Microfilter

Compressed air, gas and vacuum filters
Microfilters – Compressed air, gas and vacuum filters

Compressed air filters are now recognised as being an integral part of any system. Few, if any, compressed air systems can operate successfully without high efficiency filters. Production and process standards demand the finest quality air and components are now manufactured to such tight tolerances that no contamination is permitted.

ZANDER is one of the leaders in the purification of compressed air, gas and vacuum flows. Their product development is lead by strong partnerships with compressed air and gas users to ensure the best available product for increasingly demanding applications.

Dust, dirt and oil mist filtration is common enough today. ZANDER emphasises, not only the filtration efficiency but, importantly, links this to energy costs in terms of pressure differential, product consistency and reliability.

ZANDER-FILTER HOUSINGS

ZANDER supplies Microfilters in two housing formats:

G-Housings with threaded connection from G 1/4 to G3
- High grade aluminium casting
- Alu-chromed in and outside to prevent corrosion
- Powder coated to ensure top quality finish

F-Flanged housings DN 80 to DN 300
- Welded mild steel vessels
- Sand blasted, cleaned and degreased
- Polyester primed in and outside
- Acrylic paint outside

Both types of housings are built to the highest quality standards and have a double surface protection. The aluminium housings with alu-chrome and epoxy powder coating and the steel housings with intensive cleaning, polyester priming and acrylic paint. Thanks to the attention to quality surface treatment, ZANDER offers a 10 year guarantee on the filter housings. This gives confidence to the user!
**Microfilter-Housing Construction**

All ZANDER Microfilter housings are two piece. This means that, no matter what the size is, one person can change the filter elements. This saves having to employ a helper!

The F flanged filter housings, which can weigh up to a ton, have a hinged lower cover, which one person can open and close, when it is time to change the elements.

**Microfilter-Tie Rod**

The tie rod fixing of the element to the housing ensures that the element sits in the housing without any possibility of movement and therefore leakage between the dirty and clean side. The lower end cap of the element is firmly secured to the tie rod. This eliminates any possibility of the end cap flying off under severe shock conditions. Equally, the tie rod makes the element easier to change. There is no risk of the element end cap corroding. This does occur when aluminium threads on the element corrode into the housing. This means an expensive new housing instead of a simple element replacement. A small difference with large cost savings!

**Microfilter-Modular Concept**

The user can install simply and economically ZANDER Microfilters in modular units up to the G13 size. Using a filter combination kit, the installer can link together up to three filters in a set. This lowers the consequential pressure drop. These filter combinations can be easily wall mounted with brackets.
# Microfilter-Construction and user choice chart

## 1 Connections
- G 1/4 - G3
- DN80 - DN300

## 2 Filter element
- Pre-filter 99.99% (3 µm)
- General purpose filter 99.9999% (1 µm) ≤ 0.5 mg/m³
- Activated Carbon ≤ 0.003 mg/m³
- Activated carbon cartridge (For G3-G13 housings only) ≤ 0.003 mg/m³

## 3 Filter head accessories
- Standard
- Screwed plugs
- Pressure differential gauge

## 4 Condensate Drains
- Automatic condensate drain (Standard on V-XP4 No need to specify!)
- Hand drain (Standard on A & KTA No need to specify!)

## 5 Combination kits
- Standard combination kits (up to G13 size only)
- Combination kits and wall brackets G2 - G3

## Connection Chart
<table>
<thead>
<tr>
<th>Connection</th>
<th>Filter size</th>
<th>Element</th>
<th>Head accessory</th>
<th>Drain</th>
<th>Comb. Kit</th>
</tr>
</thead>
<tbody>
<tr>
<td>G</td>
<td>7</td>
<td>ZP</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G</td>
<td>11</td>
<td>XP</td>
<td>D</td>
<td>LS</td>
<td></td>
</tr>
<tr>
<td>G</td>
<td>14</td>
<td>A</td>
<td>W</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Examples
- Filter with G1/2" thread connection, plug in head and automatic condensate drain (Standard on V-XP4)
- Filter with G1" thread connection, oil removal element, differential pressure gauge and electronic "no-loss" condensate drain LS range.
- G2" connection with activated carbon filter, plug in head, hand drain (Standard for A & KTA filter). Wall brackets
ZANDER pleated filter elements

Zander filters use machine pleated elements, which form the heart of the filter. These pictures well illustrate the benefits of a pleated filter. They have 3 to 4.5 times the filter surface area of a wrapped filter and have a consistent and reproducible quality.

Pleating means the following benefits:
- lower velocity
- lower differential pressure
- better separation
- higher dirt holding capacity
- longer service life
- lower operating costs

The advantages quickly pay for themselves. No matter what the installed capacity of the system, the pleated filter elements save considerable electrical costs. The graph gives an example of 160 kW compressor. Zander pleated filters can save Euro 1140 per annum compared to a conventional wrapped element!

<table>
<thead>
<tr>
<th>Connection</th>
<th>Filter size</th>
<th>Element</th>
<th>Head accessory</th>
<th>Drain</th>
<th>Comb. Kit</th>
</tr>
</thead>
<tbody>
<tr>
<td>G 9 KTA OP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G 5 XP4KTA DOP LS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F 200 XP DE LC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Examples
- Filter with G 3/4 connection, activated carbon cartridge, oil indicator and hand drain (standard).
- Filter with G 3/8 connection, with super fine filter element XP 4, differential pressure gauge and LS drain.
- Combined with KTA cartridge filter with oil indicator and hand drain (standard).
- Flanged filter with 300 mm connection, oil removal filter XP, electronic differential pressure gauge and Ecodrain ED condensate drain.

Annual Differential Pressure Energy Costs (based on 8000 running hours and € 0.07 per kWh)

<table>
<thead>
<tr>
<th>Installed compressor capacity</th>
<th>Annual running costs in Euro</th>
</tr>
</thead>
<tbody>
<tr>
<td>160 kW</td>
<td>3705</td>
</tr>
<tr>
<td>110 kW</td>
<td>3420</td>
</tr>
<tr>
<td>75 kW</td>
<td>3135</td>
</tr>
<tr>
<td>45 kW</td>
<td>2850</td>
</tr>
<tr>
<td>30 kW</td>
<td>2565</td>
</tr>
<tr>
<td>22 kW</td>
<td>2280</td>
</tr>
<tr>
<td>11 kW</td>
<td>1995</td>
</tr>
<tr>
<td>11 kW</td>
<td>1710</td>
</tr>
<tr>
<td>11 kW</td>
<td>1425</td>
</tr>
<tr>
<td>11 kW</td>
<td>1140</td>
</tr>
<tr>
<td>11 kW</td>
<td>855</td>
</tr>
<tr>
<td>11 kW</td>
<td>570</td>
</tr>
<tr>
<td>11 kW</td>
<td>285</td>
</tr>
</tbody>
</table>

Example 160 kW compressor
### Microfilters

#### Technical Data

<table>
<thead>
<tr>
<th>ZANDER Type</th>
<th>Capacity (nominal) m³/h</th>
<th>Connection G/DN</th>
<th>Max. pressure bar</th>
<th>Dimensions</th>
<th>Weight kg</th>
<th>Anzahl/Typ</th>
</tr>
</thead>
<tbody>
<tr>
<td>G 2</td>
<td>30</td>
<td>G 1/4</td>
<td>16</td>
<td>60</td>
<td>165</td>
<td>14</td>
</tr>
<tr>
<td>G 3</td>
<td>50</td>
<td>G 1/4</td>
<td>16</td>
<td>87</td>
<td>215</td>
<td>21</td>
</tr>
<tr>
<td>G 5</td>
<td>70</td>
<td>G 3/8</td>
<td>16</td>
<td>87</td>
<td>215</td>
<td>21</td>
</tr>
<tr>
<td>G 7</td>
<td>100</td>
<td>G 1/2</td>
<td>16</td>
<td>87</td>
<td>285</td>
<td>21</td>
</tr>
<tr>
<td>G 9</td>
<td>180</td>
<td>G 3/4</td>
<td>16</td>
<td>130</td>
<td>325</td>
<td>43</td>
</tr>
<tr>
<td>G 11</td>
<td>300</td>
<td>G 1</td>
<td>16</td>
<td>130</td>
<td>425</td>
<td>43</td>
</tr>
<tr>
<td>G 12</td>
<td>470</td>
<td>G 1 1/2</td>
<td>16</td>
<td>130</td>
<td>525</td>
<td>43</td>
</tr>
<tr>
<td>G 13</td>
<td>700</td>
<td>G 1 1/2</td>
<td>16</td>
<td>130</td>
<td>725</td>
<td>43</td>
</tr>
<tr>
<td>G 14</td>
<td>940</td>
<td>G 2</td>
<td>16</td>
<td>164</td>
<td>825</td>
<td>48</td>
</tr>
<tr>
<td>G 17</td>
<td>1450</td>
<td>G 2</td>
<td>16</td>
<td>164</td>
<td>1075</td>
<td>48</td>
</tr>
<tr>
<td>G 18</td>
<td>1940</td>
<td>G 2 1/2</td>
<td>16×2</td>
<td>250</td>
<td>1050</td>
<td>74</td>
</tr>
<tr>
<td>G 19</td>
<td>2400</td>
<td>G 3</td>
<td>16×2</td>
<td>250</td>
<td>1200</td>
<td>74</td>
</tr>
<tr>
<td>F 17</td>
<td>1450</td>
<td>DN 80</td>
<td>16</td>
<td>380</td>
<td>1280</td>
<td>175</td>
</tr>
<tr>
<td>F 19</td>
<td>2400</td>
<td>DN 80</td>
<td>16</td>
<td>440</td>
<td>1320</td>
<td>205</td>
</tr>
<tr>
<td>F 20</td>
<td>2900</td>
<td>DN 100</td>
<td>16</td>
<td>500</td>
<td>1440</td>
<td>230</td>
</tr>
<tr>
<td>F 30</td>
<td>4350</td>
<td>DN 100</td>
<td>16</td>
<td>500</td>
<td>1440</td>
<td>230</td>
</tr>
<tr>
<td>F 40</td>
<td>5800</td>
<td>DN 150</td>
<td>16</td>
<td>640</td>
<td>1590</td>
<td>280</td>
</tr>
<tr>
<td>F 60</td>
<td>8700</td>
<td>DN 150</td>
<td>16</td>
<td>790</td>
<td>1650</td>
<td>300</td>
</tr>
<tr>
<td>F 80</td>
<td>11600</td>
<td>DN 200</td>
<td>16</td>
<td>790</td>
<td>1730</td>
<td>340</td>
</tr>
<tr>
<td>F 100</td>
<td>14500</td>
<td>DN 200</td>
<td>16</td>
<td>840</td>
<td>1870</td>
<td>360</td>
</tr>
<tr>
<td>F 120</td>
<td>17400</td>
<td>DN 250</td>
<td>16</td>
<td>940</td>
<td>1940</td>
<td>420</td>
</tr>
<tr>
<td>F 160</td>
<td>23200</td>
<td>DN 250</td>
<td>16</td>
<td>940</td>
<td>1940</td>
<td>420</td>
</tr>
<tr>
<td>F 200</td>
<td>29000</td>
<td>DN 300</td>
<td>16</td>
<td>940</td>
<td>1970</td>
<td>450</td>
</tr>
</tbody>
</table>

*1 Calculated at 1 bar a and 20°C at 7 barg working pressure
*2 In Germany, the pressure regulations indicate a maximum pressure of 8 bar working pressure. Elsewhere local rules apply.

#### Filter Element Performance Tables

- **Pre-filter element V**: – 0.02 bar (dry) – 0.07 bar (saturated) – 99.999% (3µ)
- **General Purpose Filter ZP**: – 0.03 bar (dry) – 0.10 bar (saturated) – 99.999% (1µ) – ≤ 0.5 mg/m³ (1 bar a and 20°C)
- **Oil Removal Filter XP**: – 0.06 bar (dry) – 0.15 bar (saturated) – 99.999% (0.01µ) – ≤ 0.1 mg/m³ (1 bar a and 20°C)
- **Super Fine Filter XP4**: – 0.12 bar (dry) – 0.28 bar (saturated) – ≥ 99.9999% (0.01µ) – ≤ 0.001 mg/m³ (1 bar a and 20°C)
- **Activated Carbon Filter A**: – 0.03 bar – ≤ 0.003 mg/m³ (1 bar a and 20°C) with an inlet concentration of ≤ 0.01 mg/m³
- **Activated Carbon Cartridge KTA**: Depending on size 0.15-0.4 bar – bar (Oil Removal as A grade)

#### Conversion factor f for other operating pressures

<table>
<thead>
<tr>
<th>Operating pressure bar</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
<th>16</th>
</tr>
</thead>
<tbody>
<tr>
<td>f</td>
<td>0.25</td>
<td>0.38</td>
<td>0.50</td>
<td>0.63</td>
<td>0.75</td>
<td>0.88</td>
<td>1.00</td>
<td>1.13</td>
<td>1.25</td>
<td>1.38</td>
<td>1.50</td>
<td>1.63</td>
<td>1.75</td>
<td>1.88</td>
<td>2.00</td>
<td>2.13</td>
</tr>
</tbody>
</table>

*3 Calculated for constant velocity and 20°C

Example 1: If you have a flow of 1300 m³/h (1 bar a and 20°C) –) at a minimum working pressure of 10 bar e, what size filter do you require? Answer: Flow ÷ f = 1300 m³/h ÷ 1.38 = 940 m³/h => G14 size

Example 2: What is the nominal flow through a G14 filter with a minimum working pressure of 10 bar e?<n Answer: Flow · f = 940 m³/h · 1.38 = 1300 m³/h (1 bar a and 20°C)
**Dimensions**

Pre-filter, General Purpose filter and Superfine filter  
V, ZP, ZX, XP4  
Standard format with automatic condensate drain

Grades VD (E), ZPD(E), XPD(E) and XP4(E)  
Complete with automatic drain and differential pressure gauge  
(E with volt-free contact)

Activated carbon filter A & KTA  
Standard format with hand drain

Activated Carbon filter AOP & KTAOP  
Compete with hand drain and oil indicator

**Dimensions with electronic condensate drains**

LS range  
LC range
Filter Technology

Filter elements

Process filters

High pressure filters

Dryer Technology

Refrigeration
Dryers arctic star

Membrane dryers
Sunsep

Adsorption dryers
WVM

Adsorption dryers
KEN

Adsorption dryers
KM/KMA

Condensate Technology

Condensate drains
ecodrain LS

Condensate drains
ecodrain ED

Emulsions separator

Oil/water separators.
ecosep SL

We reserve the right to change design and dimensions.

ZANDER Aufbereitungstechnik GmbH & Co.KG
Im Teelbruch 118, D-45219 Essen
Postfach 185524, D-45205 Essen
Telefon (02054) 934 - 0
Telefax (02054) 934 - 164
Internet: http://www.zander.de

MF 10/2001