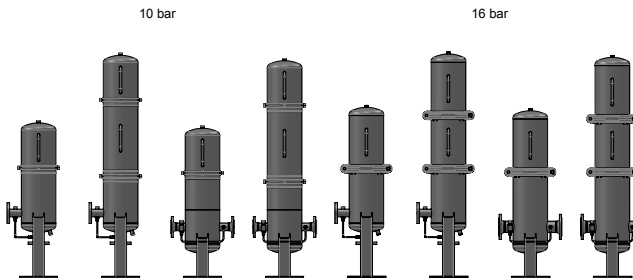


## Process Inline Filter PLF1



| Specifications      |                       |
|---------------------|-----------------------|
| Nominal size:       | DN 50 – DN 150        |
| $Q_{s \max}$ :      | 200 m <sup>3</sup> /h |
| $P_{s \max}$ :      | 16 bar                |
| Filtration ratings: | 1 – 90 µm             |

### 1. GENERAL

#### Product description

- Continuous separation of solid particles from low viscosity fluids such as:
  - Water
  - Cooling lubricants
  - Washing media
  - Processing oils
  - Scrubber water

#### Filter element technology

- Filter element type "Processmicron®":
  - HF - HighFlow 6" or 9"
  - HLC - HighLoadCascade 9"
- Filter material: Polyester (PES) or polypropylene (PP)
- Filter element version: pleated or spun spray
- Filtration ratings: 1 to 90 µm
- Filter element length: 1-stage or 2-stage variant 20" per filter element
- Sealing material: FPM, NBR, EPDM or silicone

#### Product advantages

- Very large filter area per filter element
- Compact design with high flow rates
- Superior handling compared to commonly available disposable filter elements
- Protection of the clean side during element change thanks to fixed support tube
- Modular design gives optimal flexibility in catering to every application
- Low pressure drops due to large cross sections and filter areas
- Short maintenance times
- High contamination retention capacity
- High media compatibility
- Fully incinerable

#### Technical data, filter housing

| Size    | Mounting dimension   | Materials Filter housing <sup>1)</sup>                                   | Seal material   | $P_{s \max}$ [bar]   | $T_{s \max}$ [°C] | Empty weight [kg] | Volume [l] |
|---------|--|--|---|--|-------------------|-------------------|------------|
| 1-stage | <ul style="list-style-type: none"> <li>• DN 50</li> <li>• DN 80</li> </ul>   | <ul style="list-style-type: none"> <li>• Stainless steel – E1</li> </ul> | <ul style="list-style-type: none"> <li>• FPM</li> <li>• EPDM</li> </ul> | <ul style="list-style-type: none"> <li>• 10</li> <li>• 16</li> </ul> | 90                | 60                | 50         |
| 2-stage | <ul style="list-style-type: none"> <li>• DN 100</li> <li>• DN 150</li> </ul> | <ul style="list-style-type: none"> <li>• Stainless steel – E2</li> </ul> | <ul style="list-style-type: none"> <li>• NBR</li> </ul>                 |  |                   | 95                | 90         |

#### Technical data, filter elements

| Length  | Filter materials <sup>2)</sup>   | Filtration ratings [µm]  | Perm. differential pressure at the filter element [bar] |
|---------|--|--|---|
| 1-stage | <ul style="list-style-type: none"> <li>• Polyester (PES) <sup>3)</sup></li> </ul>    | <ul style="list-style-type: none"> <li>• PP = 3 / 5 / 10 / 20 / 30 / 40 / 50 / 70</li> </ul>           | 2.5   |
| 2-stage | <ul style="list-style-type: none"> <li>• Polypropylene (PP) <sup>4)</sup></li> </ul> | <ul style="list-style-type: none"> <li>• PES = 1 / 3 / 5 / 10 / 20 / 30 / 40 / 50 / 70 / 90</li> </ul> |   |

#### Legend

<sup>1)</sup> Materials of filter housing:  
 E1 = stainless steel 1.4301 / 1.4541 or similar (Group 304 / 321)  
 E2 = stainless steel 1.4571 or similar (Group 316)

<sup>2)</sup> Material of end caps:  
 PA = polyamide  
 PP = polypropylene

<sup>3)</sup> Only available in pleated design

<sup>4)</sup> Available in pleated and spun spray design

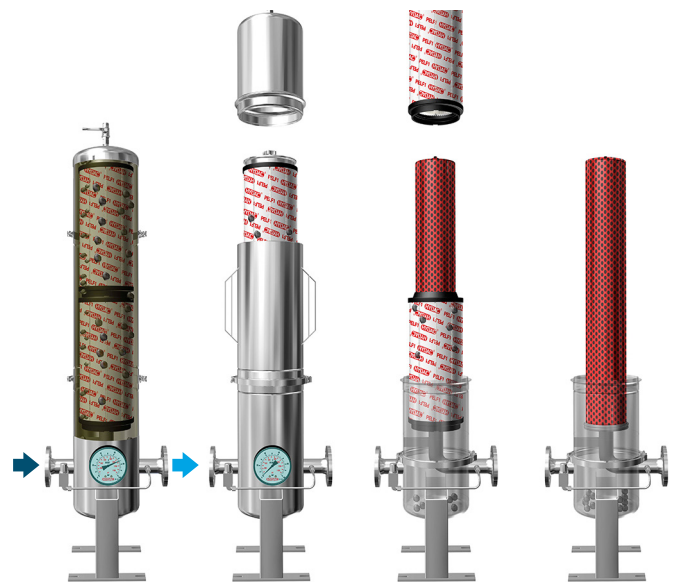
$T_{s \max}$  PES filter element: 90 °C

$T_{s \max}$  PP filter element: 60 °C

## 2. FUNCTION AND SPECIAL FEATURES

### FUNCTIONAL PRINCIPLE

- Flow through the filter element is from the outside to the inside
- Particles collect on the outside of the filter element
- The filter elements should be replaced once the maximum permitted differential pressure is reached



Functional principle

### LOCKING TECHNOLOGY

- V-clamp for 10 bar filter housing
- Clamp connection for 10 bar filter housing or 16 bar filter housing
  - Reduction in installation time when changing the filter element
  - Convenient alignment to user side
  - Sealing materials preferably EPDM or NBR
  - Particularly suitable for use in industrial part washers
- Flange connection for 10 bar or 16 bar filter housing
  - Used for special design requirements (e.g. ASME Design)

| Housing material/<br>$p_s \text{ max}$<br>[bar] | V clamp<br>(2 x M8<br>screws) | Clamp<br>connection<br>(2 x M27<br>screws) | Flange<br>connection<br>(12 x M16<br>screws) |
|---|-------------------------------|--|--|
| 10  | E1                            | • E1                                       | • E1   |
| 16  | –                             | • E2                                       | • E2   |

Locking technology

### REPLACEABLE SUPPORT TUBE (OPTIONAL)

- More flexibility – its modular design allows the filter to be extended to meet individual customer requirements
- Optimal adaptation to the particular application
- Particularly suited to meet the requirements of industrial part washers
- Retroactive optimisation when upgrading the system – doubling of maximum service life



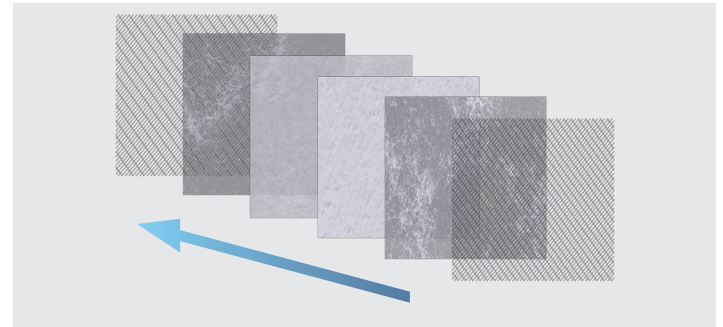
PLF1 with clamp connection and replaceable support tube

### 3. FILTER ELEMENT TECHNOLOGY

All Processmicron® filter elements are fundamentally structured as follows:

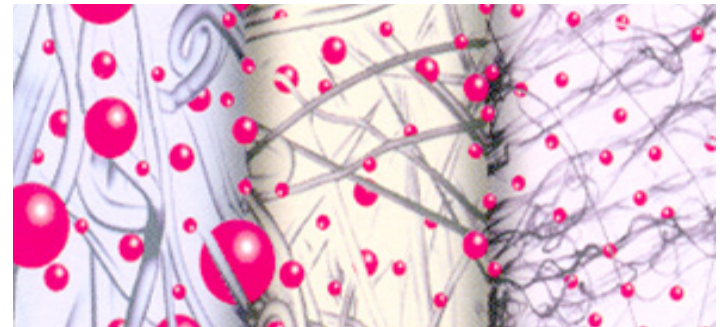
#### Multi-layer filter mat construction

- Robust and high-quality layer structure
  - ➔ Filter layers do not fold over
- High contamination retention
- Low pressure loss



#### Staged (graduated) depth filtration

- High purity in single passage
  - ➔ high storage volume for contamination

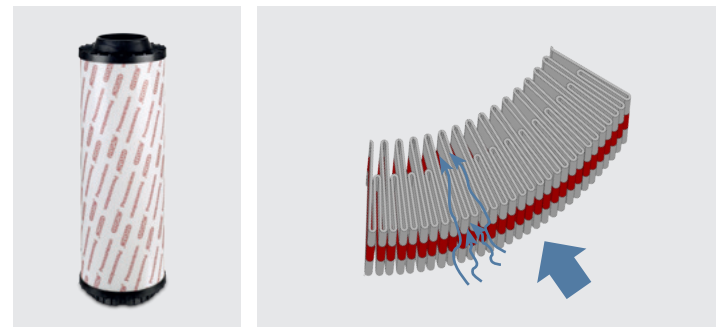


The right filter element for any application:

#### Processmicron® High Flow 6"

##### Working filtration:

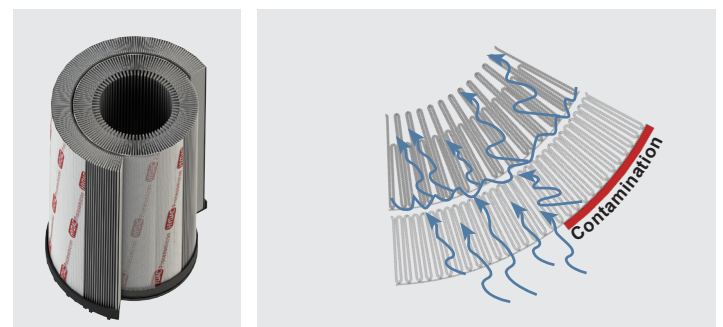
- M-pleat
- Optimized, enlarged upstream area for high polluting loads



#### Processmicron® High Flow 9" HighLoadCascade

##### Comprehensive working filtration:

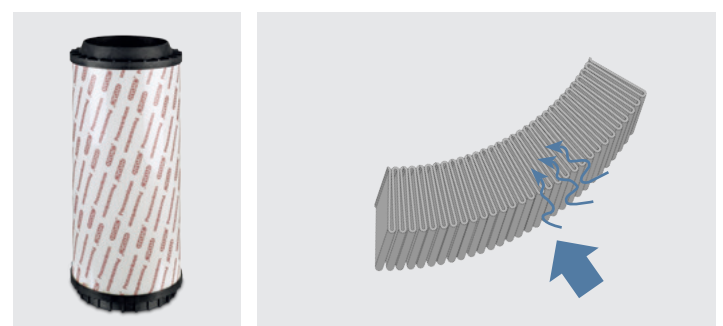
- Combination of parallel pleats (outside) and M-pleats (inside)
- Double security, even with contamination surges, thanks to cascading effect
- Selection of filter layers precisely tailored to the filtration task at hand (outer and inner layers)



#### Processmicron® High Flow 9"

##### Protective filtration:

- Pleated build of filter element (parallel folding)
- High flow rates
- Extreme fold stability through parallel folding at large filter element circumference



## 4. FILTER CALCULATION

### PROTECTIVE FILTER

|                              |   |        |                                  |                         |                                 |
|------------------------------|---|--------|----------------------------------|-------------------------|---------------------------------|
| Purpose                      | <ul style="list-style-type: none"> <li>• Protection of downstream system components</li> <li>• Only in the event of a malfunction of the main filtration stage</li> </ul>             |        |                                  |                         |                                 |
| Filter selection             | Based on the flow rate  |        |                                  |                         |                                 |
| Flow rate per filter element | <table border="1"> <tr> <td>Water:</td> <td>Max. 100 m³/h per filter element</td> </tr> <tr> <td>Coolants/washing media:</td> <td>Max. 50 m³/h per filter element</td> </tr> </table> | Water: | Max. 100 m³/h per filter element | Coolants/washing media: | Max. 50 m³/h per filter element |
| Water:                       | Max. 100 m³/h per filter element  |        |                                  |                         |                                 |
| Coolants/washing media:      | Max. 50 m³/h per filter element   |        |                                  |                         |                                 |
| Position of the filter       | After upstream filter   |        |                                  |                         |                                 |
| Pre-filtration requirements  | Stringent requirements  |        |                                  |                         |                                 |

### WORKING FILTER

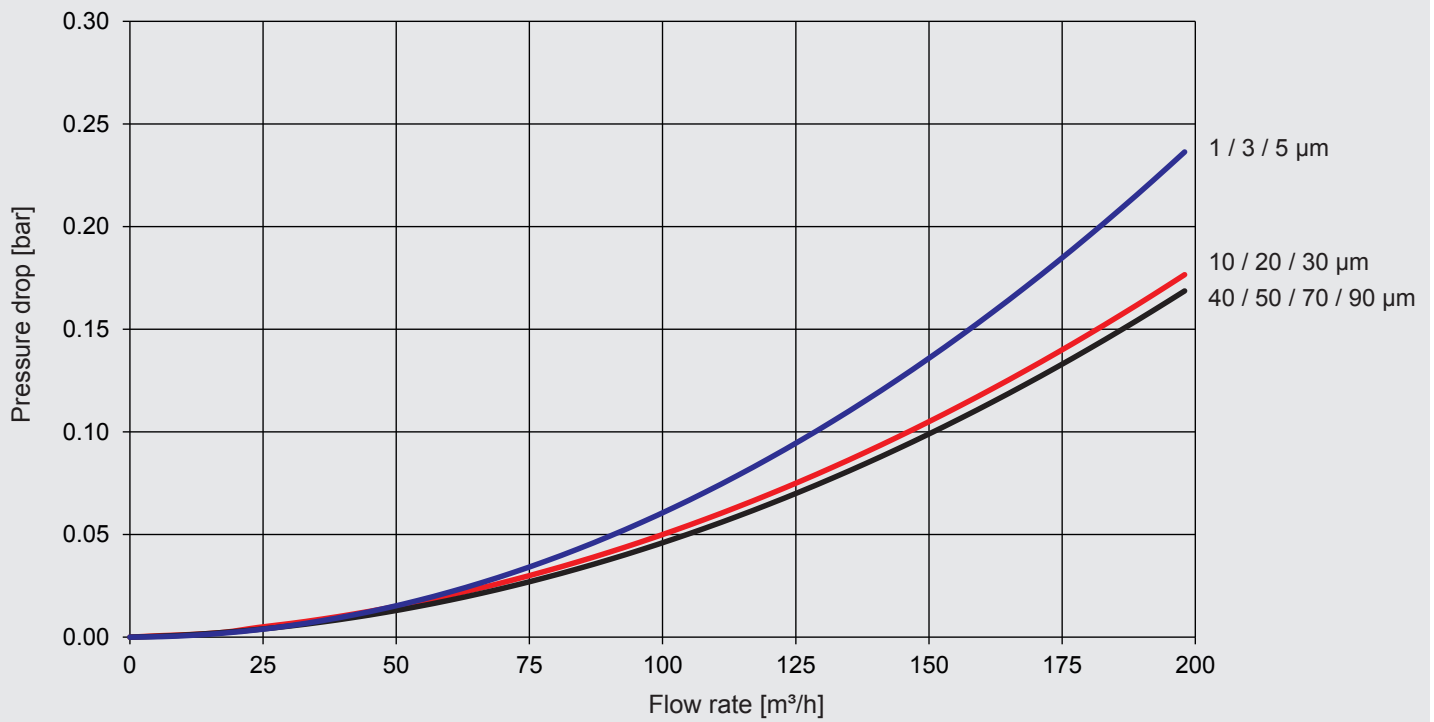
|                              |  |        |                                   |                         |   |
|------------------------------|--|--------|-----------------------------------|-------------------------|---|
| Purpose                      | Main contamination sink in the fluid system  |        |                                   |                         |   |
| Filter selection             | Based on the contaminant load and contamination type   |        |                                   |                         |   |
| Flow rate per filter element | <table border="1"> <tr> <td>Water:</td> <td>Max. 30 m³/h per filter element</td> </tr> <tr> <td>Coolants/washing media:</td> <td>Max. 25 m³/h per filter element</td> </tr> </table>                   | Water: | Max. 30 m³/h per filter element   | Coolants/washing media: | Max. 25 m³/h per filter element                 |
| Water:                       | Max. 30 m³/h per filter element  |        |                                   |                         |   |
| Coolants/washing media:      | Max. 25 m³/h per filter element  |        |                                   |                         |   |
| Position of the filter       | Main filter in the fluid system  |        |                                   |                         |   |
| Pre-filtration requirements  | <table border="1"> <tr> <td>Water:</td> <td>Pre-filtration from 200 to 500 µm</td> </tr> <tr> <td>Coolants/washing media:</td> <td>Coarse filtration approx. 3000 µm is sufficient</td> </tr> </table> | Water: | Pre-filtration from 200 to 500 µm | Coolants/washing media: | Coarse filtration approx. 3000 µm is sufficient |
| Water:                       | Pre-filtration from 200 to 500 µm  |        |                                   |                         |   |
| Coolants/washing media:      | Coarse filtration approx. 3000 µm is sufficient  |        |                                   |                         |   |

## 5. FILTER CONFIGURATION\*

|                                   | Standard   | Optional  |
|-----------------------------------|--|---|
| Flange connections                | DIN  | <ul style="list-style-type: none"> <li>• ASME</li> <li>• JIS</li> </ul>   |
| Seal materials<br>Filter housing  | <ul style="list-style-type: none"> <li>• FPM</li> <li>• Clamp connection preferably with EPDM or NBR</li> </ul>  | <ul style="list-style-type: none"> <li>• NBR</li> <li>• EPDM</li> <li>• Other sealing materials on request</li> </ul>   |
| Seal materials<br>Filter elements | FPM  | <ul style="list-style-type: none"> <li>• NBR</li> <li>• EPDM</li> <li>• Silicone</li> <li>• Other sealing materials on request</li> </ul>   |
| Differential pressure monitoring  | <ul style="list-style-type: none"> <li>• Visual</li> <li>• Visual-electrical</li> <li>• Electrical</li> </ul>  | Pressure transmitter (4–20 mA)  |
| Material of filter housing        | <ul style="list-style-type: none"> <li>• Stainless steel (E1): 1.4301 / 1.4541 or similar (Group 304 / 321)</li> <li>• Stainless steel (E2): 1.4571 or similar (Group 316) only in conjunction with clamp connection or flange connection</li> </ul> | <ul style="list-style-type: none"> <li>• Other materials</li> </ul>   |
| Material of filter elements       | <ul style="list-style-type: none"> <li>• Polyester (PES), material of end caps: polyamide (PA)</li> <li>• Polypropylene (PP)</li> </ul>  |   |
| Documentation                     | Operating manual   | <ul style="list-style-type: none"> <li>• Material certificates to EN 10204, 3.1 for pressure-bearing wetted parts</li> <li>• Manufacturer's inspection certificate to DIN 55350, part 18 "M" for construction and pressure inspection</li> <li>• According to customer specification</li> </ul> |

\* Other versions and customised special solutions following consultation with our Head Office.

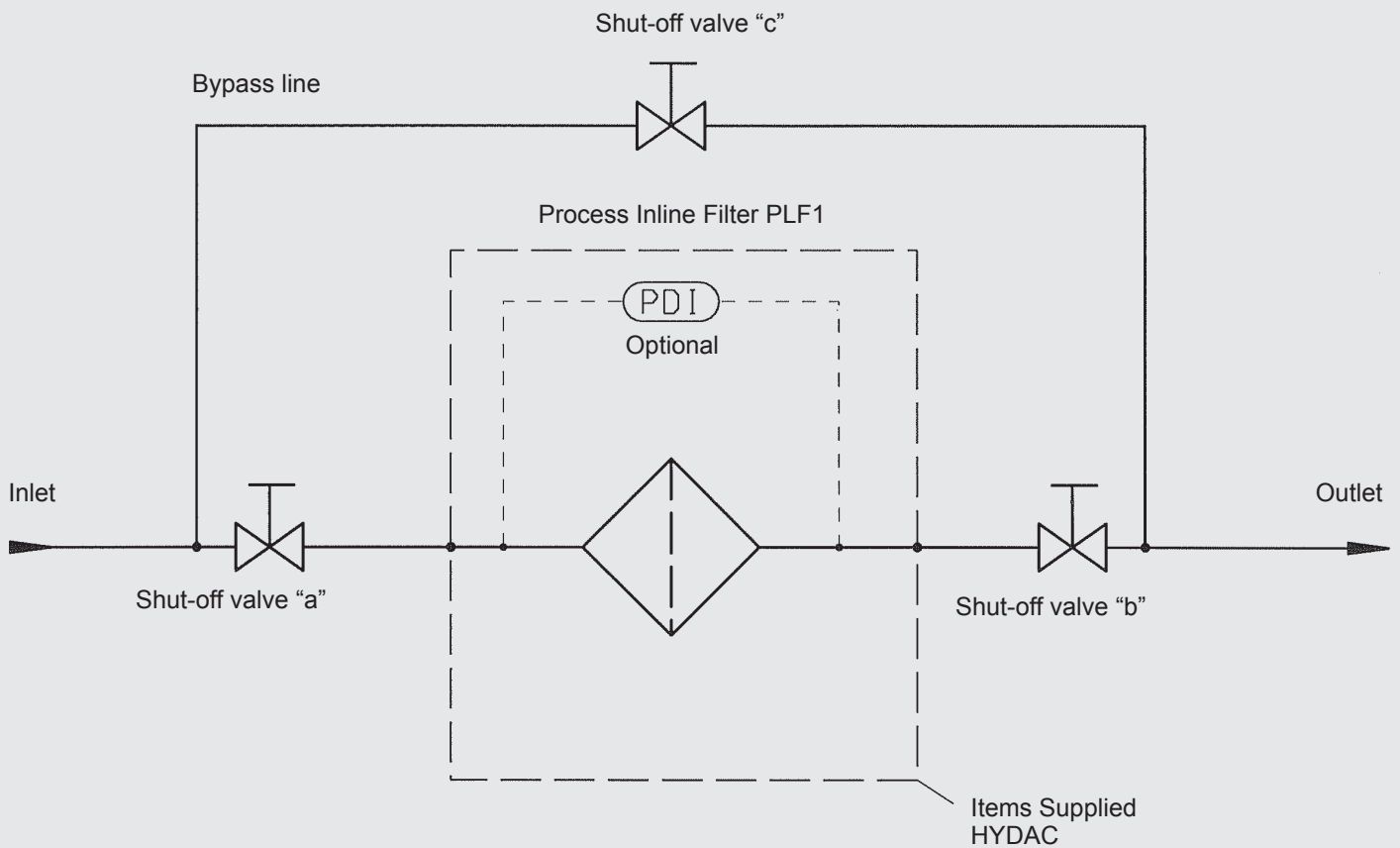
## PRESSURE DROP CURVE



### Size 1

Configuration for higher flow rates only with agreement from Head Office.

## CIRCUIT DIAGRAM



## 6. MODEL CODE

### MODEL CODE PROCESS INLINE FILTER PLF1

PLF1 - 1 - 2 - 9HF - V - E1 - S - C - E1 - 10 - N - 1 - 0 - 1 - So

#### Filter type

Single-workstation filter housing <sup>1)</sup>

#### Size of filter

- 1 = for 9" High Flow (HF) or HighLoadCascade (HLC) filter elements  
(changeable support tube for DN 50 / DN 80 – fixed support tube DN 100 / DN 150)
- 2 = for 6" High Flow (HF) filter element

#### Length of filter housing

- 1 = one-stage
- 2 = two-stage

#### Element diameter and element type

- 6HF = 6" filter element diameter High Flow (HF)
- 9HF = 9" filter element diameter High Flow (HF)
- 9HLC = 9" filter element diameter HighLoadCascade (HLC)

#### Filter alignment

- V = vertical
- H = horizontal (on request)

#### Housing material

- E1 = stainless steel 1.4301 or similar (Group 304)
- E2 = stainless steel 1.4571 or similar (Group 316)
- SD = Super Duplex (on request)
- D = Duplex (on request)
- A = for ANSI flanges, add suffix "A"
- J = for JIS flanges, add suffix "J"

#### Design code

- S = HYDAC Standard
- A = ASME VIII Div. 1
- U = ASME VIII Div. 1 Stamped
- E = EN 13445

#### Type of connection

|    | Connection size      | Available for sizes |     |
|----|----------------------|---------------------|-----|
| G2 | Thread G 2"          | n/a                 | 2   |
| C  | DIN DN 50 / 2" ANSI  | 1                   | 2   |
| E  | DIN DN 80 / 3" ANSI  | 1                   | n/a |
| F  | DIN DN 100 / 4" ANSI | 1                   | n/a |
| K  | DIN DN 150 / 6" ANSI | 1                   | n/a |

#### Material of internal parts

- E1 = stainless steel 1.4301 or similar (Group 304)
- E2 = stainless steel 1.4571 or similar (Group 316)
- SD = Super Duplex (on request)
- D = Duplex (on request)

#### Pressure ranges

- 10 = PN 10
- 16 = PN 16 (only in conjunction with optional equipment 5 or 6)

#### Sealing material

- N = NBR
- V = FPM (Viton) <sup>2)</sup>
- E = EPDM

#### Clogging indicator

- 0 = without clogging indicator
- 1 = visual indicator (PVD 2B.1)
- 2 = visual-electrical indicator (PVD 2D.0/-L24)
- 3 = V01
- 4 = differential pressure gauge in aluminium with 2 adjustable switching contacts
- 5 = differential pressure gauge in stainless steel with 2 adjustable switching contacts
- 6 = electrical indicator (PVD 2C.0)
- 7 = PVL2GW.0/-V-110
- 8 = PVL2GW.0/-V-120

#### Optional equipment

- 3 = stainless steel air vent ball valve
- 4 = ball valve for draining
- 5 = flange
- 6 = clamp connection
- 7 = special industrial part washers design  
PFL1-1-9HF: inlet on side, outlet below, flange DIN/EN DN 50, rounded handles  
PFL1-2-6HF: inlet on side, outlet below, G 2", mounting clamps
- 8 = includes solenoid technology
- 9 = height-adjustable tripod pedestal for PLF1-2-6HF, TRA (Option 7)

(Multiple fittings possible, please provide the corresponding number combination!)

#### Modification number

#### Supplementary details

So = code number for special equipment

<sup>1)</sup> Single-place filter housing = filter housing with one support tube

<sup>2)</sup> For reservoirs made of stainless steel 1.4571 or similar material (Group 316) use NBR or EPDM sealing material preferably

# MODEL CODE PROCESSMICRON® FILTER ELEMENTS

PELF-PM - 6 - HF - 2 - PL - 005 - PES - PA - V - 1

## Filter element type

Processmicron®

## Filter element diameter

6 = 6" external diameter  
9 = 9" external diameter

## Filter element type

HF = HighFlow (6" or 9")  
HLC = HighLoadCascade (9") Outer layer filtration rating added as suffix e.g. "HLC10"  
Available filtration ratings for outer layer: 10 / 20 / 30 / 40 / 50 / 70 / 90 µm  
added to HLC as suffix e.g. HLC10

## Length

2 = 20"

## Type of filter element

PL = pleated  
SP = spun spray

## Filtration rating\*

001 = 1 µm  
003 = 3 µm  
005 = 5 µm  
010 = 10 µm  
020 = 20 µm  
030 = 30 µm  
040 = 40 µm  
050 = 50 µm  
070 = 70 µm  
090 = 90 µm

## Filter material

PES = polyester  
PP = polypropylene

| Filter material | Type of filter element | Filtration rating  |
|-----------------|------------------------|--|
| PP              | PL                     | 005 / 010 / 020 /<br>030 / 040 / 050 /<br>070                      |
|                 | SP                     | 005 / 020 / 070  |
| PES             | PL                     | 001 / 003 / 005 /<br>010 / 020 / 030 /<br>040 / 050 / 070 /<br>090 |

## End caps

PA = polyamide (not for filter element type "SP")  
PP = polypropylene (not for filter element type "PES")

## Sealing material

N = NBR  
V = FPM  
E = EPDM  
S = silicone

## Technical design

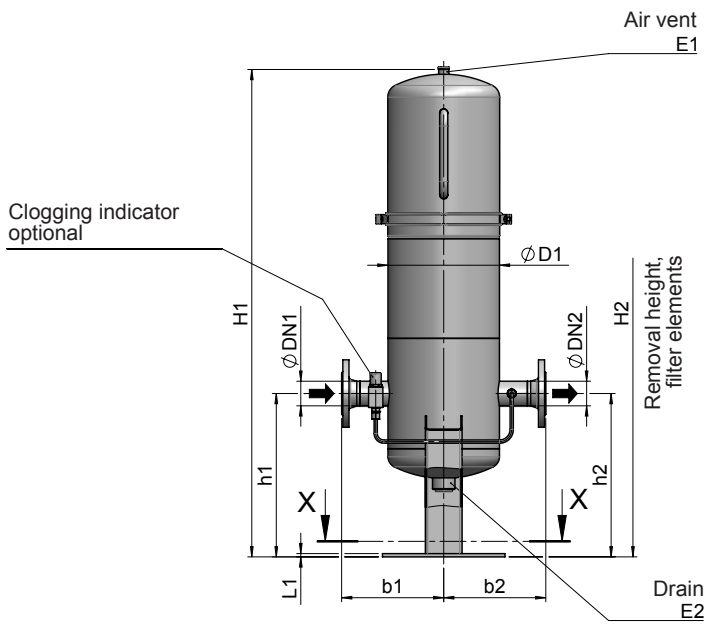
1 = injection-moulded end caps with 2-comp. PUR adhesive (only suitable for filter element type: PL / PES )  
2 = injection-moulded end caps with polyolefin melt (only suitable for filter element type: PL / SP / PP )  
3 = injection-moulded end caps with IR welding (only suitable for filter element type: PL / SP / PP)

\* With selection of the filter element type HighLoadCascade (HLC) the filtration rating of the outer layer has to be defined; see filter element type for available filtration ratings.

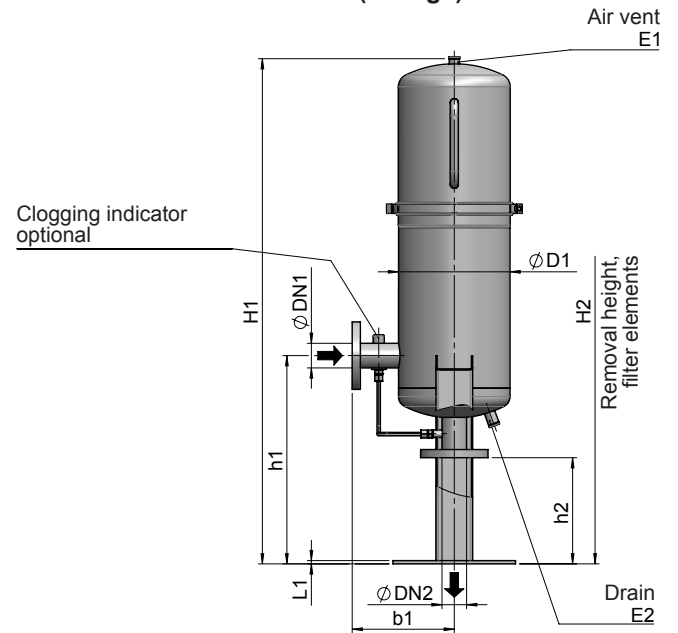
# 7. DIMENSIONS

## PLF1 - 10 bar version

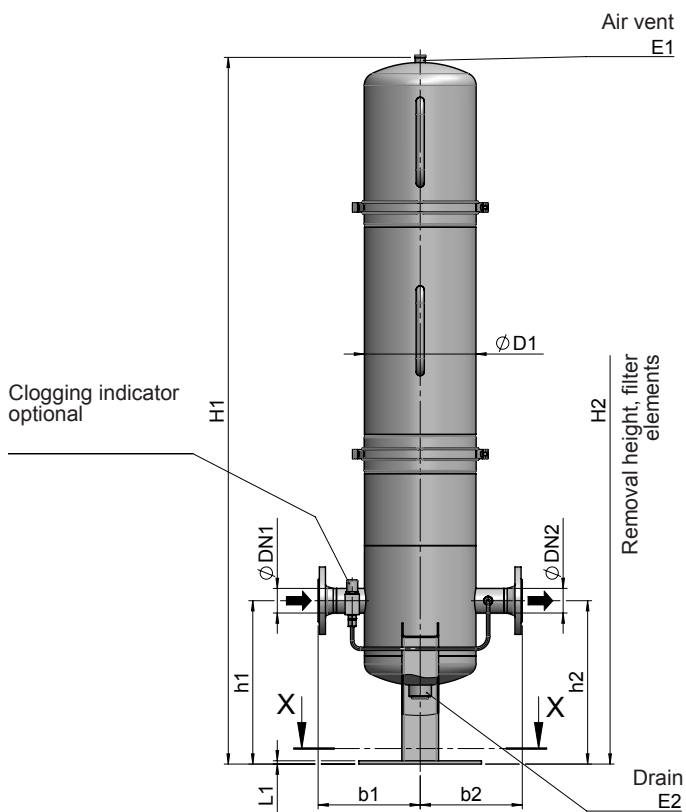
### In-line (1-stage)



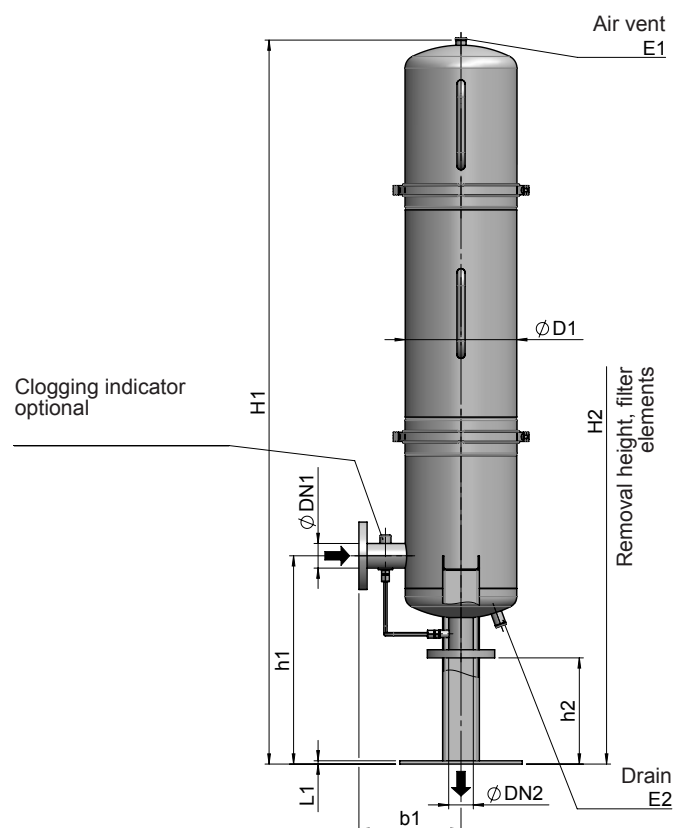
### Outlet downwards (1-stage)



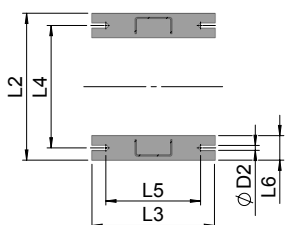
### In-line (2-stage)



### Outlet downwards (2-stage)



X-X

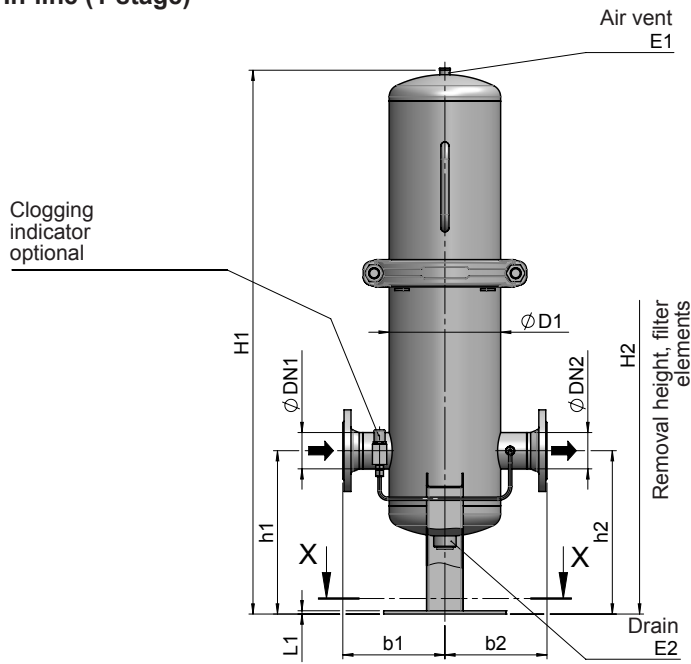


The dimensions indicated have  $\pm 10$  mm tolerances.  
All technical details are subject to change.

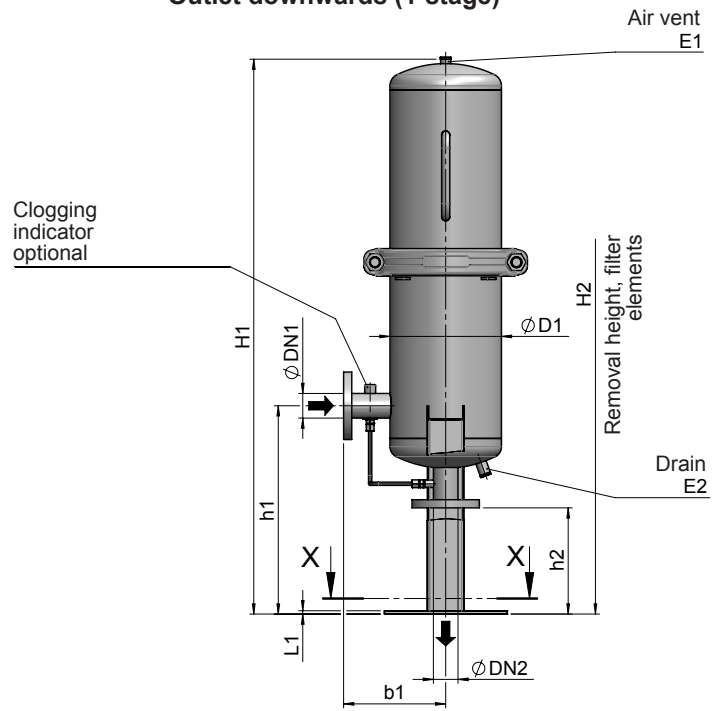


PLF1 - 16 bar version

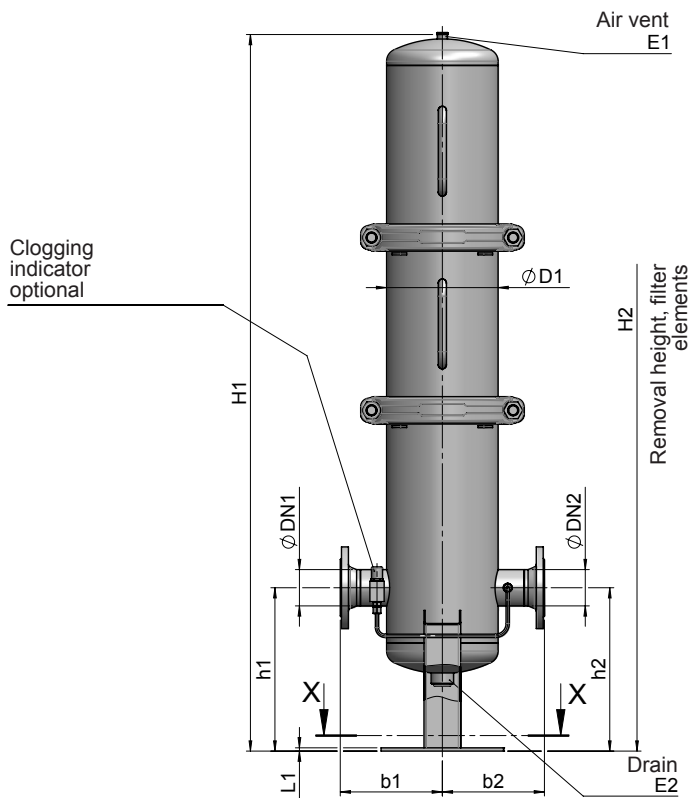
In-line (1-stage)



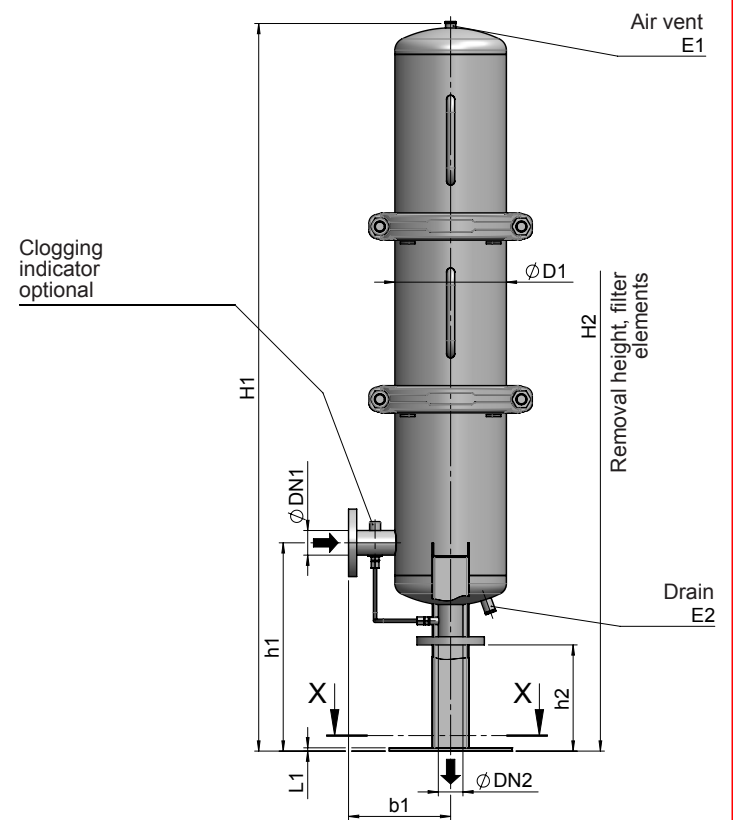
Outlet downwards (1-stage)



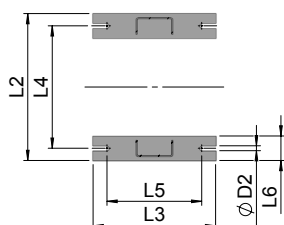
In-line (2-stage)



Outlet downwards (2-stage)



X-X



The dimensions indicated have  $\pm 10$  mm tolerances.  
All technical details are subject to change.

| PLF1                       | H1   | H2   | h1  | h2  | b1  | b2  | DN1              | DN2              | D1  | D2 | L1 | L2  | L3  | L4  | L5  | L6 | E1        | E2     | Vol. [l] |    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |    |    |
|----------------------------|------|------|-----|-----|-----|-----|------------------|------------------|-----|----|----|-----|-----|-----|-----|----|-----------|--------|----------|----|--|--|--|--|--|--|--|--|--|--|--|--|--|--|----|----|
| 1-stage<br>PN10<br>In-line | 1203 | 1750 |     |     |     |     |                  |                  |     |    |    |     |     |     |     |    |           |        |          | 45 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |    |    |
| 2-stage<br>PN10<br>In-line | 1733 | 2550 | 400 | 400 | 250 | 250 | 50/80<br>100/150 | 50/80<br>100/150 | 273 | 12 | 8  | 360 | 300 | 300 | 232 | 60 | G<br>1/2" | G 1"   |          | 90 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |    |    |
| 1-stage<br>PN16<br>In-line | 1332 | 1750 |     |     |     |     |                  |                  |     |    |    |     |     |     |     |    |           |        |          |    |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 50 |    |
| 2-stage<br>PN16<br>In-line | 1755 | 2550 |     |     | 250 |     |                  |                  |     |    |    |     |     |     |     |    |           |        |          | 90 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |    |    |
| 1-stage<br>PN10*           | 1242 | 1750 | 510 | 260 |     | -   | 50/80<br>100/150 | 50/80<br>100/150 |     |    |    |     |     |     |     |    |           | G 1/2" |          | 45 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |    |    |
| 2-stage<br>PN10*           | 1773 | 2550 |     |     |     |     |                  |                  |     |    |    |     |     |     |     |    |           |        |          |    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |    | 90 |
| 1-stage<br>PN16*           | 1369 | 1750 |     |     |     |     |                  |                  |     |    |    |     |     |     |     |    |           |        |          |    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |    | 50 |
| 2-stage<br>PN16*           | 1788 | 2550 |     |     |     |     |                  |                  |     |    |    |     |     |     |     |    |           |        |          |    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |    | 90 |

\* Outlet downwards

## NOTE

The information in this brochure relates to the operating conditions and applications described.  
For applications or operating conditions not described, please contact the relevant technical department.  
All technical details are subject to change.

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