## Frese OPTIMA Compact Low 5.0 DN10/15

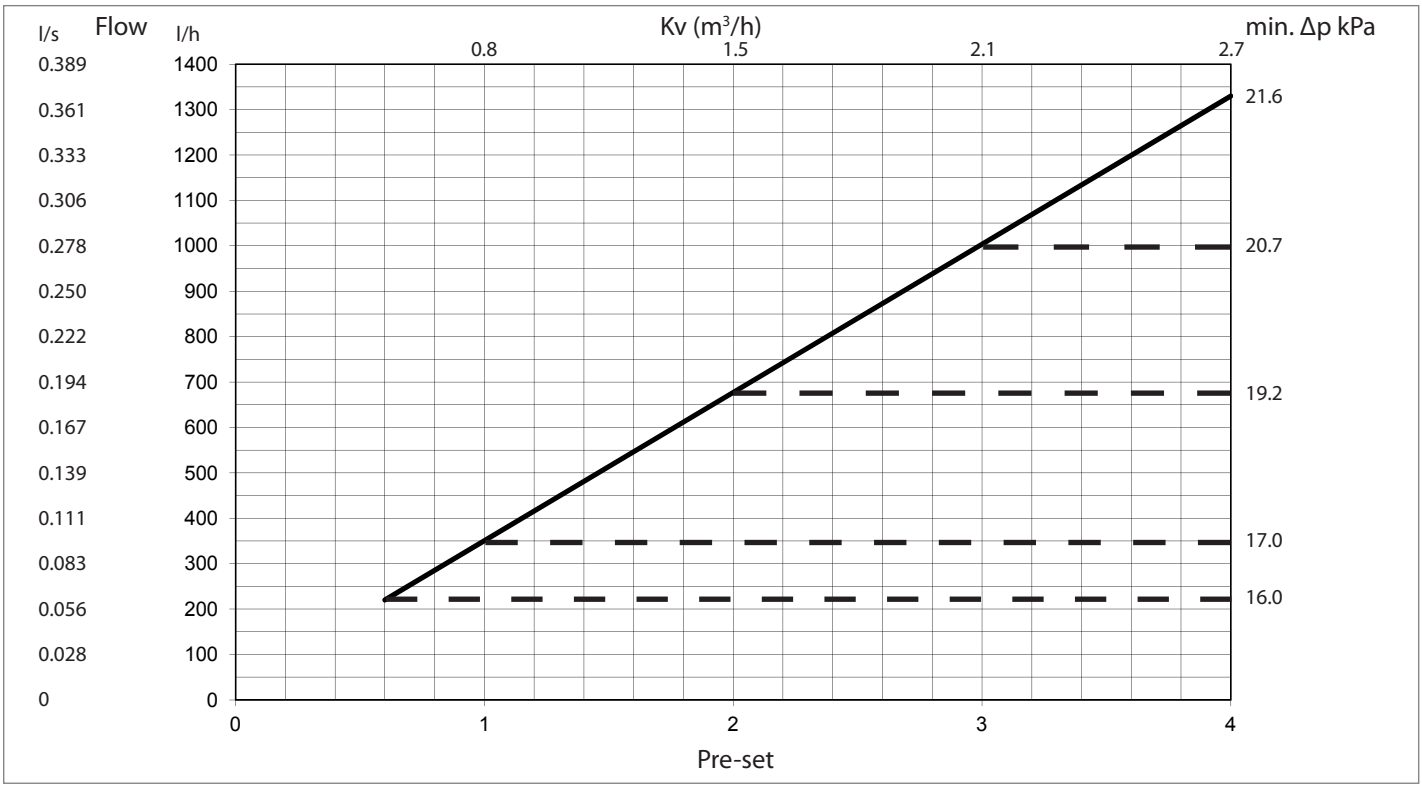


# Frese OPTIMA Compact DN10-DN50
# - pressure independent balancing & control valve

## Frese OPTIMA Compact High 2.5 DN15/20

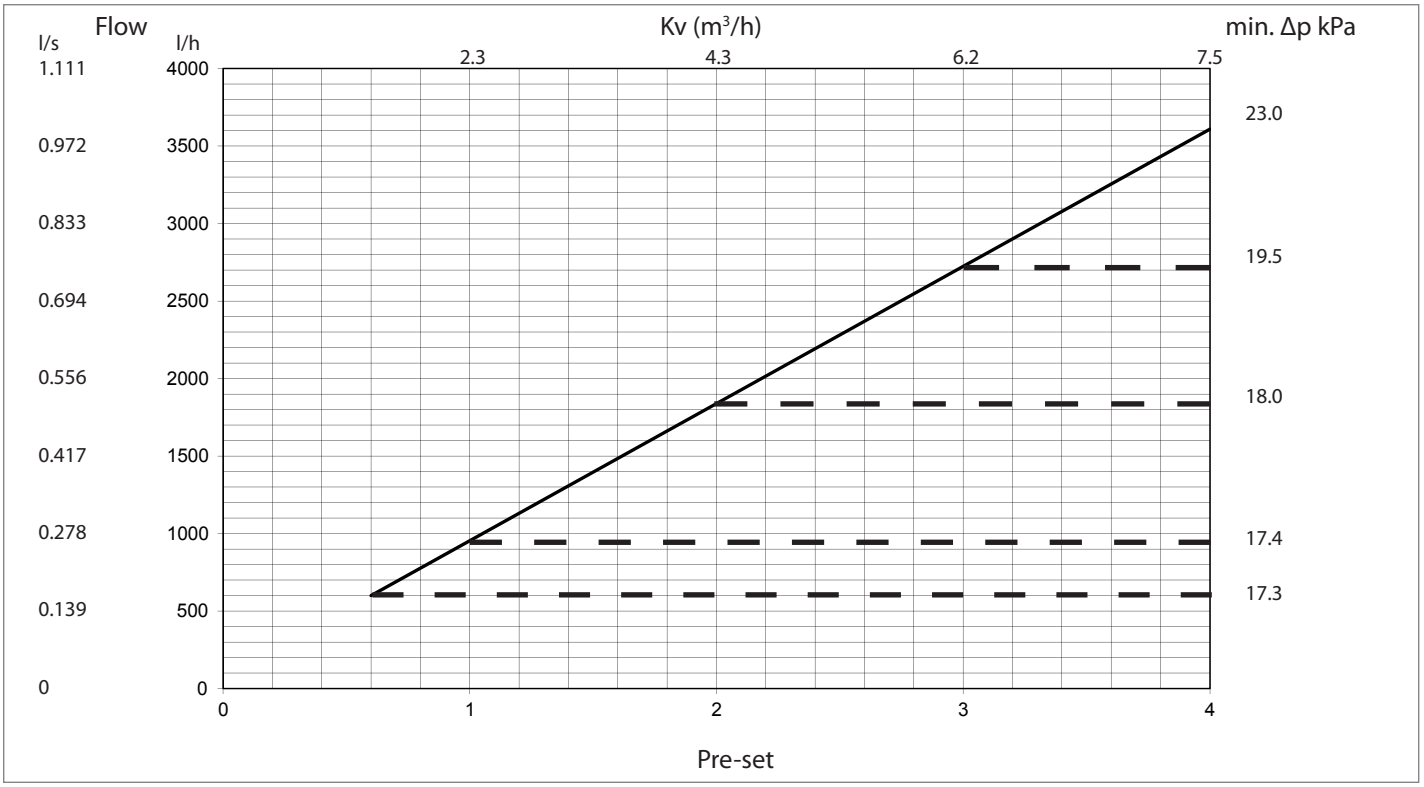



## Frese OPTIMA Compact High 5.0 DN20

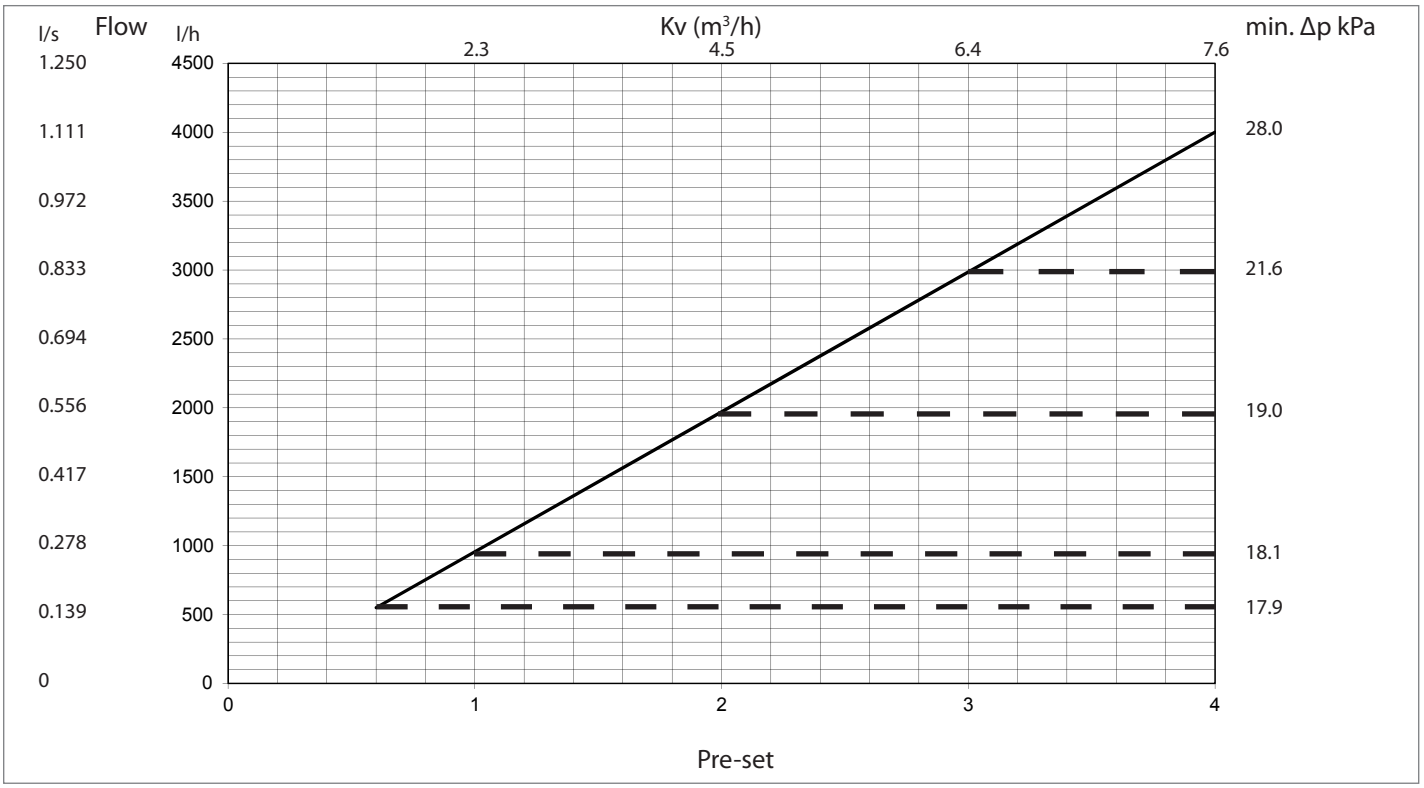


# Frese OPTIMA Compact DN10-DN50
# - pressure independent balancing & control valve

## Frese OPTIMA Compact DN25




## Frese OPTIMA Compact DN32



# Frese OPTIMA Compact DN10-DN50
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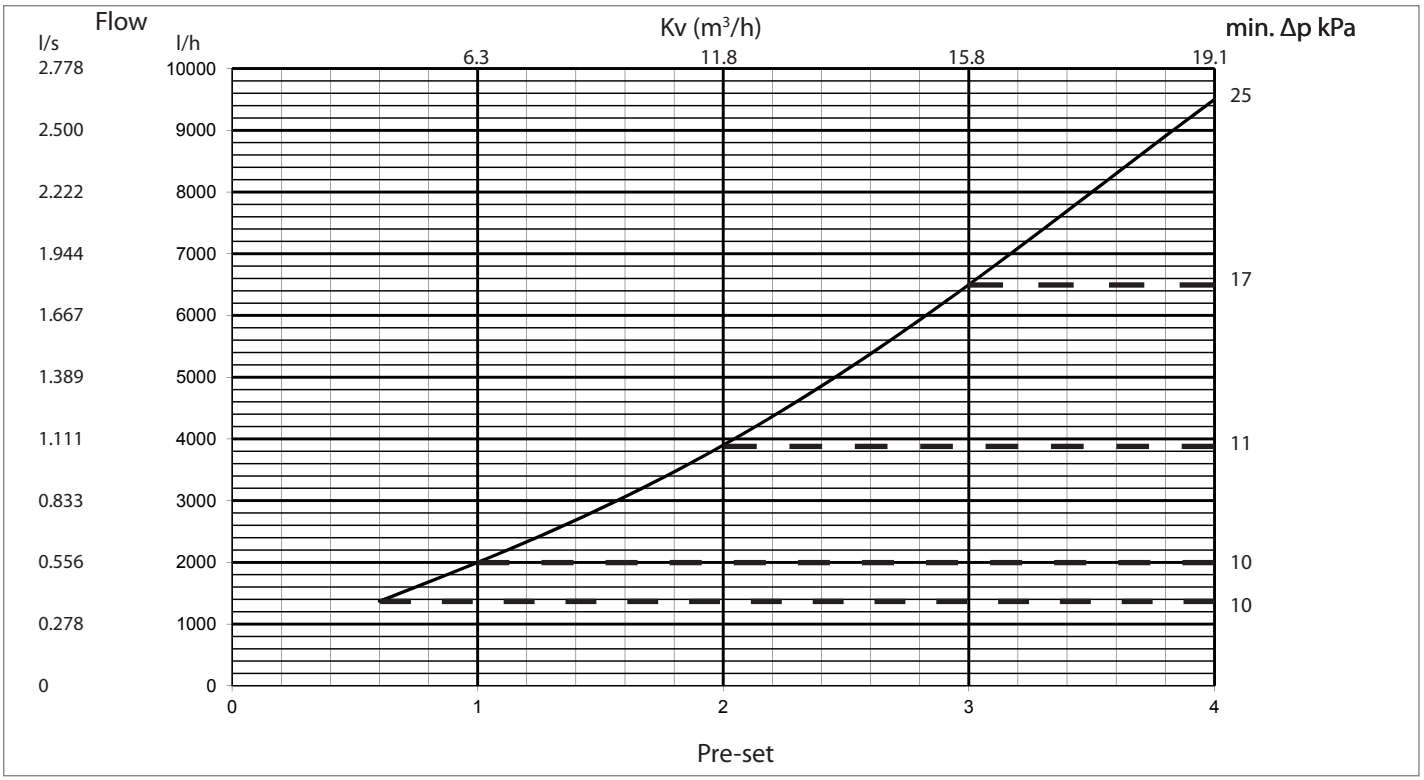
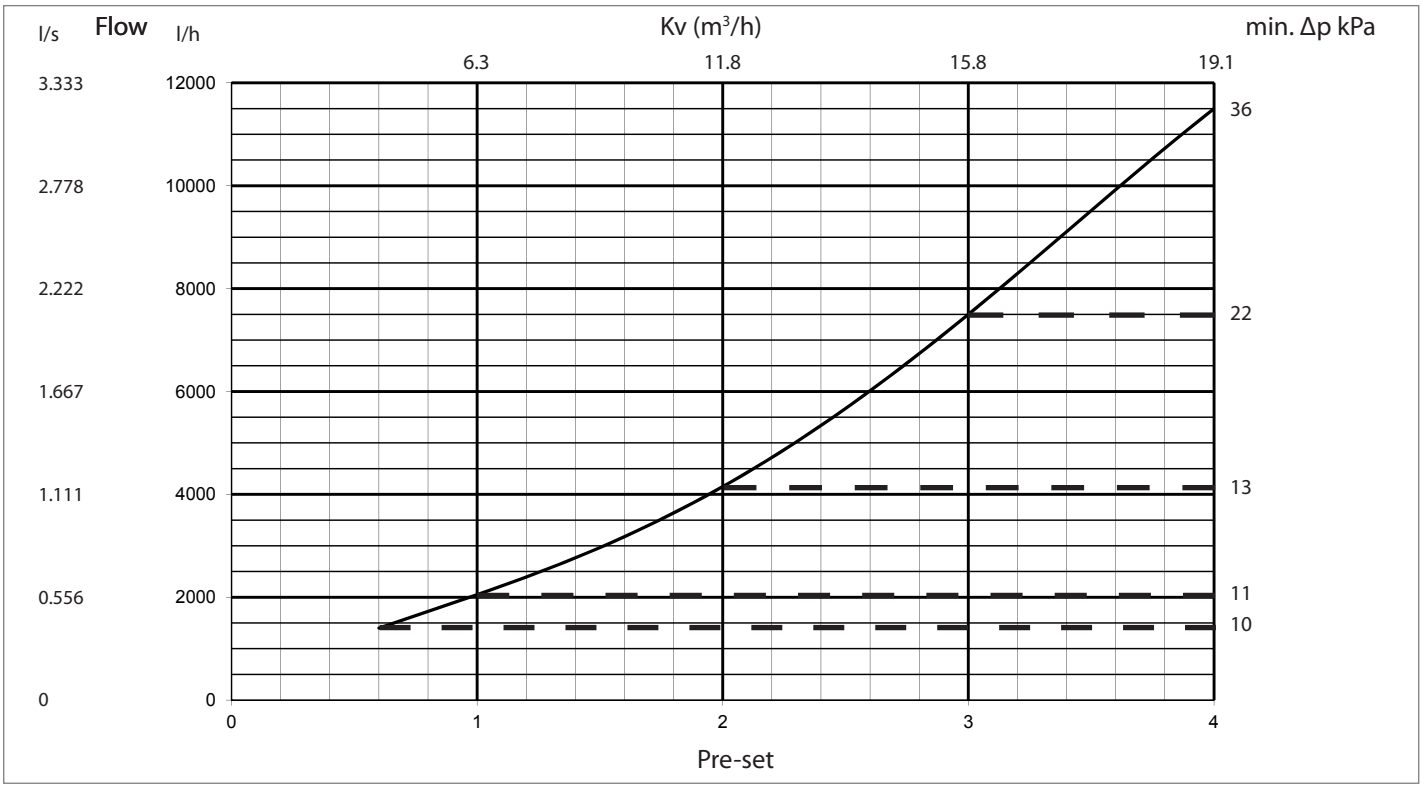
## Frese OPTIMA Compact DN40




## Frese OPTIMA Compact DN50



# Frese OPTIMA Compact DN10-DN50
# - pressure independent balancing & control valve

## Setting and Flow

| | OPTIMA Compact Low 2,5 DN10/15 | | | OPTIMA Compact Low 5,0 DN10/15 | | | OPTIMA Compact High 2,5 DN15/20 | | |
|---|---|---|---|---|---|---|---|---|---|
| **Pre-set** | **Flow l/h** | **Flow l/s** | **Flow gpm** | **Flow l/h** | **Flow l/s** | **Flow gpm** | **Flow l/h** | **Flow l/s** | **Flow gpm** |
| 0.5 | 30 | 0.008 | 0.13 | | | | | | |
| 0.6 | 35 | 0.010 | 0.15 | 65 | 0.018 | 0.29 | 100 | 0.028 | 0.44 |
| 0.8 | 45 | 0.012 | 0.20 | 83 | 0.023 | 0.37 | 128 | 0.036 | 0.56 |
| 1.0 | 54 | 0.015 | 0.24 | 101 | 0.028 | 0.44 | 156 | 0.043 | 0.69 |
| 1.2 | 64 | 0.018 | 0.28 | 119 | 0.033 | 0.52 | 184 | 0.051 | 0.81 |
| 1.4 | 74 | 0.020 | 0.32 | 137 | 0.038 | 0.60 | 212 | 0.059 | 0.93 |
| 1.6 | 83 | 0.023 | 0.37 | 155 | 0.043 | 0.68 | 240 | 0.067 | 1.06 |
| 1.8 | 93 | 0.026 | 0.41 | 173 | 0.048 | 0.76 | 268 | 0.074 | 1.18 |
| 2.0 | 103 | 0.029 | 0.45 | 191 | 0.053 | 0.84 | 296 | 0.082 | 1.30 |
| 2.2 | 113 | 0.031 | 0.50 | 209 | 0.058 | 0.92 | 324 | 0.090 | 1.42 |
| 2.4 | 122 | 0.034 | 0.54 | 226 | 0.063 | 1.00 | 351 | 0.098 | 1.55 |
| 2.6 | 132 | 0.037 | 0.58 | 244 | 0.068 | 1.08 | 379 | 0.105 | 1.67 |
| 2.8 | 142 | 0.039 | 0.62 | 262 | 0.073 | 1.15 | 407 | 0.113 | 1.79 |
| 3.0 | 151 | 0.042 | 0.67 | 280 | 0.078 | 1.23 | 435 | 0.121 | 1.92 |
| 3.2 | 161 | 0.045 | 0.71 | 298 | 0.083 | 1.31 | 463 | 0.129 | 2.04 |
| 3.4 | 171 | 0.047 | 0.75 | 316 | 0.088 | 1.39 | 491 | 0.136 | 2.16 |
| 3.6 | 181 | 0.050 | 0.79 | 334 | 0.093 | 1.47 | 519 | 0.144 | 2.29 |
| 3.8 | 190 | 0.053 | 0.84 | 352 | 0.098 | 1.55 | 547 | 0.152 | 2.41 |
| 4.0 | 200 | 0.056 | 0.88 | 370 | 0.103 | 1.63 | 575 | 0.160 | 2.53 |

| | OPTIMA Compact High 5,0 DN20 | | | OPTIMA Compact DN25 | | | OPTIMA Compact DN32 | | |
|---|---|---|---|---|---|---|---|---|---|
| **Pre-set** | **Flow l/h** | **Flow l/s** | **Flow gpm** | **Flow l/h** | **Flow l/s** | **Flow gpm** | **Flow l/h** | **Flow l/s** | **Flow gpm** |
| 0.6 | 220 | 0.061 | 0.97 | 600 | 0.167 | 2.64 | 550 | 0.153 | 2.42 |
| 0.8 | 285 | 0.079 | 1.26 | 777 | 0.216 | 3.42 | 753 | 0.209 | 3.32 |
| 1.0 | 351 | 0.097 | 1.54 | 954 | 0.265 | 4.20 | 956 | 0.266 | 4.21 |
| 1.2 | 416 | 0.116 | 1.83 | 1131 | 0.314 | 4.98 | 1159 | 0.322 | 5.10 |
| 1.4 | 481 | 0.134 | 2.12 | 1308 | 0.363 | 5.76 | 1362 | 0.378 | 6.00 |
| 1.6 | 546 | 0.152 | 2.41 | 1485 | 0.413 | 6.54 | 1565 | 0.435 | 6.89 |
| 1.8 | 612 | 0.170 | 2.69 | 1662 | 0.462 | 7.32 | 1768 | 0.491 | 7.79 |
| 2.0 | 677 | 0.188 | 2.98 | 1839 | 0.511 | 8.10 | 1971 | 0.548 | 8.68 |
| 2.2 | 742 | 0.206 | 3.27 | 2016 | 0.560 | 8.88 | 2174 | 0.604 | 9.57 |
| 2.4 | 808 | 0.224 | 3.56 | 2193 | 0.609 | 9.66 | 2377 | 0.660 | 10.47 |
| 2.6 | 873 | 0.242 | 3.84 | 2370 | 0.658 | 10.44 | 2580 | 0.717 | 11.36 |
| 2.8 | 938 | 0.261 | 4.13 | 2547 | 0.708 | 11.22 | 2783 | 0.773 | 12.26 |
| 3.0 | 1004 | 0.279 | 4.42 | 2724 | 0.757 | 12.00 | 2986 | 0.829 | 13.15 |
| 3.2 | 1069 | 0.297 | 4.71 | 2901 | 0.806 | 12.78 | 3189 | 0.886 | 14.04 |
| 3.4 | 1134 | 0.315 | 4.99 | 3078 | 0.855 | 13.55 | 3392 | 0.942 | 14.94 |
| 3.6 | 1199 | 0.333 | 5.28 | 3255 | 0.904 | 14.33 | 3595 | 0.999 | 15.83 |
| 3.8 | 1265 | 0.351 | 5.57 | 3432 | 0.953 | 15.11 | 3798 | 1.055 | 16.73 |
| 4.0 | 1330 | 0.369 | 5.85 | 3609 | 1.003 | 15.89 | 4001 | 1.111 | 17.62 |

| | OPTIMA Compact DN40 | | | OPTIMA Compact DN50 | | |
|---|---|---|---|---|---|---|
| **Pre-set** | **Flow l/h** | **Flow l/s** | **Flow gpm** | **Flow l/h** | **Flow l/s** | **Flow gpm** |
| 0.6 | 1370 | 0.381 | 6.03 | 1400 | 0.389 | 6.16 |
| 0.8 | 1681 | 0.467 | 7.40 | 1724 | 0.479 | 7.59 |
| 1.0 | 2000 | 0.556 | 8.81 | 2050 | 0.569 | 9.03 |
| 1.2 | 2333 | 0.648 | 10.27 | 2393 | 0.665 | 10.54 |
| 1.4 | 2686 | 0.746 | 11.83 | 2766 | 0.768 | 12.18 |
| 1.6 | 3063 | 0.851 | 13.48 | 3178 | 0.883 | 13.99 |
| 1.8 | 3467 | 0.963 | 15.26 | 3638 | 1.011 | 16.02 |
| 2.0 | 3900 | 1.083 | 17.17 | 4150 | 1.153 | 18.27 |
| 2.2 | 4364 | 1.212 | 19.21 | 4717 | 1.310 | 20.77 |
| 2.4 | 4857 | 1.349 | 21.39 | 5339 | 1.483 | 23.51 |
| 2.6 | 5380 | 1.494 | 23.69 | 6014 | 1.671 | 26.48 |
| 2.8 | 5928 | 1.647 | 26.10 | 6737 | 1.871 | 29.66 |
| 3.0 | 6500 | 1.806 | 28.62 | 7500 | 2.083 | 33.02 |
| 3.2 | 7090 | 1.969 | 31.22 | 8295 | 2.304 | 36.52 |
| 3.4 | 7692 | 2.137 | 33.87 | 9108 | 2.530 | 40.10 |
| 3.6 | 8300 | 2.306 | 36.54 | 9925 | 2.757 | 43.70 |
| 3.8 | 8906 | 2.474 | 39.21 | 10729 | 2.980 | 47.24 |
| 4.0 | 9500 | 2.639 | 41.83 | 11500 | 3.194 | 50.63 |

# Frese OPTIMA Compact DN10-DN50
# - pressure independent balancing & control valve

## Documentation formula

| Valve ID (own choice) | Valve type | Dimension | Pre-setting | Verified Δp [kPa] | Min. Δp (see flow rate graph) [kPa] | Flow |
|---|---|---|---|---|---|---|
| | | | | | | |
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| Pump type | Regulation mode | Set point |
|---|---|---|
| Installation | | |
| Signature | Date | |

## Text for technical specifications

The length of the modulating stroke shall be independent of flow setting.
The modulation and flow setting shall be one combined unit with a linear modulating motion and a rotational flow setting motion.
The valve characterization shall not be changed at different flow settings.
The combined flow setting and modulating control unit shall be pressure independent.
The Pressure Independent Control Valve shall contain a combined flow setting, differential pressure control and modulating bonnet assembly.
The valve housing shall be hot stamped DZR brass DN10-32 and ductile iron DN40-50.
The valve shall have a spring made of stainless steel, a Diaphragm made of HNBR and O-rings made of EPDM.
The valve housing shall be PN25 rated and suitable for 120°C.
The valve shall have a thread according to ISO 228.
The valve shall have a maximum operating differential pressure of 400 kPa (4 Bar)
The valve shall have an external adjustable analogue step less presetting scale from minimum to maximum flow.
P/T plugs shall be available as an option.
The valve shall have a leakage rate at maximum 0,01% of max rated volumetric flow and comply to EN1349 Class IV.

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