Section 3:
above 1500 psi

HIGH
PRESSURE
FILTERS

v. 112923
# High Pressure Filters Selection Guide

## Section 3

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<td>KF50 5000 (345)</td>
<td>100/150 (380/570)</td>
<td>K, KK, 27K</td>
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<tr>
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<td>200 (760)</td>
<td>K, KK, 27K</td>
<td>111</td>
</tr>
<tr>
<td>KC65 6000 (415)</td>
<td>100 (380)</td>
<td>K, KK, 27K</td>
<td>115</td>
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<tr>
<td>MKC65 6000 (415)</td>
<td>300 (1136)</td>
<td>K, KK, 27K</td>
<td>119</td>
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<tr>
<td><strong>Hydrostatic (Bidirectional) Flow High Pressure Filters</strong></td>
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<tr>
<td>HS60 6000 (415)</td>
<td>120 (450)</td>
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</tr>
<tr>
<td>MHS60 6000 (415)</td>
<td>120 (450)</td>
<td>13HZ</td>
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<td>KFH50 (Base-Ported) 5000 (345)</td>
<td>70 (265)</td>
<td>K, KK, 27K</td>
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<td>141</td>
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<td></td>
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<td>NMF30 3000 (210)</td>
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<td>6 (23)</td>
<td>—</td>
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<tr>
<td>20-CRZX10 3000 (210)</td>
<td>12 (45)</td>
<td>—</td>
<td>158</td>
</tr>
</tbody>
</table>
# Top-Ported Pressure Filter

## Features and Benefits
- Top-ported pressure filter
- All aluminum assembly
- Available with non-bypass option with high collapse element
- Offered in pipe, SAE straight thread and ISO 228 porting
- Same day shipment model available
- Available with quality protected Lock & Key Elements (NFLK30)

Model No. of filter in photograph is NF301NZ10SD5.

## Specifications

<table>
<thead>
<tr>
<th>Feature</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Flow Rating:</strong></td>
<td>Up to 20 gpm (75 L/min) for 150 SUS (32 cSt) fluids</td>
</tr>
<tr>
<td>Max. Operating Pressure:</td>
<td>3000 psi (210 bar)</td>
</tr>
<tr>
<td>Min. Yield Pressure:</td>
<td>10,000 psi (690 bar), per NFPA T2.6.1</td>
</tr>
<tr>
<td>Rated Fatigue Pressure:</td>
<td>2400 psi (165 bar), per NFPA T2.6.1</td>
</tr>
<tr>
<td>Temp. Range:</td>
<td>-20°F to 225°F (-29°C to 107°C)</td>
</tr>
</tbody>
</table>
| Bypass Setting:               | Cracking: 40 psi (2.8 bar)  
                               | Full Flow: 85 psi (5.9 bar)  
                               | Non-bypassing model has a blocked bypass. |
| Porting Head:                 | Aluminum |
| Element Case:                 | Aluminum |
| Weight of NF30-1N:            | 3.4 lbs. (1.5 kg) |
| Weight of NF30-1NN:           | 4.4 lbs. (2.0 kg) |
| Element Change Clearance:     | 4.50" (115 mm) |

## Fluid Compatibility

<table>
<thead>
<tr>
<th>Type Fluid</th>
<th>Appropriate Schroeder Media</th>
</tr>
</thead>
<tbody>
<tr>
<td>Petroleum Based Fluids</td>
<td>All E Media (cellulose), Z-Media™ and ASP™ Media (synthetic)</td>
</tr>
<tr>
<td>High Water Content</td>
<td>All Z-Media™ and ASP™ media (synthetic)</td>
</tr>
<tr>
<td>Invert Emulsions</td>
<td>10 and 25 µ Z-Media™ and 10 µ ASP™ media (synthetic)</td>
</tr>
<tr>
<td>Water Glycols</td>
<td>3, 5, 10 and 25 µ Z-Media™ and 3, 5 and 10 µ ASP™ Media (synthetic)</td>
</tr>
</tbody>
</table>
**Filtration Ratio Per ISO 4572/NFPA T3.10.8.8**

Using automated particle counter (APC) calibrated per ISO 4402

<table>
<thead>
<tr>
<th>Element</th>
<th>$\beta_x \geq 75$</th>
<th>$\beta_x \geq 100$</th>
<th>$\beta_x \geq 200$</th>
<th>$\beta_x(c) \geq 200$</th>
<th>$\beta_x(c) \geq 1000$</th>
</tr>
</thead>
<tbody>
<tr>
<td>NZ1 / NNZ1 / NLKZ1 / NNLKZ1</td>
<td>&lt;1.0</td>
<td>&lt;1.0</td>
<td>&lt;1.0</td>
<td>&lt;4.0</td>
<td>4.2</td>
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<tr>
<td>NZ3 / NNZ3 / NLKZ3 / NNLKZ3</td>
<td>&lt;1.0</td>
<td>&lt;1.0</td>
<td>&lt;2.0</td>
<td>&lt;4.0</td>
<td>4.8</td>
</tr>
<tr>
<td>NZS / NNZS / NLKZ5 / NNLKZ5</td>
<td>2.5</td>
<td>3.0</td>
<td>4.0</td>
<td>4.8</td>
<td>6.3</td>
</tr>
<tr>
<td>NZ10 / NNZ10 / NLKZ10 / NNLKZ10</td>
<td>7.4</td>
<td>8.2</td>
<td>10.0</td>
<td>8.0</td>
<td>10.0</td>
</tr>
<tr>
<td>NZ25 / NNZ25 / NLKZ25 / NNLKZ25</td>
<td>18.0</td>
<td>20.0</td>
<td>22.5</td>
<td>19.0</td>
<td>24.0</td>
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<tr>
<td>NNZX3</td>
<td>&lt;1.0</td>
<td>&lt;1.0</td>
<td>&lt;2.0</td>
<td>4.7</td>
<td>5.8</td>
</tr>
<tr>
<td>NNZX10</td>
<td>7.4</td>
<td>8.2</td>
<td>10.0</td>
<td>8.0</td>
<td>9.8</td>
</tr>
</tbody>
</table>

**Dirt Holding Capacity**

<table>
<thead>
<tr>
<th>Element</th>
<th>DHC (gm)</th>
<th>Element</th>
<th>DHC (gm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NZ1 / NLKZ1</td>
<td>12</td>
<td>NNZ3 / NNLKZ3</td>
<td>16</td>
</tr>
<tr>
<td>NZ3 / NLKZ3</td>
<td>12</td>
<td>NNZ5 / NNLKZ5</td>
<td>18</td>
</tr>
<tr>
<td>NZ5 / NLKZ5</td>
<td>12</td>
<td>NNZ10 / NNLKZ10</td>
<td>15</td>
</tr>
<tr>
<td>NZ10 / NLKZ10</td>
<td>11</td>
<td>NNZ25 / NNLKZ25</td>
<td>15</td>
</tr>
<tr>
<td>NZ25 / NLKZ25</td>
<td>11</td>
<td>NNZX3</td>
<td>11*</td>
</tr>
<tr>
<td>NZN1 / NNLKZ1</td>
<td>15</td>
<td>NNZX10</td>
<td>13*</td>
</tr>
</tbody>
</table>

* Based on 100 psi terminal pressure

**Element Collapse Rating:** 150 psid (10 bar) for standard elements
3000 psid (210 bar) for high collapse (ZX) versions

**Flow Direction:** Outside In

**Element Nominal Dimensions:**
- N: 1.75" (45 mm) O.D. x 5.25" (135 mm) long
- NN: 1.75" (45 mm) O.D. x 8.0" (200 mm) long
Exercise:
Determine $\Delta P_{filter}$ at 15 gpm (57 L/min) for NF301NZ10SD5 using 160 SUS (34 cSt) fluid.

Use the housing pressure curve to determine $\Delta P_{housing}$ at 15 gpm. In this case, $\Delta P_{housing}$ is 7 psi (.48 bar) according to the graph for an NF30 housing.

Use the element pressure curve to determine $\Delta P_{element}$ at 15 gpm. In this case, $\Delta P_{element}$ is 8 psi (.55 bar) according to the graph for an NZ10 element.

Because the viscosity in this sample is 160 SUS (34 cSt), we determine the Viscosity Factor ($V_f$) by dividing the Operating Fluid Viscosity with the Standard Viscosity of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential, $\Delta P_{filter}$, is calculated by adding $\Delta P_{housing}$ with the true element pressure differential, ($\Delta P_{element} \times V_f$). The $\Delta P_{element}$ from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

Solution:

$\Delta P_{housing} = 7 \text{ psi} [0.48 \text{ bar}]$  \hspace{1cm} $\Delta P_{element} = 8 \text{ psi} [0.55 \text{ bar}]$

$V_f = 160 \text{ SUS} \times 34 \text{ cSt} / 150 \text{ SUS} \times 32 \text{ cSt} = 1.1$

$\Delta P_{filter} = 7 \text{ psi} + (8 \text{ psi} \times 1.1) = 15.8 \text{ psi}$

$\Delta P_{filter} = .48 \text{ bar} + (.55 \text{ bar} \times 1.1) = 1.1 \text{ bar}$
### Top-Ported Pressure Filter

**Filter Model Number Selection**

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<td>–</td>
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</tr>
</tbody>
</table>

**Filter Series**
- NF30
- NF30 N (Non-bypassing; requires ZX high collapse elements)
- NFLK30

**Number & Size of Elements**
- N = Single Length
- NN = Double Length
- NLK = Single Length Lock & Key
- NNLK = Double Length Lock & Key

**Media Type**
- Omit = E Media (Cellulose)
- Z = Excellement® Z-Media® (synthetic)
- AS = Anti-Stat Media (synthetic)
- ZX = Excellement® Z-Media® (high collapse center tube; NN size only)
- M = Media (reusable metal mesh) N size only

**Micron Rating**
- 1 = 1 Micron (Z, ZX media)
- 3 = 3 Micron (AS, E, Z, ZX media)
- 5 = 5 Micron (AS, Z, ZX media)
- 10 = 10 Micron (AS, EM, Z, ZX media)
- 25 = 25 Micron (E, Z, ZX media)
- 60 = 60 Micron (M media)

**Seal Material**
- Omit = Buna N
- V = Vitoni®
- W = Buna N, Anodized Aluminum parts

**Porting**
- B = ISO228 G-¾"
- P = ¾” NPTF
- S = SAE-12

**Bypass**
- Omit = 40 PSI bypass
- 50 = 50 PSI Bypass
- X = Blocked bypass

**Dirt Alarm® Options**
- Omit = None
- D = Pointer
- D5 = Visual pop-up
- D8 = Visual w/ thermal lockout
- MS5 = Electrical w/ 12 in. 18 gauge 4-conductor cable
- MS5LC = Low current MS5
- MS10 = Electrical w/ DIN connector (male end only)
- MS10LC = Low current MS10
- MS11 = Electrical w/ 12 ft. 4-conductor wire
- MS12 = Electrical w/ 5 pin Brad Harrison connector (male end only)
- MS12LC = Low current MS12
- MS16 = Electrical w/ weather-packed sealed connector
- MS16LC = Low current MS16
- MS17LC = Electrical w/ 4 pin Brad Harrison male connector

- MS5T = MS5 (see above) w/ thermal lockout
- MS5LCT = Low current MS5T
- MS10T = MS10 (see above) w/ thermal lockout
- MS10LCT = Low current MS10T
- MS12T = MS12 (see above) w/ thermal lockout
- MS12LCT = Low current MS12T
- MS16T = MS16 (see above) w/ thermal lockout
- MS16LCT = Low current MS16T
- MS17LCT = Low current MS17T

**Additional Options**
- Omit = None
- G792 = ¾”-20 UNF drain on housing

**NOTES:**

- Box 2. Replacement element part numbers are identical to contents of Boxes 2, 3, 4 and 5.

- Box 5. E media (cellulose) elements are only available with Buna N seals. For options V and W, all aluminum parts are anodized. Vitoni® is a registered trademark of DuPont Dow Elastomers.

- Box 7. When X is paired with a standard filter series, a standard bushing and spring plate will be used.
Manifold Mounted Pressure Filter

Features and Benefits

- Manifold mounted pressure filter
- Offered in square head conventional subplate porting
- Direct mounting to inlet port on customer’s manifold

Flow Rating: Up to 20 gpm (75 L/min) for 150 SUS (32 cSt) fluids
Max. Operating Pressure: 3000 psi (210 bar)
Min. Yield Pressure: 10,000 psi (690 bar), per NFPA T2.6.1
Rated Fatigue Pressure: 2400 psi (165 bar), per NFPA T2.6.1
Temp. Range: -20°F to 225°F (-29°C to 107°C)
Bypass Setting: Cracking: 40 psi (2.8 bar)
Full Flow: 85 psi (5.9 bar)
Porting Head: Aluminum
Element Case: Aluminum
Weight of NFS30-1N: 3.6 lbs. (1.6 kg)
Weight of NFS30-1NN: 4.3 lbs. (2.0 kg)
Element Change Clearance: 4.50” (115 mm)

Type Fluid | Appropriate Schroeder Media
---|---
Petroleum Based Fluids | All E Media (cellulose), Z-Media® and ASP® Media (synthetic)
High Water Content | All Z-Media® and ASP® media (synthetic)
Invert Emulsions | 10 and 25 µ Z-Media® and 10 µ ASP® media (synthetic)
Water Glycols | 3, 5, 10 and 25 µ Z-Media® and 3, 5 and 10 µ ASP® Media (synthetic)

Filter Housing Specifications

Model No. of filter in photograph is NFS301NZ3OD5.
Manifold Mounted Pressure Filter

Element Performance Information & Dirt Holding Capacity

Filtration Ratio Per ISO 4572/NFPA T3.10.8.8
Using automated particle counter (APC) calibrated per ISO 4402

<table>
<thead>
<tr>
<th>Element</th>
<th>βx ≥ 75</th>
<th>βx ≥ 100</th>
<th>βx ≥ 200</th>
</tr>
</thead>
<tbody>
<tr>
<td>NZ1/NNZ1</td>
<td>&lt;1.0</td>
<td>&lt;1.0</td>
<td>&lt;1.0</td>
</tr>
<tr>
<td>NZ3/NNZ3</td>
<td>&lt;1.0</td>
<td>&lt;1.0</td>
<td>≥2.0</td>
</tr>
<tr>
<td>NZ5/NNZ5</td>
<td>2.5</td>
<td>3.0</td>
<td>4.0</td>
</tr>
<tr>
<td>NZ10/NNZ10</td>
<td>7.4</td>
<td>8.2</td>
<td>10.0</td>
</tr>
<tr>
<td>NZ25/NNZ25</td>
<td>18.0</td>
<td>20.0</td>
<td>22.5</td>
</tr>
</tbody>
</table>

Filtration Ratio per ISO 16889
Using APC calibrated per ISO 11171

<table>
<thead>
<tr>
<th>Element</th>
<th>βx(c) ≥ 200</th>
<th>βx(c) ≥ 1000</th>
</tr>
</thead>
<tbody>
<tr>
<td>NZ1/NNZ1</td>
<td>&lt;4.0</td>
<td>4.2</td>
</tr>
<tr>
<td>NZ3/NNZ3</td>
<td>&lt;4.0</td>
<td>4.8</td>
</tr>
<tr>
<td>NZ5/NNZ5</td>
<td>4.8</td>
<td>6.3</td>
</tr>
<tr>
<td>NZ10/NNZ10</td>
<td>8.0</td>
<td>10.0</td>
</tr>
<tr>
<td>NZ25/NNZ25</td>
<td>19.0</td>
<td>24.0</td>
</tr>
</tbody>
</table>

Element Collapse Rating: 150 psid (10 bar) for standard elements 3000 psid (210 bar) for high collapse (ZX) versions

Flow Direction: Outside In

Element Nominal Dimensions: N: 1.75” (45 mm) O.D. x 5.25” (135 mm) long
NN: 1.75” (45 mm) O.D. x 8.0” (200 mm) long

Metric dimensions in ( ).
Dimensions shown are inches (millimeters) for general information and overall envelope size only.
For complete dimensions please contact Schroeder Industries to request a certified print.
**Pressure Drop Information**

Based on Flow Rate and Viscosity

**NFS30**

\[ \Delta P_{\text{housing}} \]

For fluids with sp gr (specific gravity) = 0.86:

\[ \Delta P_{\text{filter}} = \Delta P_{\text{housing}} + (\Delta P_{\text{element}} \times V_f) \]

**Exercise:**

Determine \( \Delta P_{\text{filter}} \) at 15 gpm (57 L/min) for NFS301NZ10SO using 175 SUS (37.2 cSt) fluid.

Use the housing pressure curve to determine \( \Delta P_{\text{housing}} \) at 15 gpm. In this case, \( \Delta P_{\text{housing}} \) is 10 psi (.69 bar) on the graph for the NFS30 housing.

Use the element pressure curve to determine \( \Delta P_{\text{element}} \) at 15 gpm. In this case, \( \Delta P_{\text{element}} \) is 8 psi (.55 bar) according to the graph for the NZ10 element.

Because the viscosity in this sample is 175 SUS (37.2 cSt), we determine the Viscosity Factor (V_f) by dividing the Operating Fluid Viscosity with the Standard Viscosity of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential, \( \Delta P_{\text{filter}} \), is calculated by adding \( \Delta P_{\text{housing}} \) with the true element pressure differential, \( \Delta P_{\text{element}} \times V_f \). The \( \Delta P_{\text{element}} \) from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

**Solution:**

\[ \Delta P_{\text{housing}} = 10 \text{ psi (.69 bar)} \quad \Delta P_{\text{element}} = 8 \text{ psi (.55 bar)} \]

\[ V_f = 175 \text{ SUS (37.2 cSt) / 150 SUS (32 cSt) = 1.2} \]

\[ \Delta P_{\text{filter}} = 10 \text{ psi + (8 psi x 1.2) = 19.6 psi} \]

\[ \text{OR} \]

\[ \Delta P_{\text{filter}} = .69 \text{ bar + (.55 bar x 1.2) = 1.35 bar} \]

**Note:** If your element is not graphed, use the following equation:

\[ \Delta P_{\text{element}} = \text{Flow Rate} \times \Delta P_f \]

Plug this variable into the overall pressure drop equation.

<table>
<thead>
<tr>
<th>Ele.</th>
<th>ΔP</th>
<th>Ele.</th>
<th>ΔP</th>
</tr>
</thead>
<tbody>
<tr>
<td>N3</td>
<td>1.10</td>
<td>NN3</td>
<td>0.77</td>
</tr>
<tr>
<td>N10</td>
<td>0.17</td>
<td>NN10</td>
<td>0.13</td>
</tr>
<tr>
<td>N25</td>
<td>0.10</td>
<td>NN25</td>
<td>0.07</td>
</tr>
<tr>
<td>NAS3</td>
<td>0.92</td>
<td>NNAS3</td>
<td>0.56</td>
</tr>
<tr>
<td>NAS5</td>
<td>0.71</td>
<td>NNAS5</td>
<td>0.46</td>
</tr>
<tr>
<td>NAS10</td>
<td>0.57</td>
<td>NNAS10</td>
<td>0.35</td>
</tr>
</tbody>
</table>

---

**Manifold Mounted Pressure Filter**

NFS30

**Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)**

\[ \text{Flow Rate [GPM]} \]

\[ \text{Pressure Drop [PSID]} \]

\[ \text{Pressure Drop [BAR]} \]

- NZ
- NNZ

<table>
<thead>
<tr>
<th>Flow Rate [GPM]</th>
<th>Pressure Drop [PSID]</th>
<th>Pressure Drop [BAR]</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5</td>
<td>0.4</td>
<td>0.02</td>
</tr>
<tr>
<td>10</td>
<td>1.2</td>
<td>0.08</td>
</tr>
<tr>
<td>15</td>
<td>2.0</td>
<td>0.13</td>
</tr>
<tr>
<td>20</td>
<td>2.8</td>
<td>0.19</td>
</tr>
<tr>
<td>25</td>
<td>3.6</td>
<td>0.22</td>
</tr>
</tbody>
</table>

\[ \text{NZ} \]

- N3
- N10
- N25

\[ \text{NNZ} \]

- NN3
- NN10
- NN25

**Note:**

- V_f = 175 SUS (37.2 cSt) / 150 SUS (32 cSt) = 1.2
- \( \Delta P_{\text{filter}} = 10 \text{ psi + (8 psi x 1.2) = 19.6 psi} \)
- \( \text{OR} \)
- \( \Delta P_{\text{filter}} = .69 \text{ bar + (.55 bar x 1.2) = 1.35 bar} \)
## Manifold Mounted Pressure Filter

### Filter Model Number Selection

<table>
<thead>
<tr>
<th>BOX 1</th>
<th>BOX 2</th>
<th>BOX 3</th>
<th>BOX 4</th>
<th>BOX 5</th>
<th>BOX 6</th>
<th>BOX 7</th>
<th>BOX 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>NFS30</td>
<td>1N</td>
<td>Z</td>
<td>10</td>
<td>SO</td>
<td>D</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

= NFS301NZ10SOD

### Box 1
- **Filter Series**
  - NFS30
  - NFSN30 (Non-bypassing: requires ZX high collapse elements)

### Box 2
- **Number & Size of Elements**
  - N = Single Length
  - NN = Double Length

### Box 3
- **Media Type**
  - Omit = E Media (Cellulose)
  - Z = Excellement® Z-Media® (synthetic)
  - AS = Anti-Stat Media (synthetic)
  - ZX = Excellement® Z-Media® (high collapse center tube)
  - M = Media (reusable metal mesh) N size only

### Box 4
- **Micron Rating**
  - 1 = 1 Micron (Z, ZX media)
  - 3 = 3 Micron (AS, E, Z, ZX media)
  - 5 = 5 Micron (AS, Z, ZX media)
  - 10 = 10 Micron (AS, E, M, Z, ZX media)
  - 25 = 25 Micron (E, Z, ZX media)
  - 60 = 60 Micron (M media)

### Box 5
- **Seal Material**
  - Omit = Buna N
  - V = Viton®
  - W = Buna N, Anodized Aluminum parts

### Box 6
- **Porting**
  - SO = SAE-12
  - PO = 3/4" NPTF
  - FO = 1" SAE 4-bolt flange Code 61
  - O = Manifold

### Box 7
- **Bypass**
  - Omit = 40 PSI Bypass
  - 50 = 50 PSI Bypass
  - X = Blocked bypass (Omit box 7 if NFSN30 is used)

### Box 8
- **Dirt Alarm® Options**
  - Omit = None
  - Visual
    - D = Pointer
    - D5 = Visual pop-up
  - Visual with Thermal Lockout
    - D8 = Visual w/ thermal lockout
  - Electrical
    - MS5 = Electrical w/ 12 in. 18 gauge 4-conductor cable
    - MS5LC = Low current MS5
    - MS10 = Electrical w/ DIN connector (male end only)
    - MS10LC = Low current MS10
    - MS11 = Electrical w/ 12 ft. 4-conductor wire
    - MS12 = Electrical w/ 5 pin Brad Harrison connector (male end only)
    - MS12LC = Low current MS12
    - MS16 = Electrical w/ weather-packed sealed connector
    - MS16LC = Low current MS16
    - MS17LC = Electrical w/ 4 pin Brad Harrison male connector
  - Electrical with Thermal Lockout
    - MS5T = MS5 (see above) w/ thermal lockout
    - MS5TLC = Low current MS5T
    - MS10T = MS10 (see above) w/ thermal lockout
    - MS10TLC = Low current MS10T
    - MS12T = MS12 (see above) w/ thermal lockout
    - MS12TLC = Low current MS12T
    - MS16T = MS16 (see above) w/ thermal lockout
    - MS16TLC = Low current MS16T
    - MS17TLC = Low current MS17T
  - Visual
    - MS13 = Supplied w/ threaded connector & light
    - MS14 = Supplied w/ 5 pin Brad Harrison connector & light (male end)
  - Electrical
    - MS13DCT = MS13 (see above), direct current, w/ thermal lockout
    - MS13DCLCT = Low current MS13DCT
    - MS14DCT = MS14 (see above), direct current, w/ thermal lockout
    - MS14DCLCT = Low current MS14DCT

### Notes:
- Box 2. Replacement element part numbers are identical to contents of Boxes 2, 3, 4 and 5.
- Box 5. E media (cellulose) elements are only available with Buna N seals. For options V and W, all aluminum parts are anodized. Viton® is a registered trademark of DuPont Dow Elastomers.
- Box 6. For option O, O-rings included; fastening hardware not included.
- Box 7. When X is paired with a standard filter series, a standard bushing and spring plate will be used.
- Box 8. For options SO, PO and FO, available dirt alarm is D only.
Top-Ported Pressure Filter

Features and Benefits
- Top-ported pressure filter
- All aluminum assembly
- Meets HF2 automotive standards
- Offered in straight thread porting
- Optional drain plug in bowl for easy servicing
- Available with non-bypass option

Flow Rating: Up to 25 gpm (100 L/min) for 150 SUS (32 cSt) fluids
Max. Operating Pressure: 3000 psi (210 bar)
Min. Yield Pressure: 10,000 psi (690 bar), per NFPA T2.6.1
Rated Fatigue Pressure: 1800 psi (124 bar), per NFPA T2.6.1-2005
Temp. Range: -20°F to 225°F (-29°C to 107°C)
Bypass Setting:
- Cracking: 50 psi (3.4 bar)
- Non-bypassing model has a blocked bypass.
Porting Head: Aluminum
Element Case: Aluminum
Weight of YF30-4Y: 3.75 lbs. (1.70 kg)
Weight of YF30-8Y: 4.25 lbs. (1.93 kg)
Element Change Clearance: 4.50" (115 mm)

Filter Housing Specifications

<table>
<thead>
<tr>
<th>Fluid</th>
<th>Compatibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Petroleum Based Fl</td>
<td>All E Media (cellulose) and Z-Media® (synthetic)</td>
</tr>
<tr>
<td>High Water Content</td>
<td>All Z-Media® (synthetic)</td>
</tr>
<tr>
<td>Invert Emulsions</td>
<td>10 and 25 µ Z-Media® (synthetic)</td>
</tr>
<tr>
<td>Water Glycols</td>
<td>3, 5, 10 and 25 µ Z-Media® (synthetic)</td>
</tr>
</tbody>
</table>

Model No. of filter in photograph is YF308YZ10SD5.
Metric dimensions in ( ).
Dimensions shown are inches (millimeters) for general information and overall envelope size only.
For complete dimensions please contact Schroeder Industries to request a certified print.

### Filtration Ratio Per ISO 4572/NFPA T3.10.8.8

Using automated particle counter (APC) calibrated per ISO 4402

<table>
<thead>
<tr>
<th>Element</th>
<th>$\beta_x \geq 75$</th>
<th>$\beta_x \geq 100$</th>
<th>$\beta_x \geq 200$</th>
</tr>
</thead>
<tbody>
<tr>
<td>4YZ1/8YZ1</td>
<td>&lt;1.0</td>
<td>&lt;1.0</td>
<td>&lt;1.0</td>
</tr>
<tr>
<td>4YZ3/8YZ3</td>
<td>&lt;1.0</td>
<td>&lt;1.0</td>
<td>&lt;2.0</td>
</tr>
<tr>
<td>4YZ5/8YZ5</td>
<td>2.5</td>
<td>3.0</td>
<td>4.0</td>
</tr>
<tr>
<td>4YZ10/8YZ10</td>
<td>7.4</td>
<td>8.2</td>
<td>10.0</td>
</tr>
<tr>
<td>4YZ25/8YZ25</td>
<td>18.0</td>
<td>20.0</td>
<td>22.5</td>
</tr>
<tr>
<td>4YZX5/8YZX5</td>
<td>2.5</td>
<td>3.0</td>
<td>4.0</td>
</tr>
<tr>
<td>4YZX10/8YZX10</td>
<td>7.4</td>
<td>8.2</td>
<td>10.0</td>
</tr>
</tbody>
</table>

### Filtration Ratio per ISO 16889

Using APC calibrated per ISO 11171

<table>
<thead>
<tr>
<th>Element</th>
<th>$\beta_{j,c} \geq 200$</th>
<th>$\beta_{j,c} \geq 1000$</th>
</tr>
</thead>
<tbody>
<tr>
<td>4YZ1/8YZ1</td>
<td>&lt;4.0</td>
<td>4.2</td>
</tr>
<tr>
<td>4YZ3/8YZ3</td>
<td>&lt;4.0</td>
<td>4.8</td>
</tr>
<tr>
<td>4YZ5/8YZ5</td>
<td>4.8</td>
<td>6.3</td>
</tr>
<tr>
<td>4YZ10/8YZ10</td>
<td>8.0</td>
<td>10.0</td>
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<tr>
<td>4YZ25/8YZ25</td>
<td>19.0</td>
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<tr>
<td>4YZX5/8YZX5</td>
<td>5.6</td>
<td>7.2</td>
</tr>
<tr>
<td>4YZX10/8YZX10</td>
<td>8.0</td>
<td>9.8</td>
</tr>
</tbody>
</table>

### Element Nominal Dimensions

| 4Y | Ø2.50 x 7.50 mm (45 mm) O.D. x 4.50” (114 mm) long |
| 8Y | Ø1.77” (45 mm) O.D. x 8.21” (209 mm) long |

### Flow Direction

Outside In

### Element Collapse Rating

150 psid (10 bar) for standard elements
3000 psid (210 bar) for high collapse (ZX) versions

### Notes

1.) BOWL INSTALLATION TORQUE = 45 FT/LBS.
Exercise:
Determine $\Delta P_{\text{filter}}$ at 10 gpm (37.9 L/min) for YF304YZ10WSDRD5 using 200 SUS (42.6 cSt) fluid.

Use the housing pressure curve to determine $\Delta P_{\text{housing}}$ at 10 gpm. In this case, $\Delta P_{\text{housing}}$ is 3 psi (.21 bar) on the graph for the YF30 housing.

Use the element pressure curve to determine $\Delta P_{\text{element}}$ at 10 gpm. In this case, $\Delta P_{\text{element}}$ is 8 psi (.55 bar) according to the graph for the 4YZ10 element.

Because the viscosity in this sample is 200 SUS (42.6 cSt), we determine the Viscosity Factor ($V_f$) by dividing the Operating Fluid Viscosity with the Standard Viscosity of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential, $\Delta P_{\text{filter}}$, is calculated by adding $\Delta P_{\text{housing}}$ with the true element pressure differential, ($\Delta P_{\text{element}} * V_f$). The $\Delta P_{\text{element}}$ from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

Solution:
$\Delta P_{\text{housing}} = 3 \text{ psi} \ (\text{.21 bar}) \ | \ \Delta P_{\text{element}} = 8 \text{ psi} \ (\text{.55 bar})$

$V_f = 200 \text{ SUS (42.6 cSt)} / 150 \text{ SUS (32 cSt)} = 1.3$

$\Delta P_{\text{filter}} = (3 \text{ psi} + (8 \text{ psi} * 1.3)) = 13.4 \text{ psi}$

OR

$\Delta P_{\text{filter}} = (\text{.21 bar} + (\text{.55 bar} * 1.3)) = .93 \text{ bar}$

Note:
If your element is not graphed, use the following equation:
$\Delta P_{\text{element}} = \text{Flow Rate} * \Delta P_f$ Plug this variable into the overall pressure drop equation.
# Top-ported Pressure Filter

## How to Build a Valid Model Number for a Schroeder YF30:

<table>
<thead>
<tr>
<th>BOX 1</th>
<th>BOX 2</th>
<th>BOX 3</th>
<th>BOX 4</th>
<th>BOX 5</th>
<th>BOX 6</th>
<th>BOX 7</th>
<th>BOX 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>YF30</td>
<td>4</td>
<td>YZ10</td>
<td>W</td>
<td>S</td>
<td>DR</td>
<td>D5</td>
<td></td>
</tr>
</tbody>
</table>

= YF304YZ10WSRD5

### Filter Series
- **YF30**
- **YFN30**

**Non-bypassing requires ZX high collapse elements**

### Element Size and Media
- **YZ1** = Y size 1 µ Excellement® Z-Media® (synthetic)
- **YZ3** = Y size 3 µ Excellement® Z-Media® (synthetic)
- **YZ5** = Y size 5 µ Excellement® Z-Media® (synthetic)
- **YZ10** = Y size 10 µ Excellement® Z-Media® (synthetic)
- **YZ25** = Y size 25 µ Excellement® Z-Media® (synthetic)
- **YZX5** = Y size 5 µ Excellement® Z-Media® (high collapse center tube)
- **YZX10** = Y size 10 µ Excellement® Z-Media® (high collapse center tube)

### Seal Material
- Omit = Buna N
- **V** = Viton®
- **W** = Buna N, Anodized Aluminum parts

### Inlet Port
- **S** = SAE-12
- **O** = Subplate (contact factory)

### Dirt Alarm Location
- **Omit** = Side of filter head
- **T** = Top of filter head

### Optional Bowl Drain
- **Omit** = No drain
- **DR** = Drain

### Dirt Alarm Options
- **Omit** = None
- **DS** = Visual pop-up
- **D8** = Visual w/ thermal lockout
- **MS5** = Electrical w/ 12 in. 18 gauge 4-conductor cable
- **MS5LC** = Low current MS5
- **MS10** = Electrical w/ DIN connector (male end only)
- **MS10LC** = Low current MS10
- **MS11** = Electrical w/ 12 ft. 4-conductor wire
- **MS12** = Electrical w/ 5 pin Brad Harrison connector (male end only)
- **MS12LC** = Low current MS12
- **MS16** = Electrical w/ weather-packed sealed connector
- **MS16LC** = Low current MS16
- **MS17LC** = Electrical w/ 4 pin Brad Harrison male connector

### Electrical with Thermal Lockout
- **MS13DC** = Supplied w/ threaded connector & light
- **MS14DC** = Supplied w/ 5 pin Brad Harrison connector & light (male end)
- **MS13DCT** = MS13 (see above), direct current, w/ thermal lockout
- **MS13DCLCT** = Low current MS13DCT
- **MS14DCT** = MS14 (see above), direct current, w/ thermal lockout
- **MS14DCLCT** = Low current MS14DCT

### NOTES:
- Box 2. Replacement element part numbers are combination of Boxes 2, 3, and 4. Example 4YZ10V
- Box 4. For options V and W, all aluminum parts are anodized. Viton® is a registered trademark of DuPont Dow Elastomers.
- Box 8. Standard indicator setting for non-bypassing model is 50 psi unless otherwise specified.
Non-Bypassing Pressure Filter

Features and Benefits
- Top-ported non-bypassing pressure filter
- Unique valve eliminates need for high collapse elements, valve begins to close off flow at 50 psi: Differential Pressure and fully closes off flow by 80 psi: DP. This ensures that no un-filtered flow is allowed downstream to critical components.
- Offered in pipe, SAE straight thread and ISO 228 porting
- Integral inlet and outlet female test points option available

Flow Rating: Up to 30 gpm (115 L/min) for 150 SUS (32 cSt) fluids
Max. Operating Pressure: 3000 psi (210 bar)
Min. Yield Pressure: 12,000 psi (828 bar), per NFPA T2.6.1
Rated Fatigue Pressure: 1800 psi (125 bar), per NFPA T2.6.1-2005
Temp. Range: -20°F to 225°F (-29°C to 107°C)
Bypass Setting: Non-Bypassing
Porting Head: Aluminum
Element Case: Steel
Weight of CFX30-1CC: 19.5 lbs. (8.9 kg)
Element Change Clearance: 4.00” (100 mm)

Unique Non-Bypassing Filtration: A Better Way That Does Not Require High Crush Elements

Schroeder's CFX30 series is a non-bypassing filter that incorporates the use of a unique pressure drop limiting valve that maintains the differential pressure across the element below the element's collapse pressure rating. As the element accumulates dirt, the pressure drop increases across the element and, therefore, across the spool of the valve. At 50 psi, the spool begins to move, restricting flow as needed to prevent the pressure drop from increasing further and compromising element integrity. This design allows the CFX30 filters to safely use the lower cost standard elements, eliminating the need for expensive high-crush replacement elements.
Non-Bypassing Pressure Filter

Element Collapse Rating: 150 psid (10 bar) for standard elements
Flow Direction: Outside In
Element Nominal CC: 3.0" (75 mm) O.D. x 9.5" (240 mm) long
Dimensions:

<table>
<thead>
<tr>
<th>Element</th>
<th>DHC (gm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CCZ1</td>
<td>57</td>
</tr>
<tr>
<td>CCZ3</td>
<td>58</td>
</tr>
<tr>
<td>CCZ5</td>
<td>63</td>
</tr>
<tr>
<td>CCZ10</td>
<td>62</td>
</tr>
<tr>
<td>CCZ25</td>
<td>63</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Element</th>
<th>Filtration Ratio Per ISO 4572/NFPA T3.10.8.8 Using automated particle counter (APC) calibrated per ISO 4402</th>
<th>Filtration Ratio per ISO 16889 Using APC calibrated per ISO 11171</th>
</tr>
</thead>
<tbody>
<tr>
<td>CCZ1</td>
<td>$\beta_x \geq 75$ $\beta_x \geq 100$ $\beta_x \geq 200$ $\beta_x(c) \geq 200$ $\beta_x(c) \geq 1000$</td>
<td></td>
</tr>
<tr>
<td>CCZ3</td>
<td>$\beta_x \geq 75$ $\beta_x \geq 100$ $\beta_x \geq 200$ $\beta_x(c) \geq 200$ $\beta_x(c) \geq 1000$</td>
<td></td>
</tr>
<tr>
<td>CCZ5</td>
<td>2.5 3.0 4.0 7.4 8.2 10.0 18.0 20.0 22.5</td>
<td>4.8 6.3 8.0 10.0 19.0 24.0</td>
</tr>
<tr>
<td>CCZ10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CCZ25</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Metric dimensions in ( ).
Dimensions shown are inches (millimeters) for general information and overall envelope size only.
For complete dimensions please contact Schroeder Industries to request a certified print.
Pressure Drop Information
Based on Flow Rate and Viscosity

\[ \Delta P_{\text{filter}} = \Delta P_{\text{housing}} + (\Delta P_{\text{element}} \times V_f) \]

Exercise:
Determine \(\Delta P_{\text{filter}}\) at 15 gpm (57 L/min) for CFX301CZ5SD5 using 100 SUS (21.3 cSt) fluid.

Use the housing pressure curve to determine \(\Delta P_{\text{housing}}\) at 15 gpm. In this case, \(\Delta P_{\text{housing}}\) is 5 psi (.34 bar) on the graph for the CFX30 housing.

Use the element pressure curve to determine \(\Delta P_{\text{element}}\) at 15 gpm. In this case, \(\Delta P_{\text{element}}\) is 3 psi (.21 bar) according to the graph for the CZ5 element.

Because the viscosity in this sample is 100 SUS (21.3 cSt), we determine the Viscosity Factor \((V_f)\) by dividing the Operating Fluid Viscosity with the Standard Viscosity of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential, \(\Delta P_{\text{filter}}\), is calculated by adding \(\Delta P_{\text{housing}}\) with the true element pressure differential, \(\Delta P_{\text{element}} \times V_f\). The \(\Delta P_{\text{element}}\) from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

Solution:
\[\Delta P_{\text{housing}} = 5 \text{ psi (.34 bar)} \quad \Delta P_{\text{element}} = 3 \text{ psi (.21 bar)}\]

\[V_f = \frac{100 \text{ SUS (21.3 cSt)}}{150 \text{ SUS (32 cSt)}} = .67\]

\[\Delta P_{\text{filter}} = .34 \text{ psi} + (.21 \text{ psi} \times .67) = .48 \text{ psi}\]

OR

\[\Delta P_{\text{filter}} = .34 \text{ bar} + (.21 \text{ bar} \times .67) = .48 \text{ bar}\]
## Non-Bypassing Pressure Filter

### How to Build a Valid Model Number for a Schroeder CFX30:

<table>
<thead>
<tr>
<th>BOX 1</th>
<th>BOX 2</th>
<th>BOX 3</th>
<th>BOX 4</th>
<th>BOX 5</th>
<th>BOX 6</th>
<th>BOX 7</th>
<th>BOX 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>CFX30</td>
<td>CC</td>
<td>Z</td>
<td>S</td>
<td>S</td>
<td>D5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

CFX30CCZ5SD5

### BOX 1
**Filter Series**
- **CFX30**

### BOX 2
**Number & Size of Elements**
- **C** = Single Length
- **CC** = Double Length

### BOX 3
**Media Type**
- **Omit** = E Media (cellulose)
- **Z** = Excellement® Z-Media® (synthetic)
- **AS** = Anti-Stat Media (synthetic)
- **M** = Media (Reusable Metal Mesh)

### BOX 4
**Micron Rating**
- 1 = 1 Micron (Z-Media®)
- 3 = 3 Micron (E, Z, AS Media)
- 5 = 5 Micron (Z, AS Media)
- 10 = 10 Micron (E, M, Z, AS Media)
- 25 = 25 Micron (E & Z-Media®)

### BOX 5
**Seal Material**
- **Omit** = Buna N
- **V** = Viton®
- **W** = Buna N, Anodized Aluminum parts
- **H** = EPR
- **H.5** = Skydrol® compatibility

### BOX 6
**Porting**
- **S** = SAE-20
- **P** = 1¼" NPTF
- **B** = ISO 228 G-1¼"

### BOX 7
**Options**
- **Omit** = None
- **L** = Two ¼" NPTF inlet and outlet female test ports
- **U** = Schroeder Check ¼"-20 UNF Test Point installation in cap (upstream)

### BOX 8
**Dirt Alarm® Options**
- **Omit** = None
- **D5** = Visual pop-up
- **D8** = Visual w/ thermal lockout

### Notes:
- Box 2. Replacement element part numbers are identical to contents of Boxes 2, 3, 4 and 5. E media (cellulose) elements are only available with Buna N seals.
- Box 5. For options H, V, W, and H.5, all aluminum parts are anodized. H.5 seal designation includes the following: EPR seals, stainless steel wire mesh on elements, and light oil coating on housing exterior. Viton® is a registered trademark of DuPont Dow Elastomers. Skydrol® is a registered trademark of Solutia Inc.
- Box 6. B porting option supplied with metric mounting holes.
### Features and Benefits
- Durable carbon steel construction
- Filter housings are designed to withstand pressure surges as well as high static pressure loads
- Screw-in bowl allows the filter element to be easily removed for replacement or cleaning
- Standard model supplied with drain plugs
- Standard Viton® seal on filter housing
- Filter contains an integrated equalization valve
- Pressure is equalized between filters by raising the change-over lever prior to switching it to the relevant filter side

### Flow Rating Specifications

<table>
<thead>
<tr>
<th>Flow Rating</th>
<th>Up to 100 gpm (380 L/min) for 150 SUS (32 cSt) fluids</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. Operating Pressure</td>
<td>3000 psi (207 bar)</td>
</tr>
<tr>
<td>Min. Yield Pressure</td>
<td>10,600 psi (730 bar)</td>
</tr>
<tr>
<td>Rated Fatigue Pressure</td>
<td>3000 psi (207 bar)</td>
</tr>
<tr>
<td>Temp. Range</td>
<td>-22°F to 250°F (-30°C to 121°C)</td>
</tr>
<tr>
<td>Bypass Setting</td>
<td>102 psi (7 bar)</td>
</tr>
<tr>
<td>Porting Head</td>
<td>Ductile Iron</td>
</tr>
<tr>
<td>Element Case</td>
<td>Steel</td>
</tr>
<tr>
<td>Weight of PLD-10DV</td>
<td>97 lbs. (43.9 kg)</td>
</tr>
<tr>
<td>Weight of PLD-16DV</td>
<td>100 lbs. (45.3 kg)</td>
</tr>
<tr>
<td>Element Change Clearance</td>
<td>10DV: 3.5&quot; (89 mm)</td>
</tr>
<tr>
<td></td>
<td>16DV: 3.5&quot; (89 mm)</td>
</tr>
</tbody>
</table>

### Fluid Compatibility

<table>
<thead>
<tr>
<th>Type Fluid</th>
<th>Appropriate Schroeder Media</th>
</tr>
</thead>
<tbody>
<tr>
<td>Petroleum Based Fluids</td>
<td>All Z-Media® (synthetic)</td>
</tr>
<tr>
<td>Invert Emulsions</td>
<td>10 and 25 µ Z-Media® (synthetic)</td>
</tr>
<tr>
<td>Water Glycols</td>
<td>3, 5, 10 and 25 µ Z-Media® (synthetic)</td>
</tr>
</tbody>
</table>
High Pressure Filter

Element Performance Information & Dirt Holding Capacity

<table>
<thead>
<tr>
<th>Element</th>
<th>Filtration Ratio Per ISO 4572/NFPA T3.10.8.8 Using automated particle counter (APC) calibrated per ISO 4402</th>
<th>Filtration Ratio per ISO 16889 Using APC calibrated per ISO 11171</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$\beta_x \geq 75$</td>
<td>$\beta_x \geq 100$</td>
</tr>
<tr>
<td>10/16DVZ1</td>
<td>&lt;1.0</td>
<td>&lt;1.0</td>
</tr>
<tr>
<td>10/16DVZ3</td>
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<td>&lt;1.0</td>
</tr>
<tr>
<td>10/16DVZ5</td>
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<td>3.0</td>
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<tr>
<td>10/16DVZ10</td>
<td>7.4</td>
<td>8.2</td>
</tr>
<tr>
<td>10/16DVZ25</td>
<td>18.0</td>
<td>20.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Element</th>
<th>DHC (gm)</th>
<th>Element</th>
<th>DHC (gm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10DVZ1</td>
<td>57</td>
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<td>10DVZ5</td>
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<tr>
<td>10DVZ10</td>
<td>62</td>
<td>16DVZ10</td>
<td>112</td>
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<tr>
<td>10DVZ25</td>
<td>63</td>
<td>16DVZ25</td>
<td>102</td>
</tr>
</tbody>
</table>

Element Collapse Rating: 290 psid (20 bar)
Flow Direction: Outside In
Element Nominal Dimensions: 3.0" (75 mm) O.D. x 14.5" (370 mm) long

Metric dimensions in ( ).
Dimensions shown are inches (millimeters) for general information and overall envelope size only.
For complete dimensions please contact Schroeder Industries to request a certified print.
Pressure Drop Information Based on Flow Rate and Viscosity

Exercise:
Determine \( \Delta P_{\text{filter}} \) at 50 gpm (189 L/min) for PLD10DVZ1VF24VM using 200 SUS (42.6 cSt) fluid.

Use the housing pressure curve to determine \( \Delta P_{\text{housing}} \) at 50 gpm. In this case, \( \Delta P_{\text{housing}} \) is 8 psi (.55 bar) on the graph for the PLD housing.

Use the element pressure curve to determine \( \Delta P_{\text{element}} \) at 50 gpm. In this case, \( \Delta P_{\text{element}} \) is 17.5 psi (1.2 bar) according to the graph for the 10DVZ1 element.

Because the viscosity in this sample is 200 SUS (42.6 cSt), we determine the Viscosity Factor (\( V_f \)) by dividing the Operating Fluid Viscosity with the Standard Viscosity of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential, \( \Delta P_{\text{filter}} \), is calculated by adding \( \Delta P_{\text{housing}} \) with the true element pressure differential, \( \Delta P_{\text{element}} \cdot V_f \). The \( \Delta P_{\text{element}} \) from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

Solution:
\[
\Delta P_{\text{housing}} = 8 \text{ psi} \quad \text{[.55 bar]}
\]
\[
\Delta P_{\text{element}} = 17.5 \text{ psi} \quad \text{[1.2 bar]}
\]

\( V_f = \frac{200 \text{ SUS} \ (42.6 \text{ cSt})}{150 \text{ SUS} \ (32 \text{ cSt})} = 1.3 \)

\( \Delta P_{\text{filter}} = 8 \text{ psi} + (17.5 \text{ psi} \times 1.3) = 30.8 \text{ psi} \)

OR
\[ \Delta P_{\text{filter}} = 0.55 \text{ bar} + (1.2 \text{ bar} \times 1.3) = 2.1 \text{ bar} \]

Note:
If your element is not graphed, use the following equation:
\[ \Delta P_{\text{element}} = \text{Flow Rate} \times \Delta P_f \]
Plug this variable into the overall pressure drop equation:

\[
\Delta P_{\text{filter}} = \Delta P_{\text{housing}} + \Delta P_{\text{element}} \cdot V_f
\]
### High Pressure Filter

#### How to Build a Valid Model Number for a Schroeder PLD:

<table>
<thead>
<tr>
<th>BOX 1</th>
<th>BOX 2</th>
<th>BOX 3</th>
<th>BOX 4</th>
<th>BOX 5</th>
<th>BOX 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>PLD</td>
<td>10</td>
<td>DVZ1</td>
<td>V</td>
<td>F24</td>
<td>VM</td>
</tr>
</tbody>
</table>

= PLD10DVZ1VF24VM

#### Filter Model Number Selection

**Box 1:** Filter Series

- **PLD**

**Box 2:** Length of Elements (in)

- 10
- 16

**Box 3:** Element Size and Media

- **DVZ1** = DV size 1 µ synthetic media
- **DVZ3** = DV size 3 µ synthetic media
- **DVZ5** = DV size 5 µ synthetic media
- **DVZ10** = DV size 10 µ synthetic media
- **DVZ25** = DV size 25 µ synthetic media

**Box 4:** Seal Material

- **Omit** = Buna N
- **V** = Viton®

**Box 5:** Porting

- **F24** = 1½” SAE 4-bolt flange Code 61
- **S24** = SAE-24 (1½”)

**Box 6:** Dirt Alarm® Options

- **Omit** = None
- **Visual**
- **VM** = Visual pop-up w/manual rest
- **Electrical**
- **DW** = AC/DC 3-wire (NO or NC)

#### Notes:

- Box 2. Replacement element part numbers are a combination of Boxes 2, 3 and 4. Example: 16DVZ10
- Box 4. Filter housings are supplied with standard Viton seals. Seal designation in Box 4 applies to element only. Viton is a registered trademark of DuPont Dow Elastomers.
Top-Ported Pressure Filter

Features and Benefits
- Top-ported pressure filter
- Available with non-bypass option with high collapse element
- Offered in pipe, SAE straight thread and ISO 228 porting
- Integral inlet and outlet female test points option available
- No-Element indicator option available

Flow Rating:
- CF40 - 45 gpm (170 L/min) for 150 SUS (32 cSt) fluids
- DF40 - 30 gpm (113 L/min) for 150 SUS (32 cSt) fluids

Max. Operating Pressure: 4000 psi (275 bar)
Min. Yield Pressure: 12,000 psi (828 bar), per NFPA T2.6.1
Rated Fatigue Pressure: 1800 psi (125 bar), per NFPA T2.6.1-2005
Temp. Range: -20°F to 225°F (-29°C to 107°C)
Bypass Setting:
- Cracking: 40 psi (2.8 bar)
- Full Flow: 72 psi (5.0 bar)
Non-bypassing model has a blocked bypass.

Porting Head: Aluminum
Element Case: Steel

Weight of CF40/DF40-1C: 14.0 lbs. (6.4 kg)
Weight of CF40/DF40-1CC: 19.5 lbs. (8.9 kg)
Element Change Clearance: 4.00" (100 mm) for C elements
8.75" (219 mm) for CC elements

Filter Housing Specifications

Filter Compatibility
- NOF-50-760
- FOF60-03
- NMF30
- RMF60
- 14-CRZX10

Fluid Compatibility
- NOF30-05
- NOF-50-760
- FOF60-03
- NMF30
- RMF60
- 14-CRZX10

Model No. of filters in photograph are CF401CC10SD5 and DF401CCZ10PDS.
Top-Ported Pressure Filter

**Element Performance Information & Dirt Holding Capacity**

Metric dimensions in ():
Dimensions shown are inches (millimeters) for general information and overall envelope size only.
For complete dimensions please contact Schroeder Industries to request a certified print.

**Filtration Ratio Per ISO 4572/NFPA T3.10.8.8**
Using automated particle counter (APC) calibrated per ISO 4402

<table>
<thead>
<tr>
<th>Element</th>
<th>Filtration Ratio per ISO 16889</th>
<th>Using APC calibrated per ISO 11171</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( \beta_x \geq 75 )</td>
<td>( \beta_x \geq 100 )</td>
</tr>
<tr>
<td>CZ1/CCZ1</td>
<td>&lt; 1.0</td>
<td>&lt; 1.0</td>
</tr>
<tr>
<td>CZ3/CCZ3</td>
<td>&lt; 1.0</td>
<td>&lt; 1.0</td>
</tr>
<tr>
<td>CZ5/CCZ5</td>
<td>2.5</td>
<td>3.0</td>
</tr>
<tr>
<td>CZ10/CCZ10</td>
<td>7.4</td>
<td>8.2</td>
</tr>
<tr>
<td>CZ25/CCZ25</td>
<td>18.0</td>
<td>20.0</td>
</tr>
<tr>
<td>CCZX3</td>
<td>&lt; 1.0</td>
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</tr>
<tr>
<td>CCZX10</td>
<td>7.4</td>
<td>8.2</td>
</tr>
</tbody>
</table>

**Element**

<table>
<thead>
<tr>
<th>DHC (gm)</th>
<th>DHC (gm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CZ1</td>
<td>25</td>
</tr>
<tr>
<td>CZ3</td>
<td>26</td>
</tr>
<tr>
<td>CZ5</td>
<td>30</td>
</tr>
<tr>
<td>CZ10</td>
<td>28</td>
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<td>CZ25</td>
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<td>CCZ1</td>
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<td>CCZ10</td>
<td>62</td>
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<tr>
<td>CCZ25</td>
<td>63</td>
</tr>
<tr>
<td>CCZX3</td>
<td>26*</td>
</tr>
<tr>
<td>CCZX10</td>
<td>28*</td>
</tr>
</tbody>
</table>

**Element Collapse Rating:**
150 psid (10 bar) for standard elements
3000 psid (210 bar) for high collapse (ZX) versions

**Flow Direction:** Outside In

**Element Nominal Dimensions:**
- C: 3.0” (75 mm) O.D. x 4.75” (120 mm) long
- CC: 3.0” (75 mm) O.D. x 9.5” (240 mm) long

* Based on 100 psi terminal pressure
Exercise:
Determine $\Delta P_{\text{filter}}$ at 25 gpm (94.6 L/min) for CF40/CZ10SDS using 200 SUS (42.6 cSt) fluid.

Use the housing pressure curve to determine $\Delta P_{\text{housing}}$ at 25 gpm. In this case, $\Delta P_{\text{housing}}$ is 4.5 psi (.31 bar) on the graph for the CF40 housing.

Use the element pressure curve to determine $\Delta P_{\text{element}}$ at 25 gpm. In this case, $\Delta P_{\text{element}}$ is 6 psi (.42 bar) according to the graph for the CZ10 element.

Because the viscosity in this sample is 200 SUS (42.6 cSt), we determine the Viscosity Factor ($V_f$) by dividing the Operating Fluid Viscosity with the Standard Viscosity of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential, $\Delta P_{\text{filter}}$, is calculated by adding $\Delta P_{\text{housing}}$ with the true element pressure differential, $(\Delta P_{\text{element}} * V_f)$. The $\Delta P_{\text{element}}$ from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

Solution:
$\Delta P_{\text{housing}} = 4.5 \text{ psi} (.31 \text{ bar})$  \hspace{1cm} $\Delta P_{\text{element}} = 6 \text{ psi} (.42 \text{ bar})$

$V_f = 200 \text{ SUS (42.6 cSt) / 150 SUS (32 cSt)} = 1.3$

$\Delta P_{\text{filter}} = 4.5 \text{ psi} + (6 \text{ psi} * 1.3) = 12.3 \text{ psi}$

OR

$\Delta P_{\text{filter}} = .31 \text{ bar} + (.42 \text{ bar} * 1.3) = .86 \text{ bar}$
# SCHROEDER INDUSTRIES

## Top-Ported Pressure Filter

### How to Build a Valid Model Number for a Schroeder CF40:

<table>
<thead>
<tr>
<th>BOX 1</th>
<th>BOX 2</th>
<th>BOX 3</th>
<th>BOX 4</th>
<th>BOX 5</th>
<th>BOX 6</th>
<th>BOX 7</th>
<th>BOX 8</th>
<th>BOX 9</th>
<th>BOX 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>CF40</td>
<td>1C</td>
<td>Z</td>
<td>10</td>
<td>S</td>
<td>D5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Box 1**: Filter Series
- CF40
- CFN40 (Non-bypassing requires ZX high collapse elements)
- DF40
- DFN40 (Non-bypassing requires ZX high collapse elements)

**Box 2**: Number and Size of Elements
- CF40: 1 C
- CFN40: 1 CC
- DF40: 1 CC
- DFN40: 1 CC

**Box 3**: Media Type
- Omit = E Media (Cellulose)
- Z = Excellement’ Z-Media’ (synthetic)
- ZX = Excellement’ Z-Media’ (high collapse center tube)
- AS = Anti-Stat Media (synthetic)
- M = Media (reusable metal mesh) D size only

**Box 4**: Micron Rating
- 1 = 1 Micron (Z, ZX media)
- 3 = 3 Micron (AS, E, Z, ZX media)
- 5 = 5 Micron (AS, Z, ZX media)
- 10 = 10 Micron (AS, E, M, Z, ZX media)
- 25 = 25 Micron (E, Z & ZX media)

**Box 5**: Seal Material
- Omit = Buna N
- V = Viton®
- W = Buna N, Anodized Aluminum parts
- H = EPR
- H.5 = Skydrol® compatibility

**Box 6**: Porting
- S = SAE-20°
- P = 1¼” NPT
- B = ISO 228 G-1

**Box 7**: Bypass
- Omit = 40 PSI Bypass
- X = Blocked bypass
- 25 = 25 psi bypass setting (CF40 only)
- 30 = 30 psi bypass setting (CF40 only)
- 50 = 50 psi bypass setting

**Box 8**: Test Ports
- Omit = None
- L = Two 1/4” NPTF inlet and outlet female test ports

**Box 9**: Dirt Alarm® Options
- Omit = None
- D = Pointer
- DS = Visual pop-up
- D8 = Visual w/ thermal lockout

**Box 10**: Additional Options
- Omit = None
- N = No-Element Indicator (CF40 or DF40)

### Notes:
- Box 2. Replacement element part numbers are identical to contents of Boxes 2, 3, 4 and 5.
- Box 5. For options H, V, W, and H.5, all aluminum parts are anodized. H.5 seal designation includes the following: EPR seals, stainless steel wire mesh on elements, and light oil coating on housing exterior. Viton® is a registered trademark of DuPont Dow Elastomers. Skydrol® is a registered trademark of Solutia Inc.
- Box 6. B porting option supplied with metric mounting holes.
- Box 7. When X is paired with a standard filter series, a standard bushing and spring plate will be used.
- Box 9. Standard indicator setting for non-bypassing model is 50 psi unless otherwise noted.
- Box 10. N option is not available with CFN40 or DFN40. N option should be used in conjunction with dirt alarm.
Flow Rating: Up to 50 gpm (190 L/min) for 150 SUS (32 cSt) fluids
Max. Operating Pressure: 4000 psi (275 bar)
Min. Yield Pressure: 12,000 psi (828 bar), per NFPA T2.6.1
Rated Fatigue Pressure: 2500 psi (173 bar), per NFPA T2.6.1-R1-2005
Temp. Range: -20°F to 225°F (-29°C to 107°C)
Bypass Setting: Cracking: 40 psi (2.8 bar)
Full Flow: 75 psi (5.2 bar)
Porting Head: Steel
Element Case: Steel
Weight of PF40-5H: 21.8 lbs. (9.9 kg)
Weight of PF40-9H: 25.5 lbs. (11.6 kg)
Element Change Clearance: 3.25" (83 mm)

Features and Benefits
- Top-ported pressure filter
- All steel housing offers unparalleled fatigue rating
- Available with non-bypass option with high collapse element
- Two bowl lengths provide optimal sizing for the application
- Offered in conventional sub-plate, SAE straight thread, and ISO 228 porting

Model No. of filter in photograph is PF40HZ10S.
Element Performance Information & Dirt Holding Capacity

<table>
<thead>
<tr>
<th>Element</th>
<th>Filtration Ratio Per ISO 4572/NFPA T3.10.8.8 Using automated particle counter (APC) calibrated per ISO 4402</th>
<th>Filtration Ratio per ISO 16889 Using APC calibrated per ISO 11171</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( \beta_x \geq 75 )</td>
<td>( \beta_x \geq 100 )</td>
</tr>
<tr>
<td>5HZ1/9HZ1</td>
<td>&lt;1.0</td>
<td>&lt;1.0</td>
</tr>
<tr>
<td>5HZ3/9HZ3</td>
<td>&lt;1.0</td>
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<td>5HZ5/9HZ5</td>
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<td>5HZ25/9HZ25</td>
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<tr>
<td>5HZX3/9HZX3</td>
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<td>5HZX25/9HZX25</td>
<td>18.0</td>
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</table>

<table>
<thead>
<tr>
<th>Element</th>
<th>DHC (gm)</th>
<th>Element</th>
<th>DHC (gm)</th>
<th>Element</th>
<th>DHC (gm)</th>
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<th>DHC (gm)</th>
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<td>5HZ1</td>
<td>26</td>
<td>9HZ1</td>
<td>51</td>
<td>5HZX1</td>
<td>14</td>
<td>9HZX1</td>
<td>29</td>
</tr>
<tr>
<td>5HZ3</td>
<td>28</td>
<td>9HZ3</td>
<td>42</td>
<td>5HZX3</td>
<td>14</td>
<td>9HZX3</td>
<td>29</td>
</tr>
<tr>
<td>5HZ5</td>
<td>39</td>
<td>9HZ5</td>
<td>59</td>
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<td>32</td>
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<td>48</td>
<td>5HZ25</td>
<td>16</td>
<td>9HZ25</td>
<td>33</td>
</tr>
</tbody>
</table>

Element Collapse Rating: 150 psid (10 bar) for standard elements, 3000 psid (210 bar) for high collapse elements

Flow Direction: Outside In

Element Nominal Dimensions:
- 5H: 2.5" (100 mm) O.D. x 5.36" (136 mm) long
- 9H: 2.5" (100 mm) O.D. x 9.63" (244 mm) long

Metric dimensions in ( ).
Dimensions shown are inches (millimeters) for general information and overall envelope size only. For complete dimensions please contact Schroeder Industries to request a certified print.
"Top-Ported Pressure Filter"

\[ \Delta P_{\text{housing}} \]

PF40 \( \Delta P_{\text{housing}} \) for fluids with sp gr (specific gravity) = 0.86:

\[ \Delta P_{\text{filter}} = \Delta P_{\text{housing}} + (\Delta P_{\text{element}} \times V_f) \]

**Exercise:**
Determine \( \Delta P_{\text{filter}} \) at 20 gpm (75.7 L/min) for PF40HZ3SD5S using 160 SUS (34 cSt) fluid.

Use the housing pressure curve to determine \( \Delta P_{\text{housing}} \) at 20 gpm. In this case, \( \Delta P_{\text{housing}} \) is 2.5 psi (.17 bar) on the graph for the PF40 housing.

Use the element pressure curve to determine \( \Delta P_{\text{element}} \) at 20 gpm. In this case, \( \Delta P_{\text{element}} \) is 15 psi (1 bar) according to the graph for the 5HZ3 element.

Because the viscosity in this sample is 160 SUS (34 cSt), we determine the Viscosity Factor (\( V_f \)) by dividing the Operating Fluid Viscosity with the Standard Viscosity of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential, \( \Delta P_{\text{filter}} \), is calculated by adding \( \Delta P_{\text{housing}} \) with the true element pressure differential, \( \Delta P_{\text{element}} \times V_f \). The \( \Delta P_{\text{element}} \) from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

**Solution:**
\( \Delta P_{\text{housing}} = 2.5 \text{ psi (.17 bar)} \) | \( \Delta P_{\text{element}} = 15 \text{ psi (1 bar)} \)

\( V_f = 160 \text{ SUS (34 cSt)} / 150 \text{ SUS (32 cSt)} = 1.1 \)
\( \Delta P_{\text{filter}} = 2.5 + (15 \times 1.1) = 19 \text{ psi} \)

**OR**
\( \Delta P_{\text{filter}} = .17 + (1 \times 1.1) = 1.3 \text{ bar} \)

**Note:** If your element is not graphed, use the following equation:
\( \Delta P_{\text{element}} = \text{Flow Rate} \times \Delta P_f \). Plug this variable into the overall pressure drop equation.

<table>
<thead>
<tr>
<th>Ele.</th>
<th>( \Delta P )</th>
</tr>
</thead>
<tbody>
<tr>
<td>5HZX3</td>
<td>1.17</td>
</tr>
<tr>
<td>5HZX10</td>
<td>0.50</td>
</tr>
<tr>
<td>5HZX25</td>
<td>0.27</td>
</tr>
<tr>
<td>9HZX3</td>
<td>0.62</td>
</tr>
<tr>
<td>9HZX10</td>
<td>0.26</td>
</tr>
<tr>
<td>9HZX25</td>
<td>0.14</td>
</tr>
</tbody>
</table>
**Top-Ported Pressure Filter**

**PF40**

**How to Build a Valid Model Number for a Schroeder PF40:**

<table>
<thead>
<tr>
<th>BOX 1</th>
<th>BOX 2</th>
<th>BOX 3</th>
<th>BOX 4</th>
<th>BOX 5</th>
<th>BOX 6</th>
<th>BOX 7</th>
<th>BOX 8</th>
<th>BOX 9</th>
<th>BOX 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>PF40</td>
<td>5</td>
<td>HZ3</td>
<td>S</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>D5</td>
<td>S</td>
</tr>
</tbody>
</table>

- **Element Length (in)**
  - PF40: 5
  - PF40: 9

- **Element Part Number**
  - HZ1 = H size 1 µ Excellement® Z-Media® (synthetic)
  - HZ3 = H size 3 µ Excellement® Z-Media® (synthetic)
  - HZ5 = H size 5 µ Excellement® Z-Media® (synthetic)
  - HZ10 = H size 10 µ Excellement® Z-Media® (synthetic)
  - HZ25 = H size 25 µ Excellement® Z-Media® (synthetic)
  - HZX10 = H size 10 µ Excellement® Z-Media® (high collapse center tube)
  - HZX25 = H size 25 µ Excellement® Z-Media® (high collapse center tube)

- **Seal Material**
  - Omit = Buna N
  - H = EPR
  - V = Viton®
  - H.S = Skydrol® compatibility

- **Porting**
  - S = SAE-16
  - B = ISO 228 G-1" (metric)

- **Bypass**
  - Omit = 40 PSI bypass
  - X = Blocked Bypass
  - 50 = 50 PSI bypass

- **Test Points**
  - Omit = None
  - L = Two ¼” NPTF inlet & outlet female test ports
  - U = Schroeder Check ¾”-20 UNF test point installation in head (upstream)

- **Dirt Alarm® Options**
  - Omit = None
  - Visual
    - D5 = Visual pop-up
  - Visual with Thermal Lockout
    - D8 = Visual w/ thermal lockout

- **Electrical**
  - MS5 = Electrical w/ 12 in. 18 gauge 4-conductor cable
  - MS5LC = Low current MS5
  - MS10 = Electrical w/ DIN connector (male end only)
  - MS10LC = Low current MS10
  - MS11 = Electrical w/ 12 ft. 4-conductor wire
  - MS12 = Electrical w/ 5 pin Brad Harrison connector (male end only)
  - MS12LC = Low current MS12
  - MS16 = Electrical w/ weather-packed sealed connector
  - MS16LC = Low current MS16
  - MS17LC = Electrical w/4 pin Brad Harrison male connector

- **Visual with Thermal Lockout**
  - MS13DC = Supplied w/ threaded connector & light
  - MS14DC = Supplied w/ 5 pin Brad Harrison connector & light (male end)

- **Electrical with Thermal Lockout**
  - MS13DCT = MS13 (see above), direct current, w/ thermal lockout
  - MS13DCLCT = Low current MS13DCT
  - MS14DCT = MS14 (see above), direct current, w/ thermal lockout
  - MS14DCLCT = Low current MS14DCT

**Notes:**

- Box 2: Replacement element part numbers are a combination of Boxes 2, 3 and 4. Example: SHZ10V
- Box 4: For options H, V, and H.S, all aluminum parts are anodized. H.S seal designation includes the following: EPR seals, stainless steel wire mesh on elements, and light oil coating on housing exterior. Viton® is a registered trademark of DuPont Dow Elastomers. Skydrol® is a registered trademark of Solutia Inc.
- Box 5: B porting option supplied with metric mounting holes.
- Box 6: When X is paired with a standard filter series, a standard bushing and spring plate will be used.
- Box 8: Standard indicator setting for non-bypassing model is 50 psi unless otherwise noted.
Manifold Mounted Pressure Filter

Features and Benefits
- Manifold mounted high pressure filter
- Offered in square head conventional subplate porting
- Direct mounting to customer’s manifold
- Standard drain plug in bowl for easy servicing
- Various dirt alarm options available

Model No. of filter in photograph is RFS508R100.

Flow Rating: Up to 30 gpm (115 L/min) for 150 SUS (32 cSt) fluids
Max. Operating Pressure: 5000 psi (345 bar)
Min. Yield Pressure: 15,500 psi (1070 bar), per NFPA T2.6.1
Rated Fatigue Pressure: Contact Factory
Temp. Range: -20°F to 225°F (-29°C to 107°C)
Bypass Setting: Cracking: 40 psi (2.8 bar)
Full Flow: 56 psi (3.9 bar)
Porting Head: Steel
Element Case: Steel
Weight of RFS50-8R: 16.50 lbs. (7.5 kg)
Element Change Clearance: 3.0” (75 mm)

Type Fluid | Appropriate Schroeder Media
---|---
Petroleum Based Fluids | All E Media (cellulose) and Z-Media® (synthetic)
High Water Content | All Z-Media® (synthetic)
Invert Emulsions | 10 and 25 µ Z-Media® (synthetic)
Water Glycols | 3, 5, 10 and 25 µ Z-Media® (synthetic)
Phosphate Esters | All Z-Media® (synthetic) with H (EPR) seal designation
Skydrol® | 3, 5, 10 and 25 µ Z-Media® (synthetic) with H.5 seal designation (EPR seals and stainless steel wire mesh in element, and light oil coating on housing exterior)

Filter Housing Specifications

Fluid Compatibility

SCHROEDER INDUSTRIES 75
### Filtration Ratio Per ISO 4572/NFPA T3.10.8.8

Using automated particle counter (APC) calibrated per ISO 4402

<table>
<thead>
<tr>
<th>Element</th>
<th>$\beta_x \geq 75$</th>
<th>$\beta_x \geq 100$</th>
<th>$\beta_x \geq 200$</th>
<th>$\beta_x(0) \geq 200$</th>
<th>$\beta_x(c) \geq 1000$</th>
</tr>
</thead>
<tbody>
<tr>
<td>8RZ1</td>
<td>&lt;1.0</td>
<td>&lt;1.0</td>
<td>&lt;1.0</td>
<td>&lt;4.0</td>
<td>4.2</td>
</tr>
<tr>
<td>8RZ3</td>
<td>&lt;1.0</td>
<td>&lt;1.0</td>
<td>&lt;2.0</td>
<td>&lt;4.0</td>
<td>4.8</td>
</tr>
<tr>
<td>8RZ5</td>
<td>2.5</td>
<td>3.0</td>
<td>4.0</td>
<td>4.8</td>
<td>6.3</td>
</tr>
<tr>
<td>8RZ10</td>
<td>7.4</td>
<td>8.2</td>
<td>10.0</td>
<td>8.0</td>
<td>10.0</td>
</tr>
<tr>
<td>8RZ25</td>
<td>18.0</td>
<td>20.0</td>
<td>22.5</td>
<td>19.0</td>
<td>24.0</td>
</tr>
</tbody>
</table>

### Filtration Ratio per ISO 16889

Using APC calibrated per ISO 11171

<table>
<thead>
<tr>
<th>Element</th>
<th>$\beta_x(0) \geq 200$</th>
<th>$\beta_x(c) \geq 1000$</th>
</tr>
</thead>
<tbody>
<tr>
<td>8RZ1</td>
<td>&lt;4.0</td>
<td>4.2</td>
</tr>
<tr>
<td>8RZ3</td>
<td>&lt;4.0</td>
<td>4.8</td>
</tr>
<tr>
<td>8RZ5</td>
<td>4.8</td>
<td>6.3</td>
</tr>
<tr>
<td>8RZ10</td>
<td>8.0</td>
<td>10.0</td>
</tr>
<tr>
<td>8RZ25</td>
<td>19.0</td>
<td>24.0</td>
</tr>
</tbody>
</table>

### Element DHC (gm)

<table>
<thead>
<tr>
<th>Element</th>
<th>DHC (gm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8RZ1</td>
<td>33</td>
</tr>
<tr>
<td>8RZ3</td>
<td>26</td>
</tr>
<tr>
<td>8RZ5</td>
<td>51</td>
</tr>
<tr>
<td>8RZ10</td>
<td>29</td>
</tr>
<tr>
<td>8RZ25</td>
<td>30</td>
</tr>
</tbody>
</table>

Element Collapse Rating: 150 psid (10 bar) for standard elements

Flow Direction: Outside In

Element Nominal Dimensions: 2.18” (55 mm) O.D. x 8.15” (206 mm) long
ΔP_{housing}

RFS50 ΔP_{housing} for fluids with sp.gr (specific gravity) = 0.86:

ΔP_{filter} = ΔP_{housing} + (ΔP_{element} * V_f)

Exercise:

Determine ΔP_{filter} at 15 gpm (57 L/min) for RFS508RZ10VOD5 using 200 SUS (42.6 cSt) fluid.

Use the housing pressure curve to determine ΔP_{housing} at 15 gpm. In this case, ΔP_{housing} is 5 psi (.34 bar) on the graph for the RFS50 housing.

Use the element pressure curve to determine ΔP_{element} at 15 gpm. In this case, ΔP_{element} is 5 psi (.34 bar) according to the graph for the 8RZ10 element.

Because the viscosity in this sample is 200 SUS (42.6 cSt), we determine the Viscosity Factor (V_f) by dividing the Operating Fluid Viscosity with the Standard Viscosity of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential, ΔP_{filter}, is calculated by adding ΔP_{housing} with the true element pressure differential, (ΔP_{element} * V_f). The ΔP_{element} from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

Solution:

ΔP_{housing} = 5 psi (.34 bar) | ΔP_{element} = 5 psi (.34 bar)

V_f = 200 SUS (42.6 cSt) / 150 SUS (32 cSt) = 1.3

ΔP_{filter} = 5 psi + (5 psi * 1.3) = 11.5 psi

OR

ΔP_{filter} = .34 bar + (.34 bar * 1.3) = .78 bar

Note:

If your element is not graphed, use the following equation:

ΔP_{element} = Flow Rate x ΔP_f Plug this variable into the overall pressure drop equation.
How to Build a Valid Model Number for a Schroeder RFS50:

BOX 1  BOX 2  BOX 3  BOX 4  BOX 5  BOX 6  BOX 7  BOX 8
RFS50  8  RZ10  V  O  -  -  D5 = RFS508RZ10VOD5

BOX 1  BOX 2  BOX 3  BOX 4  BOX 5  BOX 6  BOX 7  BOX 8
Filter Series  Element Length (in)
RFS50  8
RFSN50

BOX 4  BOX 5
Seal Material  Inlet Port
Omit = Buna N
H = EPR
V = Viton®
O = Manifold mounting

BOX 6  BOX 7
Options  Test Points
Omit = 40 PSI Bypass
X = Blocked bypass
50 = 50 psi bypass setting
L = Two 1/4" NPTF inlet and outlet female test ports
U = Schroeder Check 7/16"-20 UNF Test Point installation in head (upstream)

BOX 8
Dirt Alarm® Options
Omit = None
Visual
DS = Visual pop-up
Visual with Thermal Lockout
D8 = Visual w/ thermal lockout

Electrical
MS5 = Electrical w/ 12 in. 18 gauge 4-conductor cable
MS5LC = Low current MS5
MS10 = Electrical w/ DIN connector (male end only)
MS10LC = Low current MS10
MS11 = Electrical w/ 12 ft. 4-conductor wire
MS12 = Electrical w/ 5 pin Brad Harrison connector (male end only)
MS12LC = Low current MS12
MS16 = Electrical w/ weather-packed sealed connector
MS16LC = Low current MS16
MS17LC = Electrical w/ 4 pin Brad Harrison male connector

Electrical with Thermal Lockout
MSST = MS5 (see above) w/ thermal lockout
MSSTLC = Low current MSST
MS10T = MS10 (see above) w/ thermal lockout
MS10TLC = Low current MS10T
MS12T = MS12 (see above) w/ thermal lockout
MS12TLC = Low current MS12T
MS16T = MS16 (see above) w/ thermal lockout
MS16TLC = Low current MS16T
MS17T = Low current MS17T

Electrical Visual
MS13DC = Supplied w/ threaded connector & light
MS14DC = Supplied w/ 5 pin Brad Harrison connector & light (male end)

Electrical Visual with Thermal Lockout
MS13DCT = MS13 (see above), direct current, w/ thermal lockout
MS13DCTLC = Low current MS13DCT
MS14DCT = MS14 (see above), direct current, w/ thermal lockout
MS14DCTLC = Low current MS14DCT

NOTES:

Box 2. Replacement element part numbers are a combination of Boxes 2, 3, and 4.

Box 3. Example: 8RZ1V synthetic media elements are only available with Viton seals.

Box 4. Viton® is a registered trademark of DuPont Dow Elastomers.

Box 5. For option O, O-rings included, fastening hardware not included.

Box 6. When X is paired with a standard filter series, a standard bushing and spring plate will be used.
Top-Ported Pressure Filter

Model No. of filter in photograph is RF608R10P.

Flow Rating: Up to 30 gpm (115 L/min) for 150 SUS (32 cSt) fluids
Max. Operating Pressure: 6000 psi (415 bar)
Min. Yield Pressure: 18,000 psi (1241 bar), per NFPA T2.6.1
Rated Fatigue Pressure: 2300 psi (159 bar), per NFPA T2.6.1-2005
Temp. Range: -20°F to 225°F (-29°C to 107°C)
Bypass Setting: Cracking: 40 psi (2.8 bar)
Full Flow: 56 psi (3.9 bar)
Non-bypassing model has a blocked bypass.
Porting Head: Steel
Element Case: Steel
Weight of RF60-8R: 15.75 lbs. (7.2 kg)
Element Change Clearance: 3.0” (75 mm)

Filter
Housing
Specifications

Fluid Compatibility

<table>
<thead>
<tr>
<th>Fluid Type</th>
<th>Appropriate Schroeder Media</th>
</tr>
</thead>
<tbody>
<tr>
<td>Petroleum Based Fluids</td>
<td>All E-Media (cellulose) and Z-Media® (synthetic)</td>
</tr>
<tr>
<td>High Water Content</td>
<td>All Z-Media® (synthetic)</td>
</tr>
<tr>
<td>Invert Emulsions</td>
<td>10 and 25 µ Z-Media® (synthetic)</td>
</tr>
<tr>
<td>Water Glycols</td>
<td>3, 5, 10 and 25 µ Z-Media® (synthetic)</td>
</tr>
<tr>
<td>Phosphate Esters</td>
<td>All Z-Media® (synthetic) with H (EPR) seal designation</td>
</tr>
<tr>
<td>Skydrol®</td>
<td>3, 5, 10 and 25 µ Z-Media® (synthetic) with H5 seal designation (EPR seals and stainless steel wire mesh in element, and light oil coating on housing exterior)</td>
</tr>
</tbody>
</table>

SCHROEDER INDUSTRIES 79
Element Performance Information & Dirt Holding Capacity

Element                  Filtration Ratio Per ISO 4572/NFPA T3.10.8.8
                          Using automated particle counter (APC) calibrated per ISO 4402
                          Filtration Ratio per ISO 16889
                          Using APC calibrated per ISO 11171

<table>
<thead>
<tr>
<th>Element</th>
<th>( \beta_x \geq 75 )</th>
<th>( \beta_x \geq 100 )</th>
<th>( \beta_x \geq 200 )</th>
<th>( \beta_x(c) \geq 200 )</th>
<th>( \beta_x(c) \geq 1000 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>8RZ1</td>
<td>&lt;1.0</td>
<td>&lt;1.0</td>
<td>&lt;1.0</td>
<td>&lt;4.0</td>
<td>4.2</td>
</tr>
<tr>
<td>8RZ3</td>
<td>&lt;1.0</td>
<td>&lt;1.0</td>
<td>&lt;2.0</td>
<td>&lt;4.0</td>
<td>4.8</td>
</tr>
<tr>
<td>8RZ5</td>
<td>2.5</td>
<td>3.0</td>
<td>4.0</td>
<td>4.8</td>
<td>6.3</td>
</tr>
<tr>
<td>8RZ10</td>
<td>7.4</td>
<td>8.2</td>
<td>10.0</td>
<td>8.0</td>
<td>10.0</td>
</tr>
<tr>
<td>8RZ25</td>
<td>18.0</td>
<td>20.0</td>
<td>22.5</td>
<td>19.0</td>
<td>24.0</td>
</tr>
<tr>
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<td>&lt;2.0</td>
<td>4.7</td>
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</tr>
<tr>
<td>8RZX10</td>
<td>7.4</td>
<td>8.2</td>
<td>10.0</td>
<td>8.0</td>
<td>9.8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Element</th>
<th>DHC (gm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8RZ1</td>
<td>33</td>
</tr>
<tr>
<td>8RZ3</td>
<td>26</td>
</tr>
<tr>
<td>8RZ5</td>
<td>51</td>
</tr>
<tr>
<td>8RZ10</td>
<td>29</td>
</tr>
<tr>
<td>8RZ25</td>
<td>30</td>
</tr>
<tr>
<td>8RZX3</td>
<td>C/F</td>
</tr>
<tr>
<td>8RZX10</td>
<td>C/F</td>
</tr>
</tbody>
</table>

Element Collapse Rating: 150 psid (10 bar) for standard elements
3000 psid (210 bar) for high collapse (ZX) versions

Flow Direction: Outside In

Element Nominal Dimensions: 2.18" (55 mm) O.D. x 8.15" (206 mm) long
Determine $\Delta P_{\text{filter}}$ at 15 gpm (57 L/min) for RF608RZ10VPD5 using 100 SUS (21.3 cSt) fluid.

Use the housing pressure curve to determine $\Delta P_{\text{housing}}$ at 15 gpm. In this case, $\Delta P_{\text{housing}}$ is 5 psi (.34 bar) according to the graph for the RF60 housing.

Use the element pressure curve to determine $\Delta P_{\text{element}}$ at 15 gpm. In this case, $\Delta P_{\text{element}}$ is 5 psi (.34 bar) according to the graph for the 8RZ10 element.

Because the viscosity in this sample is 100 SUS (21.3 cSt), we determine the Viscosity Factor ($V_f$) by dividing the Operating Fluid Viscosity with the Standard Viscosity of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential, $\Delta P_{\text{filter}}$, is calculated by adding $\Delta P_{\text{housing}}$ with the true element pressure differential, $\Delta P_{\text{element}}$ x $V_f$. The $\Delta P_{\text{element}}$ from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

**Solution:**

$\Delta P_{\text{housing}}$ = 5 psi (.34 bar) | $\Delta P_{\text{element}}$ = 5 psi (.34 bar)

$V_f = 100$ SUS (21.3 cSt) / 150 SUS (32 cSt) = .67

$\Delta P_{\text{filter}} = 5$ psi + (5 psi * .67) = 8.3 psi

OR

$\Delta P_{\text{filter}} = .34$ bar + (.34 bar * .67) = .57 bar
How to Build a Valid Model Number for a Schroeder RF60:

**Filter Series**
- RF60
- RFN60 (Non-bypassing; requires ZX high collapse elements)

**Element Length (in)**
- 8

**Element Size and Media**
- R3 = R size 3 µ E media (cellulose)
- R10 = R size 10 µ E media (cellulose)
- RZ1 = R size 1 µ Excellement® Z-Media® (synthetic)
- RZ3 = R size 3 µ Excellement® Z-Media® (synthetic)
- RZ5 = R size 5 µ Excellement® Z-Media® (synthetic)
- RZ10 = R size 10 µ Excellement® Z-Media® (synthetic)
- RZ25 = R size 25 µ Excellement® Z-Media® (synthetic)
- RZX1 = R size 1 µ Excellement® Z-Media® (high collapse center tube)
- RZX3 = R size 3 µ Excellement® Z-Media® (high collapse center tube)
- RZX5 = R size 5 µ Excellement® Z-Media® (high collapse center tube)
- RZX10 = R size 10 µ Excellement® Z-Media® (high collapse center tube)
- RZX25 = R size 25 µ Excellement® Z-Media® (high collapse center tube)

**Seal Material**
- Omit = Buna N
- H = EPR
- V = Viton®

**Inlet Port**
- P = 1" NPTF
- S = SAE-16
- F = 1" SAE 4-bolt flange Code 62
- B = ISO 228 G-1"

**Bypass**
- Omit = 40 PSI Bypass
- X = Blocked bypass
- 50 = 50 psi bypass setting
  (Omit Box 6 if RFN60 is used)

**Test Points**
- L = Two ¼" NPTF inlet and outlet female test ports
- U = Schroeder Check ¾"-20 UNF Test Point installation in head (upstream)

**Dirt Alarm® Options**
- Omit = None
- Visual
  - DS = Visual pop-up
- Visual with Thermal Lockout
  - D8 = Visual w/ thermal lockout

- Electrical
  - MS5 = Electrical w/ 12 in. 18 gauge 4-conductor cable
  - MS5LC = Low current MS5
  - MS10 = Electrical w/ DIN connector (male end only)
  - MS10LC = Low current MS10
  - MS11 = Electrical w/ 12 ft. 4-conductor wire
  - MS12 = Electrical w/ 5 pin Brad Harrison connector (male end only)
  - MS12LC = Low current MS12
  - MS16 = Electrical w/ weather-packed sealed connector
  - MS16LC = Low current MS16
  - MS17LC = Electrical w/ 4 pin Brad Harrison male connector

- Electrical with Thermal Lockout
  - MS13T = MS13 (see above) w/ thermal lockout
  - MS13DCT = MS13 (see above), direct current, w/ thermal lockout
  - MS14DC = Supplied w/ 5 pin Brad Harrison connector & light (male end)
  - MS14DCLCT = Low current MS14DCT
  - MS15T = MS15 (see above) w/ thermal lockout
  - MS15DCLCT = Low current MS15DCT

- Visual
  - MS13DC = MS13 (see above), direct current, w/ thermal lockout
  - MS14DCT = MS14 (see above), direct current, w/ thermal lockout

NOTES:
- Box 2. Replacement element part numbers are a combination of Boxes 2, 3 and 4. Example: 8RZ1V
- Synthetic media elements are only available with Viton seals.
- Box 4. Viton® is a registered trademark of DuPont Dow Elastomers.
- Box 5. B porting option supplied with metric mounting holes.
- Box 6. When X is paired with a standard filter series, a standard bushing and spring plate will be used.
- Box 8. Standard indicator setting for non-bypassing model is 50 psi unless otherwise noted.
Top-Ported Pressure Filter

CF60

Features and Benefits

- Top-ported high pressure filter
- Available with non-bypass option with high collapse element
- Offered in pipe, SAE straight thread, flange and ISO 228 porting
- No-Element indicator option available

Flow Rating: Up to 50 gpm (190 L/min) for 150 SUS (32 cSt) fluids

Max. Operating Pressure: 6000 psi (415 bar)

Min. Yield Pressure: 15,500 psi (1070 bar), per NFPA T2.6.1

Rated Fatigue Pressure: 4000 psi (276 bar), per NFPA T2.6.1-R1-2005

Temp. Range: -20°F to 225°F (-29°C to 107°C)

Bypass Setting: Cracking: 40 psi (2.8 bar)
- Full Flow: 75 psi (5.2 bar)
- Non-bypassing model has a blocked bypass.

Porting Head: Ductile Iron
Element Case: Steel

Weight of CF60-9C: 24.0 lbs. (10.9 kg)

Element Change Clearance: 4.0” (103 mm)

Filter Housing Specifications

Type Fluid | Appropriate Schroeder Media
---|---
Petroleum Based Fluids | All E-Media (cellulose), Z-Media” and ASP” Media (synthetic)
High Water Content | All Z-Media” and ASP” Media (synthetic)
Invert Emulsions | 10 and 25 μ Z-Media” (synthetic) and 10 μ ASP” Media (synthetic)
Water Glycols | 3, 5, 10 and 25 μ Z-Media” and all ASP” Media (synthetic)
Phosphate Esters | All Z-Media” and ASP” Media (synthetic) with H (EPR) seal designation
Skydrol” | 3, 5, 10 and 25 μ Z-Media” and all ASP” Media (synthetic) with H.5 seal designation (EPR seals and stainless steel wire mesh in element, and light oil coating on housing exterior)

Fluid Compatibility

Filter

Housing

Specifications

Model No. of filter in photograph is CF601CCZ3SD5.
**Top-Ported Pressure Filter**

**Element Performance Information & Dirt Holding Capacity**

**Filtration Ratio Per ISO 4572/NFPA T3.10.8.8**
- Using automated particle counter (APC) calibrated per ISO 4402

<table>
<thead>
<tr>
<th>Element</th>
<th>(\beta_x \geq 75)</th>
<th>(\beta_x \geq 100)</th>
<th>(\beta_x \geq 200)</th>
<th>(\beta_x(c) \geq 200)</th>
<th>(\beta_x(c) \geq 1000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CCZ1</td>
<td>&lt;1.0</td>
<td>&lt;1.0</td>
<td>&lt;1.0</td>
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<tr>
<td>CCZ5</td>
<td>2.5</td>
<td>3.0</td>
<td>4.0</td>
<td>4.8</td>
<td>6.3</td>
</tr>
<tr>
<td>CCZ10</td>
<td>7.4</td>
<td>8.2</td>
<td>10.0</td>
<td>8.0</td>
<td>10.0</td>
</tr>
<tr>
<td>CCZ25</td>
<td>18.0</td>
<td>20.0</td>
<td>22.5</td>
<td>19.0</td>
<td>24.0</td>
</tr>
<tr>
<td>CCZX3</td>
<td>&lt;1.0</td>
<td>&lt;1.0</td>
<td>&lt;2.0</td>
<td>4.7</td>
<td>5.8</td>
</tr>
</tbody>
</table>

**Filtration Ratio per ISO 16889**
- Using APC calibrated per ISO 11171

<table>
<thead>
<tr>
<th>Element</th>
<th>(\beta_x(c) \geq 200)</th>
<th>(\beta_x(c) \geq 1000)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>5.0</td>
<td>10.0</td>
</tr>
</tbody>
</table>

**Element DHC (gm)**

<table>
<thead>
<tr>
<th>Element</th>
<th>DHC (gm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CCZ1</td>
<td>57</td>
</tr>
<tr>
<td>CCZ3</td>
<td>58</td>
</tr>
<tr>
<td>CCZ5</td>
<td>63</td>
</tr>
<tr>
<td>CCZ10</td>
<td>62</td>
</tr>
<tr>
<td>CCZ25</td>
<td>63</td>
</tr>
<tr>
<td>CCZX3</td>
<td>26*</td>
</tr>
</tbody>
</table>

Element Collapse Rating: 150 psid (10 bar) for standard elements
3000 psid (210 bar) for high collapse (ZX) versions

Flow Direction: Outside In

Element Nominal Dimensions: CC: 3.0" (75 mm) O.D. x 9.5" (240 mm) long

Metric dimensions in ( ).
Dimensions shown are inches (millimeters) for general information and overall envelope size only.
For complete dimensions please contact Schroeder Industries to request a certified print.
ΔP

ΔP_{\text{housing}}

CF60 ΔP_{\text{housing}} for fluids with sp gr (specific gravity) = 0.86:

Exercise:
Determine ΔP_{\text{filter}} at 30 gpm (113.6 L/min) for CF60CCZ10SD5 using 175 SUS (37.2 cSt) fluid.

Use the housing pressure curve to determine ΔP_{\text{housing}} at 30 gpm. In this case, ΔP_{\text{housing}} is 4 psi (.28 bar) on the graph for the CF60 housing.

Use the element pressure curve to determine ΔP_{\text{element}} at 30 gpm. In this case, ΔP_{\text{element}} is 3 psi (.21 bar) according to the graph for the CCZ10 element.

Because the viscosity in this sample is 175 SUS (37.2 cSt), we determine the Viscosity Factor (V_f) by dividing the Operating Fluid Viscosity with the Standard Viscosity of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential, ΔP_{\text{filter}} , is calculated by adding ΔP_{\text{housing}} with the true element pressure differential, (ΔP_{\text{element}} * V_f). The ΔP_{\text{element}} from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

Solution:
ΔP_{\text{housing}} = 4 psi [.28 bar] | ΔP_{\text{element}} = 3 psi [.21 bar]

V_f = 175 SUS (37.2 cSt) / 150 SUS (32 cSt) = 1.2

ΔP_{\text{filter}} = 4 psi + (3 psi * 1.2) = 7.6 psi

OR

ΔP_{\text{filter}} = .28 bar + (.21 bar * 1.2) = .53 bar
Top-Ported Pressure Filter

How to Build a Valid Model Number for a Schroeder CF60:

<table>
<thead>
<tr>
<th>BOX 1</th>
<th>BOX 2</th>
<th>BOX 3</th>
<th>BOX 4</th>
<th>BOX 5</th>
<th>BOX 6</th>
<th>BOX 7</th>
<th>BOX 8</th>
<th>BOX 9</th>
</tr>
</thead>
<tbody>
<tr>
<td>CF60</td>
<td>1CC</td>
<td>Z</td>
<td>10</td>
<td>S</td>
<td>D5</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

= CF601CCZ10SD5

NOTES:

Box 2. Replacement element part numbers are identical to contents of Boxes 2, 3, 4, and 5. E media (cellulose) elements are only available with Buna N seals.

Box 5. H.5 seal designation includes the following: EPR seals, stainless steel wire mesh on elements, and light oil coating on housing exterior. Viton® is a registered trademark of DuPont Dow Elastomers. Skydrol® is a registered trademark of Solutia Inc.

Box 6. B porting option supplied with metric mounting holes.

Box 7. When X is paired with a standard filter series, a standard bushing and spring plate will be used.

Box 8. Standard indicator setting for non-bypassing model is 50 psi unless

<table>
<thead>
<tr>
<th>BOX 4</th>
<th>BOX 5</th>
<th>BOX 6</th>
<th>BOX 7</th>
<th>BOX 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Micron Rating</td>
<td>Seal Material</td>
<td>Porting</td>
<td>Bypass Options</td>
<td></td>
</tr>
<tr>
<td>1 = 1 Micron (Z media)</td>
<td>Omit = Buna N</td>
<td>S = SAE-20</td>
<td>Omit = None</td>
<td></td>
</tr>
<tr>
<td>3 = 3 Micron (AS, E, Z and ZX media)</td>
<td>V = Viton®</td>
<td>P = 13/8” NPTF</td>
<td>Visual</td>
<td></td>
</tr>
<tr>
<td>5 = 5 Micron (AS, Z, and ZX media)</td>
<td>H = EPR</td>
<td>F = 13/8” SAE 4-bolt flange code 62</td>
<td>Electrical w/ Thermal Lockout</td>
<td></td>
</tr>
<tr>
<td>10 = 10 Micron (AS, E, Z, and ZX media)</td>
<td>H.5 = Skydrol® compatibility</td>
<td>B = ISO 228 G-13/8”</td>
<td>Visual</td>
<td></td>
</tr>
<tr>
<td>25 = 25 Micron (E, Z, and ZX media)</td>
<td></td>
<td></td>
<td>Omit = 40 PSI Bypass</td>
<td></td>
</tr>
</tbody>
</table>

X = Blocked Bypass
30 = 30 psi bypass setting
50 = 50 psi bypass setting

(Omit box 7 if a CFN60 is selected)
Flow Rating: Up to 75 gpm (284 L/min) for 150 SUS (32 cSt) fluids
Max. Operating Pressure: 6000 psi (415 bar)
Min. Yield Pressure: 18,000 psi (1241 bar), per NFPA T2.6.1
Rated Fatigue Pressure: 6000 psi (415 bar), per NFPA T2.6.1-R1-2005 (only with F20 4-bolt flange porting)
Temp. Range: -20°F to 225°F (-29°C to 107°C)
Bypass Setting: Cracking: 50 psi (3.4 bar)
Full Flow: 83 psi (5.7 bar)
Non-bypassing model has a blocked bypass.

Porting Head: Ductile Iron
Element Case: Steel
Weight of CTF60-5CT:
CTF60-8CT:
CTF60-14CT:
Element Change Clearance: 4.0” (103 mm)

Type Fluid  Appropriate Schroeder Media
High Water Content  All Z-Media® (synthetic)
Invert Emulsions  10 and 25 µ Z-Media® (synthetic)
Water Glycols  3, 5, 10 and 25 µ Z-Media® (synthetic)
Phosphate Esters  All Z-Media® (synthetic) with H (EPR) seal designation
Top-Ported Pressure Filter

Element

Performance

Information & Dirt Holding Capacity

Filtration Ratio Per ISO 4572/NFPA T3.10.8.8
Using automated particle counter (APC) calibrated per ISO 4402

\[
\begin{array}{cccc}
\text{Element} & \beta_x \geq 75 & \beta_x \geq 100 & \beta_x \geq 200 \\
CTZ1/CTZX1 & <1.0 & <1.0 & <1.0 \\
CTZ3/CTZX3 & <1.0 & <1.0 & <2.0 \\
CTZ5/CTZX5 & 2.5 & 3.0 & 4.0 \\
CTZ10/CTZX10 & 7.4 & 8.2 & 10.0 \\
CTZ25/CTZX25 & 18.0 & 20.0 & 22.5 \\
\end{array}
\]

Filtration Ratio per ISO 16889
Using APC calibrated per ISO 11171

\[
\begin{array}{cccc}
\beta_x(c) \geq 200 & \beta_x(c) \geq 1000 \\
CTZ1/CTZX1 & <4.0 & 4.2 \\
CTZ3/CTZX3 & <4.0 & 4.8 \\
CTZ5/CTZX5 & 4.8 & 6.3 \\
CTZ10/CTZX10 & 8.0 & 10.0 \\
CTZ25/CTZX25 & 19.0 & 24.0 \\
\end{array}
\]

Element

DHC (gm)

Element

DHC (gm)

Element

DHC (gm)

5CTZ1
19
8CTZ1
31
14CTZ1
66
5CTZ3
16
8CTZ3
27
14CTZ3
57
5CTZ5
18
8CTZ5
30
14CTZ5
64
5CTZ10
21
8CTZ10
34
14CTZ10
72
5CTZ25
17
8CTZ25
28
14CTZ25
60
5CTZX1
14
8CTZX1
24
14CTZX1
53
5CTZX3
11
8CTZX3
18
14CTZX3
41
5CTZX5
10
8CTZX5
17
14CTZX5
38
5CTZX10
12
8CTZX10
20
14CTZX10
44
5CTZX25
11
8CTZX25
18
14CTZX25
39

Element Collapse Rating: 150 psid (10 bar) for standard elements
Flow Direction: 3000 psid (210 bar) for high collapse (ZX) versions
Outside In

Element Nominal Dimensions:

- 5CT: 2.64" (67 mm) O.D. x 4.88" (124 mm) long
- 8CT: 2.64" (67 mm) O.D. x 7.25" (184 mm) long
- 14CT: 2.64" (67 mm) O.D. x 14.38" (365 mm) long
Pressure Drop Information

Based on Flow Rate and Viscosity

**Exercise:**

Determine \( \Delta P_{\text{filter}} \) at 50 gpm (189 L/min) for CTF608CTZ5S20D9 using 200 SUS (42.6 cSt) fluid.

1. **Use the housing pressure curve to determine \( \Delta P_{\text{housing}} \) at 50 gpm. In this case, \( \Delta P_{\text{housing}} \) is 7 psi (.48 bar) on the graph for the CTF60 housing.**

2. **Use the element pressure curve to determine \( \Delta P_{\text{element}} \) at 50 gpm. In this case, \( \Delta P_{\text{element}} \) is 22 psi (1.5 bar) according to the graph for the 8CTZ5 element.**

Because the viscosity in this sample is 200 SUS (42.6 cSt), we determine the Viscosity Factor (\( V_f \)) by dividing the Operating Fluid Viscosity with the Standard Viscosity of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential, \( \Delta P_{\text{filter}} \), is calculated by adding \( \Delta P_{\text{housing}} \) with the true element pressure differential, \( \Delta P_{\text{element}} \cdot V_f \). The \( \Delta P_{\text{element}} \) from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

**Solution:**

\[
\Delta P_{\text{filter}} = \Delta P_{\text{housing}} + (\Delta P_{\text{element}} \cdot V_f)
\]

\[
\Delta P_{\text{housing}} = 7 \text{ psi} \ (0.48 \text{ bar}) \quad \Delta P_{\text{element}} = 22 \text{ psi} \ (1.5 \text{ bar})
\]

\[
V_f = 200 \text{ SUS} / 150 \text{ SUS} = 1.3
\]

\[
\Delta P_{\text{filter}} = 7 \text{ psi} + (22 \text{ psi} \cdot 1.3) = 35.6 \text{ psi}
\]

**OR**

\[
\Delta P_{\text{filter}} = 0.48 \text{ bar} + (1.5 \text{ bar} \cdot 1.3) = 2.4 \text{ bar}
\]

---

**Note:**

If your element is not graphed, use the following equation:

\[
\Delta P_{\text{element}} = \text{Flow Rate} \times \Delta P_f
\]

Plug this variable into the overall pressure drop equation.
# Top-Ported Pressure Filter

**Filter Model Number Selection**

How to Build a Valid Model Number for a Schroeder CTF60:

<table>
<thead>
<tr>
<th>BOX 1</th>
<th>BOX 2</th>
<th>BOX 3</th>
<th>BOX 4</th>
<th>BOX 5</th>
<th>BOX 6</th>
<th>BOX 7</th>
<th>BOX 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>CTF60</td>
<td>CTZ5</td>
<td>S20</td>
<td></td>
<td></td>
<td></td>
<td>D9</td>
<td></td>
</tr>
</tbody>
</table>

CTF60 – 8 – CTZ5 – S20 – D9 = CTF608CTZ5S20D9

### Filter Series

- **CTF60**
- **CTFN60** (Non-bypassing requires 2X high collapse elements)

### Element Length (in.)

- 5
- 8
- 14

### Element Part Number

- **CTZ1** = 1 µ Excellement® Z-Media® (synthetic)
- **CTZ3** = 3 µ Excellement® Z-Media® (synthetic)
- **CTZ5** = 5 µ Excellement® Z-Media® (synthetic)
- **CTZ10** = 10 µ Excellement® Z-Media® (synthetic)
- **CTZX1** = 1 µ Excellement® Z-Media® (high collapse center tube)
- **CTZX3** = 3 µ Excellement® Z-Media® (high collapse center tube)
- **CTZX5** = 5 µ Excellement® Z-Media® (high collapse center tube)
- **CTZX10** = 10 µ Excellement® Z-Media® (high collapse center tube)
- **CTZX25** = 25 µ Excellement® Z-Media® (high collapse center tube)

### Seal Material

- **Omit** = Buna N
- **V** = Viton®
- **H** = EPR

### Inlet Port

- **P20** = 1 1/4” NPTF
- **S20** = SAE-20
- **F20** = 1 1/4” SAE
  - 4-bolt flange
  - Code 62
- **B20** = ISO 228
  - G-1 1/4”

### Bypass

- **Omit** = 50 PSI Bypass
  (Omit Box 6 if a CTFN60 is selected)

### Options

- **UU Series 1215**
  - 7/16” UNF
  - Schroeder Check Test
  - Points installed in the filter head (upstream & downstream)
- **DR** = Drain on bowl

### Dirt Alarm® Options

- **MSSS** = Electrical w/ 12 in. 18 gauge 4-conductor cable
- **MSSSLC** = Low current MSS
- **MS105SS** = Electrical w/ DIN connector (male end only)
- **MS105SSLCT** = Low current MS10
- **MS115SS** = Electrical w/ 12 ft. 4-conductor wire
- **MS125SS** = Electrical w/ 5 pin Brad Harrison connector (male end only)
- **MS125SSLCT** = Low current MS12
- **MS165SS** = Electrical w/ weather-packed sealed connector
- **MS165SSLCT** = Low current MS16
- **MS175SSLCT** = Electrical w/ 4 pin Brad Harrison male connector

- **MSSST** = MSS (see above) w/ thermal lockout
- **MSSSST** = Low current MSS
- **MS105SSST** = Low current MS10
- **MS125SSST** = Low current MS12
- **MS165SSST** = Low current MS16
- **MS175SSLCT** = Low current MS17

- **MS13DC** = Supplied w/ threaded connector & light
- **MS14DC** = Supplied w/ 5 pin Brad Harrison connector & light (male end)

- **MS13SSDCT** = MS13 (see above), direct current, w/ thermal lockout
- **MS14SSDCT** = MS14 (see above), direct current, w/ thermal lockout
- **MS14SSDCLCT** = Low current MS14DCT

### NOTES:

- Box 2. Replacement element part numbers are identical to contents of Boxes 2, 3 and 4.
- Box 4. Viton® is a registered trademark of DuPont Dow Elastomers.
- Box 5. B porting option supplied with metric mounting holes.
- Box 8. All Dirt Alarm® Indicators must be Stainless Steel. Standard indicator setting is 50 psi. For replacement indicators, contact the factory.

---

90 SCHROEDER INDUSTRIES
Top-Ported Pressure Filter

Features and Benefits
- Top-ported high pressure filter
- Threaded bowl for easy element servicing
- Offered in pipe, SAE straight thread and ISO 228 porting
- Various dirt alarm options available

Model No. of filter in photograph is VF609VZ10SD5.

Flow Rating: Up to 70 gpm (265 L/min) for 150 SUS (32 cSt) fluids
Max. Operating Pressure: 6000 psi (415 bar)
Min. Yield Pressure: 15,500 psi (1070 bar), per NFPA T2.6.1
Rated Fatigue Pressure: 3300 psi (230 bar), per NFPA T2.6.1-R1-2005
Temp. Range: -20°F to 225°F (-29°C to 107°C)
Bypass Setting: Cracking: 50 psi (3.5 bar) Full Flow: 65 psi (4.5 bar)
Porting Head: Ductile Iron
Element Case: Steel
Weight of VF60-9V: 24.0 lbs. (10.9 kg)
Element Change Clearance: 4.0” (103 mm)

Type Fluid | Appropriate Schroeder Media
--- | ---
Petroleum Based Fluids | All E-Media (cellulose) and Z-Media’ (synthetic)
High Water Content | All Z-Media’ (synthetic)
Invert Emulsions | 10 and 25 μ Z-Media’ (synthetic)
Water Glycols | 3, 5, 10 and 25 μ Z-Media’ (synthetic)
Phosphate Esters | All Z-Media’ (synthetic) with H (EPR) seal designation
Skydrol’ | 3, 5, 10 and 25 μ Z-Media’ (synthetic) with H.5 seal designation (EPR seals and stainless steel wire mesh in element, and light oil coating on housing exterior)

Filter Housing Specifications

Fluid Compatibility

SCHROEDER INDUSTRIES 91
Top-Ported Pressure Filter

Metric dimensions in ( ).
Dimensions shown are inches (millimeters) for general information and overall envelope size only.
For complete dimensions please contact Schroeder Industries to request a certified print.

### Element Performance Information & Dirt Holding Capacity

<table>
<thead>
<tr>
<th>Element</th>
<th>Filtration Ratio Per ISO 4572/NFPA T3.10.8.8</th>
<th>Filtration Ratio per ISO 16889</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Using automated particle counter (APC) calibrated per ISO 4402</td>
<td>Using APC calibrated per ISO 11171</td>
</tr>
<tr>
<td>Element</td>
<td>$\beta_x \geq 75$</td>
<td>$\beta_x \geq 100$</td>
</tr>
<tr>
<td>9VZ1</td>
<td>$&lt;1.0$</td>
<td>$&lt;1.0$</td>
</tr>
<tr>
<td>9VZ3</td>
<td>$&lt;1.0$</td>
<td>$&lt;1.0$</td>
</tr>
<tr>
<td>9VZ5</td>
<td>2.5</td>
<td>3.0</td>
</tr>
<tr>
<td>9VZ10</td>
<td>7.4</td>
<td>8.2</td>
</tr>
<tr>
<td>9VZ25</td>
<td>18.0</td>
<td>20.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Element</th>
<th>DHC (gm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>9VZ1</td>
<td>55</td>
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<tr>
<td>9VZ3</td>
<td>57</td>
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<td>62</td>
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<tr>
<td>9VZ10</td>
<td>60</td>
</tr>
<tr>
<td>9VZ25</td>
<td>61</td>
</tr>
</tbody>
</table>

Element Collapse Rating: 150 psid (10 bar) for standard elements
Flow Direction: Outside In
Element Nominal Dimensions: 9V: 2.9" (75 mm) O.D. x 9.5" (240 mm) long
Pressure Drop Information
Based on Flow Rate and Viscosity

\[ \Delta P_{\text{filter}} = \Delta P_{\text{housing}} + (\Delta P_{\text{element}} \times V_f) \]

**Exercise:**
Determine \( \Delta P_{\text{filter}} \) at 40 gpm (151 L/min) for VF609VZ1S using 120 SUS (25.5 cSt) fluid.

Use the housing pressure curve to determine \( \Delta P_{\text{housing}} \) at 40 gpm. In this case, \( \Delta P_{\text{housing}} \) is 6 psi (.42 bar) on the graph for the VF60 housing.

Use the element pressure curve to determine \( \Delta P_{\text{element}} \) at 40 gpm. In this case, \( \Delta P_{\text{element}} \) is 13 psi (.90 bar) according to the graph for the 9VZ1 element.

Because the viscosity in this sample is 120 SUS (25.5 cSt), we determine the Viscosity Factor \( V_f \) by dividing the Operating Fluid Viscosity with the Standard Viscosity of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential, \( \Delta P_{\text{filter}} \), is calculated by adding \( \Delta P_{\text{housing}} \) with the true element pressure differential, \( \Delta P_{\text{element}} \times V_f \). The \( \Delta P_{\text{element}} \) from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

**Solution:**
\[ \Delta P_{\text{housing}} = 6 \text{ psi} \times 0.42 \text{ bar} \quad \mid \quad \Delta P_{\text{element}} = 13 \text{ psi} \times 0.90 \text{ bar} \]

\( V_f = 120 \text{ SUS} \times (25.5 \text{ cSt}) / 150 \text{ SUS} \times (32 \text{ cSt}) = .80 \)
\( \Delta P_{\text{filter}} = 6 \text{ psi} + (13 \text{ psi} \times .80) = 16.4 \text{ psi} \)

**OR**
\( \Delta P_{\text{filter}} = .42 \text{ bar} + (.90 \text{ bar} \times .80) = 1.14 \text{ bar} \)

**Note:**
If your element is not graphed, use the following equation:
\[ \Delta P_{\text{element}} = \text{Flow Rate} \times \Delta P_f \]
Plug this variable into the overall pressure drop equation.

<table>
<thead>
<tr>
<th>Ele.</th>
<th>( \Delta P )</th>
</tr>
</thead>
<tbody>
<tr>
<td>9V3</td>
<td>0.32</td>
</tr>
<tr>
<td>9V10</td>
<td>0.24</td>
</tr>
</tbody>
</table>
Top-Ported Pressure Filter

How to Build a Valid Model Number for a Schroeder VF60:

<table>
<thead>
<tr>
<th>BOX 1</th>
<th>BOX 2</th>
<th>BOX 3</th>
<th>BOX 4</th>
<th>BOX 5</th>
<th>BOX 6</th>
<th>BOX 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>VF60</td>
<td>9</td>
<td>VZ1</td>
<td>S</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

= VF609VZ1S

**Filter Series**

| VF60 |

**Element Length (in)**

| 9 |

**Element Size and Media**

- V3 = V size 3 µ E media (cellulose)
- V10 = V size 10 µ E media (cellulose)
- VZ1 = V size 1 µ Excellement® Z-Media® (synthetic)
- VZ3 = V size 3 µ Excellement® Z-Media® (synthetic)
- VZ5 = V size 5 µ Excellement® Z-Media® (synthetic)
- VZ10 = V size 10 µ Excellement® Z-Media® (synthetic)
- VZ25 = V size 25 µ Excellement® Z-Media® (synthetic)
- VM150 = V size 150 µ M media (reusable metal)

**Seal Material**

| Omit = Buna N |
| V = Viton® |
| H = EPR |

**Inlet Port**

| P = 1¼” NPTF |
| S = SAE-20 |
| B = ISO 228 G-1¼” |

**Bypass**

| Omit = 50 PSI bypass |
| 40 = 40 PSI bypass |

**Dirt Alarm® Options**

- Omit = None
- Visual: D5 = Visual pop-up
- Visual with Thermal Lockout: DB = Visual w/ thermal lockout

**Electrical**

- MSS = Electrical w/ 12 in. 18 gauge 4-conductor cable
- MSSLC = Low current MSS
- MS10 = Electrical w/ DIN connector (male end only)
- MS10LC = Low current MS10
- MS11 = Electrical w/ 12 ft. 4-conductor wire
- MS12 = Electrical w/ 5 pin Brad Harrison connector (male end only)
- MS12LC = Low current MS12
- MS16 = Electrical w/ weather-packed sealed connector
- MS16LC = Low current MS16
- MS17LC = Electrical w/ 4 pin Brad Harrison male connector

**Electrical with Thermal Lockout**

- MSST = MSS (see above) w/ thermal lockout
- MSSTLC = Low current MSST
- MS10T = MS10 (see above) w/ thermal lockout
- MS10TLC = Low current MS10T
- MS12T = MS12 (see above) w/ thermal lockout
- MS12TLC = Low current MS12T
- MS16T = MS16 (see above) w/ thermal lockout
- MS16TLC = Low current MS16T
- MS17TLC = Electrical w/ 4 pin Brad Harrison male connector

**Electrical Visual**

- MS13DC = Supplied w/ threaded connector & light
- MS14DC = Supplied w/ 5 pin Brad Harrison connector & light (male end)

**Electrical with Thermal Lockout**

- MS13DCT = MS13 (see above), direct current, w/ thermal lockout
- MS13DCLCT = Low current MS13DCT
- MS14DCT = MS14 (see above), direct current, w/ thermal lockout
- MS14DCLCT = Low current MS14DCT

**NOTES:**

- Box 2. Replacement element part numbers are a combination of Boxes 2, 3, and 4.
- Box 4. Viton® is a registered trademark of DuPont Dow Elastomers.
- Box 5. B porting option supplied with metric mounting holes.
- Box 6. Bypass option supplied with metric mounting holes.
High-Flow, High Pressure Filter

Features and Benefits
- Horizontal alignment allows straight-through flow, maximizing efficiency and minimizing pressure drop
- Proprietary synthetic media designed specifically for the mining industry. Excellement-MDTM provides level of filtration not achievable using alternative wire mesh elements because of their lack of absolute ratings
- Two-inch BSPP ports are easily adaptable to Super Stecko fittings commonly used underground
- Stainless steel bypass valve that ensures smooth integration with 95/5 fluid
- Non-bypassing version available with high crush (4500 psid) cleanable metal mesh (25 micron) element

Model No. of filter in photograph is LW6039ZPZ5VB32DPG.

Flow Rating: Up to 300 gpm (1135 L/min) for use with 95/5 fluids
Max. Operating Pressure: 6000 psi (415 bar)
Min. Yield Pressure: 18,000 psi (1240 bar), per NFPA T2.6.1
Rated Fatigue Pressure: 4500 psi (310 bar), per NFPA T2.6.1
Temp. Range: -20°F to 225°F (-29°C to 107°C)
Bypass Setting: Cracking: 50 psi (3.4 bar) LWN60 non-bypassing model available with high crush element

Type Fluid | Appropriate Schroeder Media
---|---
95/5 fluids | Specifically designed for use with 95/5 fluids applications

Filter Housing Specifications

| Flow Rating | Up to 300 gpm (1135 L/min) for use with 95/5 fluids |
| Max. Operating Pressure | 6000 psi (414 bar) |
| Min. Yield Pressure | 18,000 psi (1240 bar), per NFPA T2.6.1 |
| Rated Fatigue Pressure | 4500 psi (310 bar), per NFPA T2.6.1 |
| Temp. Range | -20°F to 225°F (-29°C to 107°C) |
| Bypass Setting | Cracking: 50 psi (3.4 bar) LWN60 non-bypassing model available with high crush element |
| Porting Cap | Steel |
| Housing | Steel |
| Weight | 550 lb. (250 kg) |
| Element Change Clearance | 34.0" (864 mm) |

Fluid Compatibility

<table>
<thead>
<tr>
<th>Type Fluid</th>
<th>Appropriate Schroeder Media</th>
</tr>
</thead>
<tbody>
<tr>
<td>95/5 fluids</td>
<td>Specifically designed for use with 95/5 fluids applications</td>
</tr>
</tbody>
</table>

SCHROEDER INDUSTRIES 95
High-Flow, High Pressure Filter

Filtration Ratio per ISO 16889
Using APC calibrated per ISO 11171

<table>
<thead>
<tr>
<th>Element</th>
<th>( \beta_{50} \geq 1000 )</th>
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<tbody>
<tr>
<td>39ZP3V</td>
<td>5.1</td>
</tr>
<tr>
<td>39ZP5V</td>
<td>6.1</td>
</tr>
<tr>
<td>39ZP10V</td>
<td>12.1</td>
</tr>
<tr>
<td>39ZP25V</td>
<td>17.7</td>
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</table>

<table>
<thead>
<tr>
<th>Element</th>
<th>DHC (gm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>39ZP3V</td>
<td>449</td>
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<tr>
<td>39ZP5V</td>
<td>359</td>
</tr>
<tr>
<td>39ZP10V</td>
<td>429</td>
</tr>
<tr>
<td>39ZP25V</td>
<td>284</td>
</tr>
</tbody>
</table>

Element Collapse Rating: 150 psid (10 bar)
Flow Direction: Outside In
Element Nominal Dimensions: 5.0” (127 mm) O.D. x 38.0” (965 mm) long
**Exercise:**

Determine $\Delta P_{\text{filter}}$ at 200 gpm (757 L/min) for LW6039ZPZ3VB32DPG using 75 SUS (16 cSt) fluid.

Use the housing pressure curve to determine $\Delta P_{\text{housing}}$ at 200 gpm. In this case, $\Delta P_{\text{housing}}$ is .25 psi (.02 bar) on the graph for the LW60 housing.

Use the element pressure curve to determine $\Delta P_{\text{element}}$ at 200 gpm. In this case, $\Delta P_{\text{element}}$ is 12 psi (.83 bar) according to the graph for the 39ZPZ3 element.

Because the viscosity in this sample is 75 SUS (16 cSt), we determine the Viscosity Factor ($V_f$) by dividing the Operating Fluid Viscosity with the Standard Viscosity of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential, $\Delta P_{\text{filter}}$, is calculated by adding $\Delta P_{\text{housing}}$ with the true element pressure differential, $(\Delta P_{\text{element}} * V_f)$. The $\Delta P_{\text{element}}$ from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

**Solution:**

$\Delta P_{\text{housing}} = .25 \text{ psi} (.02 \text{ bar})$ | $\Delta P_{\text{element}} = 12 \text{ psi} (.83 \text{ bar})$

$V_f = 75 \text{ SUS (16 cSt)} / 150 \text{ SUS (32 cSt)} = .50$

$\Delta P_{\text{filter}} = .25 \text{ psi} + (12 \text{ psi} * .50) = 6.25 \text{ psi}$

**OR**

$\Delta P_{\text{filter}} = .02 \text{ bar} + (.83 \text{ bar} * .50) = .44 \text{ bar}$
How to Build a Valid Model Number for a Schroeder LW60:

**BOX 1**
- LW60

**BOX 2**
- 39ZPZ3V
- B32
- DPG

= LW6039ZPZ3VB32DPG

**BOX 1**
- LWN60

**BOX 2**
- 39ZPMX25V
- B32
- DPG

= LW6039ZMX25VB32DPG

**Filter Series**
- LW60

**Element Part Number**
- 39ZPZ3V = 3 µ Excellement® Z-Media® (synthetic)
- 39ZPZ5V = 5 µ Excellement® Z-Media® (synthetic)
- 39ZPZ10V = 10 µ Excellement® Z-Media® (synthetic)
- 39ZPZ25V = 25 µ Excellement® Z-Media® (synthetic)

**Porting**
- B32 = ISO 228 G-2” (2-11 BSPP)

**Bypass Settings**
- Omit = 50 psi cracking
- 30 = 30 psi cracking

**Dirt Alarm® Options**
- DPG = Differential pressure gauge

How to Build a Valid Model Number for a Schroeder LWN60:

**BOX 1**
- LWN60

**BOX 2**
- 39ZPMX25V
- B32
- DPG

= LW6039ZMX25VB32DPG

**Filter Series**
- LWN60

(Non-bypassing: requires MX high collapse elements)

**Element Part Number**
- 39ZPMX25V = 25 µ Excellement® Z-Media® (high collapse center tube)

**Porting**
- B32 = ISO 228 G-2” (2-11 BSPP)

**Bypass Settings**
- Omit = Blocked

**Dirt Alarm® Options**
- DPG = Differential pressure gauge
# Base-Ported Pressure Filter

**Features and Benefits**
- Base-ported pressure filter
- Can be installed in vertical or horizontal position
- Meets HF4 automotive standard
- Element changeout from top minimizes oil spillage
- Offered in pipe, SAE straight thread, flanged and ISO 228 porting
- No-Element indicator option available
- Available with non-bypass option with high collapse element
- Integral inlet and outlet female test points option available
- Offered in conventional subplate porting
- Same day shipment model available
- Double and triple stacking of K-size elements can be replaced by single KK or 27K-size elements
- Available with quality-protected GeoSeal Elements (GKF30/GKF50)

---

**Flow Rating:**
Up to 100 gpm (380 L/min) for 150 SUS (32 cSt) fluids
With 2" porting only, up to 150 gpm (570 L/min) for 150 SUS (32 cSt) fluids

**Max. Operating Pressure:**
- KF30: 3000 psi (210 bar)
- KF50: 5000 psi (345 bar)

**Min. Yield Pressure:**
- KF30: 12,000 psi (830 bar), per NFPA T2.6.1
- KF50: 15,000 psi (1025 bar), per NFPA T2.6.1

**Rated Fatigue Pressure:**
- KF30: 2500 psi (170 bar), per NFPA T2.6.1-2005
- KF50: 3500 psi (240 bar), per NFPA T2.6.1-2005

**Temp. Range:**
- -20°F to 225°F (-29°C to 107°C)

**Bypass Setting:**
Cracking: 40 psi (2.8 bar)
Full Flow: 61 psi (4.2 bar)
Non-bypassing model has a blocked bypass.

**Porting Base & Cap:**
Ductile Iron

**Element Case:**
Steel

<table>
<thead>
<tr>
<th>Model</th>
<th>Weight (lbs)</th>
<th>Structural Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>KF30-1K</td>
<td>48</td>
<td>8.50&quot; (215 mm) for 1K; 17.50&quot; (445 mm) for KK; 26.5&quot; (673 mm) for 27K</td>
</tr>
<tr>
<td>KF30-2K</td>
<td>65</td>
<td></td>
</tr>
<tr>
<td>KF30-3K</td>
<td>81</td>
<td></td>
</tr>
<tr>
<td>KF50-1K</td>
<td>59.7</td>
<td></td>
</tr>
<tr>
<td>KF50-2K</td>
<td>80.7</td>
<td></td>
</tr>
<tr>
<td>KF50-3K</td>
<td>102.0</td>
<td></td>
</tr>
</tbody>
</table>

**Type Fluid** | **Appropriate Schroeder Media** |
--- | --- |
Petroleum Based Fluids | All E media (cellulose), Z-Media® and ASP® Media (synthetic) |
High Water Content | All Z-Media® and ASP® Media (synthetic) |
Invert Emulsions | 10 and 25 µ Z-Media® (synthetic), 10 µ ASP® Media |
Water Glycols | 3, 5, 10 and 25 µ Z-Media® (synthetic) and all ASP® Media |
Phosphate Esters | All Z-Media® and ASP® Media (synthetic) with H (EPR) seal designation and 3 and 10 µ E media (cellulose) with H (EPR) seal designation |
Skydrol® | 3, 5, and 10 µ Z-Media® (synthetic) and all ASP® Media (synthetic) with H.5 seal designation (EPR seals and stainless steel wire mesh in element, and light oil coating on housing exterior)
### Base-Ported Pressure Filter

**KF30/KF50**

![Diagram](image)

Metric dimensions in ( ).
Dimensions shown are inches (millimeters) for general information and overall envelope size only.
For complete dimensions please contact Schroeder Industries to request a certified print.

**Element Collapse Rating:**
- 150 psid (10 bar) for standard elements
- 3000 psid (210 bar) for high collapse (ZX) versions

**Flow Direction:** Outside In

**Element Nominal Dimensions:**
- $K$: 3.9" (99 mm) O.D. x 9.0" (230 mm) long
- $KK$: 3.9" (99 mm) O.D. x 18.0" (460 mm) long
- $27K$: 3.9" (99 mm) O.D. x 27.0" (690 mm) long

### Element Performance Information & Dirt Holding Capacity

<table>
<thead>
<tr>
<th>Element</th>
<th>$\beta_2 \geq 75$</th>
<th>$\beta_2 \geq 100$</th>
<th>$\beta_2 \geq 200$</th>
<th>$\beta_2^{(c)} \geq 200$</th>
<th>$\beta_2^{(c)} \geq 1000$</th>
</tr>
</thead>
<tbody>
<tr>
<td>KZ1/KKZ1/27KZ1</td>
<td>&lt;1.0</td>
<td>&lt;1.0</td>
<td>&lt;1.0</td>
<td>&lt;4.0</td>
<td>4.2</td>
</tr>
<tr>
<td>KZ3/KKZ3/27KZ3</td>
<td>&lt;1.0</td>
<td>&lt;1.0</td>
<td>&lt;2.0</td>
<td>&lt;4.0</td>
<td>4.8</td>
</tr>
<tr>
<td>KZ5/KKZ5/27KZ5</td>
<td>2.5</td>
<td>3.0</td>
<td>4.0</td>
<td>4.8</td>
<td>6.3</td>
</tr>
<tr>
<td>KZ10/KKZ10/27KZ10</td>
<td>7.4</td>
<td>8.2</td>
<td>10.0</td>
<td>8.0</td>
<td>10.0</td>
</tr>
<tr>
<td>KZ25/KKZ25/27KZ25</td>
<td>18.0</td>
<td>20.0</td>
<td>22.5</td>
<td>19.0</td>
<td>24.0</td>
</tr>
<tr>
<td>KZW1</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>&lt;4.0</td>
<td>&lt;4.0</td>
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<td>4.8</td>
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<td>8.6</td>
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<td>KZW25/KKZW25</td>
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<td>N/A</td>
<td>N/A</td>
<td>15.4</td>
<td>18.5</td>
</tr>
<tr>
<td>KZX3/KKZX3/27KZX3</td>
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<td>&lt;1.0</td>
<td>&lt;2.0</td>
<td>4.7</td>
<td>5.8</td>
</tr>
<tr>
<td>KZX10/KKZX10/27KZX10</td>
<td>7.4</td>
<td>8.2</td>
<td>10.0</td>
<td>8.0</td>
<td>9.8</td>
</tr>
</tbody>
</table>

* Based on 100 psi terminal pressure

**Filtration Ratio Per ISO 4572/NFPA T3.10.8.8**
Using automated particle counter (APC) calibrated per ISO 4402

**Filtration Ratio per ISO 16889**
Using APC calibrated per ISO 11171
Exercise:
Determine \( \Delta P_{\text{filter}} \) at 50 gpm (189.5 L/min) for KF30/KZ10SD5 using 160 SUS (34 cSt) fluid.

Use the housing pressure curve to determine \( \Delta P_{\text{housing}} \) at 50 gpm. In this case, \( \Delta P_{\text{housing}} \) is 3 psi (.21 bar) according to the graph for the KF30 housing.

Use the element pressure curve to determine \( \Delta P_{\text{element}} \) at 50 gpm. In this case, \( \Delta P_{\text{element}} \) is 2.5 psi (.17 bar) according to the graph for the KZ10 element.

Because the viscosity in this sample is 160 SUS (34 cSt), we determine the Viscosity Factor (\( V_f \)) by dividing the Operating Fluid Viscosity with the Standard Viscosity of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential, \( \Delta P_{\text{filter}} \), is calculated by adding \( \Delta P_{\text{housing}} \) with the true element pressure differential, \( \Delta P_{\text{element}} \cdot V_f \). The \( \Delta P_{\text{element}} \) from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

Solution:
\( \Delta P_{\text{housing}} = 3 \text{ psi (.21 bar)} \) | \( \Delta P_{\text{element}} = 2.5 \text{ psi (.17 bar)} \)

\( V_f = 160 \text{ SUS (34 cSt)} / 150 \text{ SUS (32 cSt)} = 1.1 \)

\( \Delta P_{\text{filter}} = 3 \text{ psi} + (2.5 \text{ psi} \cdot 1.1) = 5.8 \text{ psi} \)

OR
\( \Delta P_{\text{filter}} = .21 \text{ bar} + (.17 \text{ bar} \cdot 1.1) = .40 \text{ bar} \)
Box 2. Number of elements must equal 1 when using KK or 27K elements. Replacement element part numbers are identical to contents of Boxes 2, 3, 4, and 5. Double and triple stacking of K-size elements can be replaced by single KK and 27K elements, respectively. ZW media not available in 27K length. For standard elements, a plastic connector SAP P/N: 7630900(LF-1997) is used to connect two or three K elements. For high collapse, a steel connector is required SAP P/N: 7608360 (LF-325S).

Box 5. H.5 seal designation includes the following: EPR seals, stainless steel wire mesh on elements, and light oil coating on housing exterior. Viton® is a registered trademark of DuPont Dow Elastomers. Skydrol® is a registered trademark of Solutia inc.

Box 7. For options F & F32, bolt depth .75” (19 mm).

For option O, O-rings included; hardware not included.

Box 8. When X is paired with a standard filter series, a standard bushing and spring plate will be used.

Box 9. Standard indicator setting for non-bypassing model is 50 psi unless otherwise specified.

Box 10. Options N, are not available with KFN30, KFN50. N option should be used in conjunction with dirt alarm.

Box 11. Additional Options

Omit = None
N = No-Element Indicator (not available w/ KFN30/KFN50/ GKF30/GKF50 or housings w/ indicator in cap)
C = Electrical indicator in cap vs. in base standard
GS09 = Dirt Alarm and drain opposite standard
GS88 = Electric Switch and drain opposite standard

Example: Note: Only boxes 8 and 10 may contain more than one option

KF30Z10S = GKF30 – KG – Z – 10 – – – S – – D5 – –

How to Build a Valid Model Number for a Schroeder KF30:

<table>
<thead>
<tr>
<th>BOX 1</th>
<th>BOX 2</th>
<th>BOX 3</th>
<th>BOX 4</th>
<th>BOX 5</th>
<th>BOX 6</th>
<th>BOX 7</th>
<th>BOX 8</th>
<th>BOX 9</th>
<th>BOX 10</th>
<th>BOX 11</th>
</tr>
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<tbody>
<tr>
<td>KF30</td>
<td>KG</td>
<td>Z</td>
<td>10</td>
<td>V</td>
<td>S</td>
<td>D5</td>
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<td>Number of elements</td>
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<tr>
<td>1 = K, KK, 27K</td>
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<tr>
<td>1 = KG, KX, 270KG</td>
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</tr>
</tbody>
</table>

Media Type

Omit = None
AS = Anti-Stat Media (synthetic)
W = W Media (water removal)
V = Viton®
Z = Excellement® Z-Media (synthetic)
ZW = Aqua-Acceller® ZW Media
ZX = Excellement® Z-Media (high Collapse centertube)
M = Media (reusable metal mesh) N size only

Micron Rating

1 = 1 Micron (Z, ZW, ZY media)
3 = 3 Micron (AZ, Z, ZY media)
5 = 5 Micron (AS, Z, ZW, ZY media)
10 = 10 Micron (AS, ZM, Z, ZW, ZY media)
25 = 25 Micron (E, M, Z, ZW, ZY media)
60 = 60 Micron (M media)
150 = 150 Micron (M media)
260 = 260 Micron (M media)

Seal Material

Omit = Buna N
V = Viton®
H = EPR
H5 = Skydrol® compatibility

Magnet Option

Omit = None
M = Magnet inserts (not available w/ indicator in cap)

Dirt Alarm® Options

Omit = None
D = Pointer
D5 = Visual pop-up
DSC = D5 in cap
D9 = All stainless D5
DB = Visual w/ thermal lockout
D8C = D8 cap
MSS = Electrical w/ 12 in. 16 gauge 4-conductor cable
MS10C = Low current MS10
MS11C = Electrical w/ 12 ft. 4-conductor wire
MS12C = Electrical w/ 5 pin Brad Harrison connector (male end only)
MS14DC = Electrical w/ 12 in. 18 gauge 4-conductor cable
MS16C = Electrical w/ 5 pin Brad Harrison connector (male end only)
MS17 = Electrical w/ 5 pin Brad Harrison connector
MS24B = ISO 228 G-1.5

Electrical with Thermal Lockout

MS5T = MS5 (see above) w/ thermal lockout
MS10CT = Low current MS10
MS11CT = Low current MS11
MS12CT = Low current MS12
MS14DEC = Low current MS14
MS16CT = Low current MS16
MS17CT = Low current MS17

Electrical with Magnetic Lockout

MS5 = Cam operated switch w/ 1/8” conduit female connection
MS10 = Supplied w/ threaded connector & light
MS11 = Supplied w/ 5 pin Brad Harrison connector & light (male end)
MS13DC = Low current MS13
MS14DC = Low current MS14

Electrical with Indicator

MS5 = Cam operated switch w/ 1/8” conduit female connection
MS10 = Supplied w/ threaded connector & light
MS11 = Supplied w/ 5 pin Brad Harrison connector & light (male end)
MS13DC = Low current MS13
MS14DC = Low current MS14
Base-Ported Pressure Filter

Features and Benefits
- Base-ported pressure filter
- Can be installed in vertical or horizontal position
- Element changeout from top minimizes oil spillage
- Offered in pipe, SAE straight thread, flanged and ISO 228 porting
- Available with non-bypass option with high collapse element
- Integral inlet and outlet female test points option available
- Offered in conventional subplate porting

Flow Rating: Up to 40 gpm (150 L/min) for 150 SUS (32 cSt) fluids
Max. Operating Pressure: 5000 psi (345 bar)
Min. Yield Pressure: 15,000 psi (1035 bar), per NFPA T2.6.1
Rated Fatigue Pressure: 3500 psi (240 bar), per NFPA T2.6.1-2005
Temp. Range: -20°F to 225°F (-29°C to 107°C)
Bypass Setting: Cracking: 40 psi (2.8 bar)
Full Flow: 69 psi (4.8 bar)
Non-bypassing model has a blocked bypass.

Porting Base: Ductile Iron
Element Case & Cap: Steel

Weight of TF50-1A: 24.4 lbs. (11.1 kg)
Weight of TF50-2A: 29.8 lbs. (13.5 kg)
Element Change Clearance: 8.50" (215 mm)

Filter Housing Specifications

Fluid Compatibility

<table>
<thead>
<tr>
<th>Type Fluid</th>
<th>Appropriate Schroeder Media</th>
</tr>
</thead>
<tbody>
<tr>
<td>Petroleum Based Fluids</td>
<td>All E media (cellulose) and Z-Media® (synthetic)</td>
</tr>
<tr>
<td>High Water Content</td>
<td>All Z-Media® (synthetic)</td>
</tr>
<tr>
<td>Invert Emulsions</td>
<td>10 and 25 µ Z-Media® (synthetic)</td>
</tr>
<tr>
<td>Water Glycols</td>
<td>3, 5, 10 and 25 µ Z-Media® (synthetic)</td>
</tr>
<tr>
<td>Phosphate Esters</td>
<td>All Z-Media® (synthetic) with H (EPR) seal designation</td>
</tr>
<tr>
<td>Skydrol®</td>
<td>3, 5, 10 and 25 µ Z-Media® (synthetic) with H.5 seal designation (EPR seals and stainless steel wire mesh in element, and light oil coating on housing exterior)</td>
</tr>
</tbody>
</table>

Model No. of filter in photograph is TF502A10P.
**Base-Ported Pressure Filter**

**Element Collapse Rating:**
- 150 psid (10 bar) for standard elements
- 3000 psid (210 bar) for high collapse (ZX) versions

**Flow Direction:** Outside In

**Element Nominal Dimensions:**
- A: 3.0" (75 mm) O.D. x 4.5" (115 mm) long
- CC: 3.0" (75 mm) O.D. x 9.5" (240 mm) long

---

### Filtration Ratio Per ISO 4572/NFPA T3.10.8.8

<table>
<thead>
<tr>
<th>Element</th>
<th>$\beta_x \geq 75$</th>
<th>$\beta_x \geq 100$</th>
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<th>$\beta_{x(c)} \geq 200$</th>
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<td>&lt;1.0</td>
<td>&lt;1.0</td>
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<td>4.2</td>
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<td>&lt;4.0</td>
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<td>10.0</td>
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<td>19.0</td>
<td>24.0</td>
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<tr>
<td>CCZX3</td>
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<td>&lt;1.0</td>
<td>&lt;2.0</td>
<td>4.7</td>
<td>5.8</td>
</tr>
<tr>
<td>CCZX10</td>
<td>7.4</td>
<td>8.2</td>
<td>10.0</td>
<td>8.0</td>
<td>10.0</td>
</tr>
</tbody>
</table>

### Filtration Ratio per ISO 16889

<table>
<thead>
<tr>
<th>Element</th>
<th>$\beta_x(c) \geq 200$</th>
<th>$\beta_x(c) \geq 1000$</th>
</tr>
</thead>
<tbody>
<tr>
<td>AZ1</td>
<td>4.2</td>
<td></td>
</tr>
<tr>
<td>AZ3</td>
<td>4.8</td>
<td></td>
</tr>
<tr>
<td>AZ5</td>
<td>6.3</td>
<td></td>
</tr>
<tr>
<td>AZ10</td>
<td>10.0</td>
<td></td>
</tr>
<tr>
<td>AZ25</td>
<td>24.0</td>
<td></td>
</tr>
<tr>
<td>CCZX3</td>
<td>5.8</td>
<td></td>
</tr>
<tr>
<td>CCZX10</td>
<td>10.0</td>
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</tr>
</tbody>
</table>

---

### Metrics & Dimensions

- **Filtration Ratio Per ISO 4572/NFPA T3.10.8.8**
- **Filtration Ratio per ISO 16889**

---

### Element Information & Dirt Holding Capacity

- **AZ1:** 25
- **AZ3:** 26
- **AZ5:** 30
- **AZ10:** 28
- **AZ25:** 28
- **CCZX3:** 26*
- **CCZX10:** 28*

**Dirt Holding Capacity (DHC) (gm):**

- **AZ1:** 25
- **AZ3:** 26
- **AZ5:** 30
- **AZ10:** 28
- **AZ25:** 28
- **CCZX3:** 26*
- **CCZX10:** 28*

---

**Element Collapse Rating:** 150 psid (10 bar) for standard elements, 3000 psid (210 bar) for high collapse (ZX) versions

**Flow Direction:** Outside In

**Element Nominal Dimensions:**
- **A:** 3.0" (75 mm) O.D. x 4.5" (115 mm) long
- **CC:** 3.0" (75 mm) O.D. x 9.5" (240 mm) long

---

**Note:** *Based on 100 psi terminal pressure.
Pressure Drop Information

Based on Flow Rate and Viscosity

**Base-Ported Pressure Filter**

**TF50**

**ΔP**

**ΔP** for fluids with sp gr (specific gravity) = 0.86:

\[
\Delta P_{\text{housing}} = \Delta P_{\text{housing}}^\text{TF50} \]

**Exercise:**

Determine \( \Delta P_{\text{filter}} \) at 15 gpm (57 L/min) for TF501AZ10SD5 using 175 SUS (37.2 cSt) fluid.

Use the housing pressure curve to determine \( \Delta P_{\text{housing}} \) at 15 gpm. In this case, \( \Delta P_{\text{housing}} \) is 1.8 psi (.12 bar) according to the graph for the TF50 housing.

Use the element pressure curve to determine \( \Delta P_{\text{element}} \) at 15 gpm. In this case, \( \Delta P_{\text{element}} \) is 3.8 psi (.26 bar) according to the graph for the AZ10 element.

Because the viscosity in this sample is 175 SUS (37.2 cSt), we determine the Viscosity Factor (\( V_f \)) by dividing the Operating Fluid Viscosity with the Standard Viscosity of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential, \( \Delta P_{\text{filter}} \), is calculated by adding \( \Delta P_{\text{housing}} \) with the true element pressure differential, \( \Delta P_{\text{element}} \cdot V_f \). The \( \Delta P_{\text{element}} \) from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

**Solution:**

\[ \Delta P_{\text{housing}} = 1.8 \text{ psi} \ (0.12 \text{ bar}) \]

\[ \Delta P_{\text{element}} = 3.8 \text{ psi} \ (0.26 \text{ bar}) \]

\[ V_f = \frac{175 \text{ SUS (37.2 cSt)}}{150 \text{ SUS (32 cSt)}} = 1.2 \]

\[ \Delta P_{\text{filter}} = 1.8 \text{ psi} + (3.8 \text{ psi} \cdot 1.2) = 6.4 \text{ psi} \]

\[ \text{OR} \]

\[ \Delta P_{\text{filter}} = .12 \text{ bar} + (.26 \text{ bar} \cdot 1.2) = .43 \text{ bar} \]

**Note:**

If your element is not graphed, use the following equation:

\[ \Delta P_{\text{element}} = \text{Flow Rate} \times \Delta P_f. \]

Plug this variable into the overall pressure drop equation.

<table>
<thead>
<tr>
<th>Ele.</th>
<th>ΔP (psi)</th>
<th>Ele.</th>
<th>ΔP (bar)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A3</td>
<td>0.53</td>
<td>AA3</td>
<td>0.16</td>
</tr>
<tr>
<td>A10</td>
<td>0.36</td>
<td>AA10</td>
<td>0.18</td>
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<tr>
<td>A25</td>
<td>0.05</td>
<td>AA25</td>
<td>0.03</td>
</tr>
<tr>
<td>CCZX3</td>
<td>0.29</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CCZX10</td>
<td>0.26</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
How to Build a Valid Model Number for a Schroeder TF50:

**BOX 1**
Filter Series

- TF50
- TFN50 (Non-bypassing: requires ZX high collapse elements)

**BOX 2**
Number

- 1
- 2 (AZ elements only)

**BOX 3**
Media Type

| AZ1 | 1 µ Excellement® Z-Media® (synthetic) |
| AZ3 | 3 µ Excellement® Z-Media® (synthetic) |
| AZ5 | 5 µ Excellement® Z-Media® (synthetic) |
| AZ10 | 10 µ Excellement® Z-Media® (synthetic) |
| AZ25 | 25 µ Excellement® Z-Media® (synthetic) |
| CCZX1 | 1 µ Excellement® Z-Media® (high collapse center tube) |
| CCZX3 | 3 µ Excellement® Z-Media® (high collapse center tube) |
| CCZX5 | 5 µ Excellement® Z-Media® (high collapse center tube) |
| CCZX10 | 10 µ Excellement® Z-Media® (high collapse center tube) |
| CCZX25 | 25 µ Excellement® Z-Media® (high collapse center tube) |

**BOX 4**
Seal Material

- Omit = Buna N
- V = Viton®
- H = EPR
- HS = Skydrol® compatibility

**BOX 5**
Magnet option

- Omit = None
- M = Magnet inserts (not available w/ indicator in cap or TFN50)

**BOX 6**
Porting

- P = 1” NPTF
- S = SAE-16
- F = 1” SAE 4-bolt flange
- O = Subplate
- B = ISO 228 G-1

**BOX 7**
Bypass

- Omit = 40 PSI Bypass
- X = Blocked bypass
- 50 = 50 psi bypass setting
- 60 = 60 psi bypass setting

**BOX 8**
Test Points

- L = Two 1⁄4” NPTF inlet and outlet female test ports
- U = Series 1215 1⁄8” UNF Schroeder Check Test Point installation in cap (upstream)
- UU = Series 1215 1⁄8” UNF Schroeder Check Test Point installation in block (upstream and downstream)

**BOX 9**
Dirt Alarm® Options

- None
- Visual
- Thermal Lockout

<table>
<thead>
<tr>
<th>Omit</th>
<th>D8 = Visual w/ thermal lockout</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>Pointer</td>
</tr>
<tr>
<td>D5</td>
<td>Visual pop-up</td>
</tr>
<tr>
<td>DSC</td>
<td>DS in cap</td>
</tr>
<tr>
<td>D9</td>
<td>All-stainless DS</td>
</tr>
</tbody>
</table>

**BOX 10**
Additional Options

- Omit = None
- N = No-Element indicator (not available with TFN50)
- GS09 = Dirt alarm and drain opposite standard
- GS88 = Electrical switch and drain opposite standard

**NOTES:**

Box 7. When X is paired with a standard filter series, a standard bushing and spring plate will be used.
Base-Ported Pressure Filter

Features and Benefits
- Base-ported pressure filter
- Patented dirt-tolerant cap design
- Can be installed in vertical or horizontal position
- Meets HF4 automotive standard
- Element changeout from top minimizes oil spillage
- Offered in pipe, SAE straight thread, flanged and ISO 228 porting
- No-Element indicator option available
- Available with non-bypass option with high collapse element
- Integral inlet and outlet female test points option available
- Offered in conventional subplate porting
- Double and triple stacking of K-size elements can be replaced by single KK or 27K-size elements
- Available with quality-protected GeoSeal® Elements (GKC50)

Model No. of filter in photograph is KC501KZ10PD.

Flow Rating: Up to 100 gpm (380 L/min) for 150 SUS (32 cSt) fluids
With 2” porting only, up to 150 gpm (570 L/min) for 150 SUS (32 cSt) fluids

Max. Operating Pressure: 5000 psi (345 bar)
Min. Yield Pressure: 15,000 psi (1035 bar), per NFPA T2.6.1
Rated Fatigue Pressure: 3500 psi (240 bar), per NFPA T2.6.1-2005
Temp. Range: -20°F to 225°F (-29°C to 107°C)
Bypass Setting:
- Cracking: 40 psi (2.8 bar)
- Optional Cracking: 50 psi (3.5 bar)
- Full Flow: 61 psi (4.2 bar)
Non-bypassing model has a blocked bypass.

Porting Base & Cap: Ductile Iron
Element Case: Steel

Weight of KF30-1K: 66.8 lbs. (30.3 kg)
Weight of KF30-2K: 87.8 lbs. (39.8 kg)
Weight of KF30-3K: 109.6 lbs. (49.7 kg)
Element Change Clearance: 8.50” (215 mm) for 1K; 17.50” (445 mm) for KK; 26.5” (673 mm) for 27K

Type Fluid
- Petroleum Based Fluids
  - All E-Media (cellulose) and Z-Media® and ASP® Media (synthetic)
- High Water Content
  - All Z-Media® and ASP® Media (synthetic)
- Invert Emulsions
  - 10 and 25 µ Z-Media® (synthetic), 10 µ ASP® Media (synthetic)
- Water Glycols
  - 3, 5, 10 and 25 µ Z-Media® (synthetic), and all ASP® Media
- Phosphate Esters
  - All Z-Media® and ASP® Media (synthetic) with H (EPR) seal designation and 3 and 10 µ E media (cellulose) with H (EPR) seal designation
- Skydrol® 3, 5, 10 and 25 µ Z-Media® (synthetic), and all ASP® Media (synthetic) with H.S seal designation (EPR seals and stainless steel wire mesh in element, and light oil coating on housing exterior)

Filter Housing Specifications

Fluid Compatibility
- NOF30-05
- NOF-50-760
- FOF60-03
- NMF30
- RMF30
- 14-CRZX10
Metric dimensions in ( ).
Dimensions shown are inches (millimeters) for general information and overall envelope size only.
For complete dimensions please contact Schroeder Industries to request a certified print.

<table>
<thead>
<tr>
<th>Element</th>
<th>DHC (gm)</th>
<th>Element</th>
<th>DHC (gm)</th>
<th>Element</th>
<th>DHC (gm)</th>
<th>Element</th>
<th>DHC (gm)</th>
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<tbody>
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<td>112</td>
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<td>224</td>
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<td>336</td>
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<td>KZ3</td>
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</table>

Filtration Ratio Per ISO 4572/NFPA 3.10.8.8
Using automated particle counter (APC) calibrated per ISO 4402
Filtration Ratio per ISO 16889
Using APC calibrated per ISO 11171

<table>
<thead>
<tr>
<th>Element</th>
<th>βx (≥ 75)</th>
<th>βx (≥ 100)</th>
<th>βx (≥ 200)</th>
<th>βx(c) (≥ 200)</th>
<th>βx(c) (≥ 1000)</th>
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<tbody>
<tr>
<td>KZ1/KKZ1/27KZ1</td>
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<td>&lt;1.0</td>
<td>&lt;1.0</td>
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<td>KZX10/KKZX10/27KZX10</td>
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<td>8.2</td>
<td>10.0</td>
<td>8.0</td>
<td>9.8</td>
</tr>
</tbody>
</table>

Element Collapse Rating: 150 psid (10 bar) for standard elements
3000 psid (210 bar) for high collapse (ZX) versions

Flow Direction: Outside In

Element Nominal Dimensions:
K: 3.9” (99 mm) O.D. x 9.0” (230 mm) long
KK: 3.9” (99 mm) O.D. x 18.0” (460 mm) long
27K: 3.9” (99 mm) O.D. x 27.0” (690 mm) long
Base-Ported Pressure Filter

\[ \Delta P_{\text{housing}} \]

KC50 \( \Delta P_{\text{housing}} \) for fluids with sp gr (specific gravity) = 0.86:

\[ \Delta P_{\text{filter}} = \Delta P_{\text{housing}} + (\Delta P_{\text{element}} \cdot V_f) \]

Exercise:
Determine \( \Delta P_{\text{filter}} \) at 50 gpm (189.5 L/min) for KC501KZ10SD5 using 160 SUS (34 cSt) fluid.

Use the housing pressure curve to determine \( \Delta P_{\text{housing}} \) at 50 gpm. In this case, \( \Delta P_{\text{housing}} \) is 3 psi (.21 bar) on the graph for the KC50 housing.

Use the element pressure curve to determine \( \Delta P_{\text{element}} \) at 50 gpm. In this case, \( \Delta P_{\text{element}} \) is 2.5 psi (.17 bar) according to the graph for the KZ10 element.

Because the viscosity in this sample is 160 SUS (34 cSt), we determine the Viscosity Factor (\( V_f \)) by dividing the Operating Fluid Viscosity with the Standard Viscosity of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential, \( \Delta P_{\text{filter}} \), is calculated by adding \( \Delta P_{\text{housing}} \) with the true element pressure differential, \( \Delta P_{\text{element}} \cdot V_f \). The \( \Delta P_{\text{element}} \) from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

Solution:
\( \Delta P_{\text{housing}} = 3 \text{ psi (.21 bar)} \) | \( \Delta P_{\text{element}} = 2.5 \text{ psi (.17 bar)} \)

\( V_f = 160 \text{ SUS (34 cSt) / 150 SUS (32 cSt) = 1.1} \)
\( \Delta P_{\text{filter}} = 3 \text{ psi} + (2.5 \text{ psi} \times 1.1) = 5.8 \text{ psi} \)

**OR**
\( \Delta P_{\text{filter}} = .21 \text{ bar} + (.17 \text{ bar} \times 1.1) = .40 \text{ bar} \)

Note:
If your element is not graphed, use the following equation:
\( \Delta P_{\text{element}} = \text{Flow Rate} \times \Delta P_f \). Plug this variable into the overall pressure drop equation.
# Base-Ported Pressure Filter

## How to Build a Valid Model Number for a Schroeder KC50:

<table>
<thead>
<tr>
<th>Filter Model Number Selection</th>
<th>Filter Series</th>
<th>Number &amp; Size of Elements</th>
<th>Media Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>BOX 1</td>
<td>KC50</td>
<td>1, K, K, 27K</td>
<td>Omit = E Media (Cellulose) (KC50 only)</td>
</tr>
<tr>
<td>BOX 2</td>
<td>KCN50</td>
<td>2, K</td>
<td>AS = Anti-Stat Media (synthetic)</td>
</tr>
<tr>
<td>BOX 3</td>
<td>K</td>
<td>3, K</td>
<td>Z = Excellement® Z-Media (synthetic)</td>
</tr>
<tr>
<td>BOX 4</td>
<td>GeoSeal*</td>
<td>1, K, KKG, 27KG</td>
<td>ZX = Excellement® Z-Media (High Collapse center tube) (KCN50 Only)</td>
</tr>
<tr>
<td>BOX 5</td>
<td>GKC50</td>
<td>2, KG</td>
<td>ZW = Aqua-Excellement ZW Media (KC50 Only)</td>
</tr>
<tr>
<td>BOX 6</td>
<td>WKC50</td>
<td>3, KG</td>
<td>W = W Media (water removal)</td>
</tr>
<tr>
<td>BOX 7</td>
<td>Water</td>
<td></td>
<td>M = Media (reusable metal mesh) (KC50 &amp; KCN50 Only)</td>
</tr>
</tbody>
</table>

### Notes:
- Box 2: Number of elements must equal 1 when using KK or 27K elements. Replacement element part numbers are identical to contents of Boxes 2, 3, 4 and 5. Double and triple stacking of K size elements can be replaced by single KK and 27K elements, respectively. ZW media not available in 27K length. For standard elements, a plastic connector SAP P/N: 7630900 (LF-1997) is used to connect two or three K elements. For high collapse, a steel connector is required SAP P/N: 7608360 (LF-3252SC).

### Micron Rating

<table>
<thead>
<tr>
<th>Micron Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 = 1 Micron</td>
</tr>
<tr>
<td>3 = 3 Micron</td>
</tr>
<tr>
<td>5 = 5 Micron</td>
</tr>
<tr>
<td>10 = 10 Micron</td>
</tr>
<tr>
<td>25 = 25 Micron</td>
</tr>
<tr>
<td>60 = 60 Micron</td>
</tr>
<tr>
<td>150 = 150 Micron</td>
</tr>
<tr>
<td>260 = 260 Micron</td>
</tr>
</tbody>
</table>

### Seal Material

<table>
<thead>
<tr>
<th>Seal Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>Omit = None</td>
</tr>
<tr>
<td>V = Viton*</td>
</tr>
<tr>
<td>H = EPR</td>
</tr>
<tr>
<td>H.5 = Skydrol* compatibility</td>
</tr>
</tbody>
</table>

### Magnet Option

<table>
<thead>
<tr>
<th>Magnet Option</th>
</tr>
</thead>
<tbody>
<tr>
<td>Omit = None</td>
</tr>
<tr>
<td>M = Magnet inserts (not available w/ indicator in cap)</td>
</tr>
</tbody>
</table>

### Additional Options

<table>
<thead>
<tr>
<th>Additional Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Omit = None</td>
</tr>
<tr>
<td>N = No-Element Indicator (not available w/ KC50 or GKC50 housings w/ indicator in cap)</td>
</tr>
</tbody>
</table>

### Bypass

<table>
<thead>
<tr>
<th>Bypass</th>
</tr>
</thead>
<tbody>
<tr>
<td>Omit = 40 PSI Bypass</td>
</tr>
<tr>
<td>X = Blocked bypass</td>
</tr>
<tr>
<td>50 = 50 psi bypass setting</td>
</tr>
</tbody>
</table>

### Test Points

<table>
<thead>
<tr>
<th>Test Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Omit = None</td>
</tr>
<tr>
<td>L = Two 1/2 NPTF inlet &amp; outlet female test ports</td>
</tr>
<tr>
<td>U = Series 1215 1/4 UNF Schroeder Check Test Point installed in cap (upstream)</td>
</tr>
<tr>
<td>UU = Series 1215 1/4 UNF Schroeder Check Test Point installed in block (upstream and downstream)</td>
</tr>
</tbody>
</table>

### Dirty Alarm Options

<table>
<thead>
<tr>
<th>Dirty Alarm Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Omit = None</td>
</tr>
<tr>
<td>Visual = D</td>
</tr>
<tr>
<td>D9 = All stainless DS</td>
</tr>
<tr>
<td>D8 = D in cap</td>
</tr>
</tbody>
</table>

### Wiring Diagram

- **Electrical with Thermal Lockout**
  - MS = Electrical w/ 12 in. 18 gauge 4-conductor cable
  - MS1CLC = Low current MS1CLC
  - MS10C = Electrical w/ DIN connector (male end only)
  - MS10LC = Low current MS10LC
  - MS11C = Electrical w/ 12 ft. 4-conductor wire
  - MS12C = Electrical w/ 5 pin Brad Harrison connector (male end only)
  - MS12LC = Low current MS12LC
  - MS16C = Electrical w/ weather packed sealed connector
  - MS16LC = Low current MS16LC
  - MS17C = Electrical w/ 4 pin Brad Harrison male connector
  - MS17LC = Low current MS17LC
  - MSST = MS (see above) w/ thermal lockout
  - MSSTLT = Low current MSST
  - MS10C = Low current MS10C
  - MS12C = Low current MS12C
  - MS16C = Low current MS16C
  - MS17C = Low current MS17C

- **Electrical**
  - MS = Cam operated switch w/ 1/2 conduit female connection
  - MS13DC = Supplied w/ threaded connector & light
  - MS14DC = Supplied w/ 5 pin Brad Harrison connector & light (male end)

- **Visual**
  - MS13DC = MS13 (see above), direct current, w/ thermal lockout
  - MS14DC = MS14 (see above), direct current, w/ thermal lockout

- **Components**
  - MS10C = Low current MS10C
  - MS12C = Low current MS12C
  - MS16C = Low current MS16C
  - MS17C = Low current MS17C

- **Ports**
  - P = 1/2 NPTF
  - F = 1/2 NPTF
  - S = SAE-24
  - D = Subplate

- **Materials**
  - H = EPR
  - V = Viton®

**Additional Notes**
- Box 7: For option F, bolt depth .75” (19 mm). For option O, O-rings included; hardware not included.
- Box 8: When X is paired with a standard filter series, a standard bushing and spring plate will be used.
- Box 10: Standard indicator setting for non-bypassing model is 50 psi unless otherwise specified.
- Box 11: Option N, are not available with KCN50/GKC50. N option should be used in conjunction with dirt alarm.
Base-Ported Pressure Filter

Features and Benefits
- Base-ported high pressure dual filter manifold mounted
- Meets HF4 automotive standard
- Element changeout from top minimizes oil spillage
- Offered in pipe porting (contact factory for other porting options)
- No-Element indicator option available
- Available with non-bypass option with high collapse element
- Integral inlet and outlet female test points option available
- Double and triple stacking of K-size elements can be replaced by single KK or 27K-size elements
- Available with quality-protected GeoSeal® Elements (GMKF50)

Model No. of filter in photograph are MKF504K10PD5 and MKC504K10PD5.

Flow Rating: Up to 200 gpm (760 L/min) for 150 SUS (32 cSt) fluids
Max. Operating Pressure: 5000 psi (345 bar)
Min. Yield Pressure: 15,000 psi (1035 bar), per NFPA T2.6.1
Rated Fatigue Pressure: 3500 psi (240 bar), per NFPA T2.6.1-2005
Temp. Range: -20°F to 225°F (-29°C to 107°C)
Bypass Setting: Cracking: 40 psi (2.8 bar)  Optional Cracking: 50 psi (3.5 bar)
Full Flow: 61 psi (4.2 bar)
Non-bypassing model has a blocked bypass.

Porting Base & Cap: Ductile Iron
Element Case: Steel
Weight of MKF50-2K: 214.0 lbs. (97.3 kg)
Weight of MKF50-4K: 243.0 lbs. (110.2 kg)
Weight of MKF50-6K: 284.4 lbs. (129.0 kg)
Weight of MKC50-2K: 216.0 lbs. (98.0 kg)
Weight of MKC50-4K: 245.0 lbs. (111.1 kg)
Weight of MKC50-6K: 286.4 lbs. (129.9 kg)
Element Change Clearance: 8.50” (215 mm) for 1K; 17.50” (445 mm) for KK; 26.5” (673 mm) for 27K

Filter Housing Specifications

Fluid Compatibility

Type Fluid Appropriate Schroeder Media
Petroleum Based Fluids All E-Media (cellulose) and Z-Media™ and ASP® Media (synthetic)
High Water Content All Z-Media™ and ASP® Media (synthetic)
Invert Emulsions 10 and 25 µ Z-Media™ (synthetic), 10 µ ASP® Media (synthetic)
Water Glycols 3, 5, 10 and 25 µ Z-Media™ (synthetic), and all ASP® Media
Phosphate Esters All Z-Media™ and ASP® Media (synthetic) with H (EPR) seal designation and 3 and 10 µ
E media (cellulose) with H (EPR) seal designation
Skydrol® 3, 5, 10 and 25 µ Z-Media™ (synthetic), and all ASP® Media (synthetic) with H.S seal
designation (EPR seals and stainless steel wire mesh in element, and light oil coating on housing exterior)
**Base-Ported Pressure Filter**

**Element Performance Information & Dirt Holding Capacity**

Metric dimensions in ().
Dimensions shown are inches (millimeters) for general information and overall envelope size only.
For complete dimensions please contact Schroeder Industries to request a certified print.

**Filtration Ratio Per ISO 4572/NFPA T3.10.8.8 Using automated particle counter (APC) calibrated per ISO 4402**

<table>
<thead>
<tr>
<th>Element</th>
<th>βx ≥ 75</th>
<th>βx ≥ 100</th>
<th>βx ≥ 200</th>
<th>βy(c) ≥ 200</th>
<th>βy(c) ≥ 1000</th>
</tr>
</thead>
<tbody>
<tr>
<td>KZ1/KKZ1/27KZ1</td>
<td>&lt;1.0</td>
<td>&lt;1.0</td>
<td>&lt;1.0</td>
<td>&lt;4.0</td>
<td>4.2</td>
</tr>
<tr>
<td>KZ3/KKZ3/27KZ3</td>
<td>&lt;1.0</td>
<td>&lt;1.0</td>
<td>&lt;2.0</td>
<td>&lt;4.0</td>
<td>4.8</td>
</tr>
<tr>
<td>KZ5/KKZ5/27KZ5</td>
<td>2.5</td>
<td>3.0</td>
<td>4.0</td>
<td>4.8</td>
<td>6.3</td>
</tr>
<tr>
<td>KZ10/KKZ10/27KZ10</td>
<td>7.4</td>
<td>8.2</td>
<td>10.0</td>
<td>8.0</td>
<td>10.0</td>
</tr>
<tr>
<td>KZW1</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>&lt;4.0</td>
<td>&lt;4.0</td>
</tr>
<tr>
<td>KZW3/KKZW3</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>4.0</td>
<td>4.8</td>
</tr>
<tr>
<td>KZW5/KKZW5</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>5.1</td>
<td>6.4</td>
</tr>
<tr>
<td>KZW10/KKZW10</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>6.9</td>
<td>8.6</td>
</tr>
<tr>
<td>KZW25/KKZW25</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>15.4</td>
<td>18.3</td>
</tr>
<tr>
<td>KZX3/KKZX3/27KZX3</td>
<td>&lt;1.0</td>
<td>&lt;1.0</td>
<td>&lt;2.0</td>
<td>4.7</td>
<td>5.8</td>
</tr>
<tr>
<td>KZX10/KKZX10/27KZX10</td>
<td>7.4</td>
<td>8.2</td>
<td>10.0</td>
<td>8.0</td>
<td>9.8</td>
</tr>
</tbody>
</table>

**Filtration Ratio per ISO 16889 Using APC calibrated per ISO 11171**

<table>
<thead>
<tr>
<th>Element</th>
<th>βy(c) ≥ 200</th>
<th>βy(c) ≥ 1000</th>
</tr>
</thead>
<tbody>
<tr>
<td>KZ1/KKZ1/27KZ1</td>
<td>4.2</td>
<td></td>
</tr>
<tr>
<td>KZ3/KKZ3/27KZ3</td>
<td>4.8</td>
<td></td>
</tr>
<tr>
<td>KZ5/KKZ5/27KZ5</td>
<td>6.3</td>
<td></td>
</tr>
<tr>
<td>KZ10/KKZ10/27KZ10</td>
<td>10.0</td>
<td></td>
</tr>
<tr>
<td>KZW1</td>
<td>&lt;4.0</td>
<td>4.8</td>
</tr>
<tr>
<td>KZW3/KKZW3</td>
<td>4.8</td>
<td>6.4</td>
</tr>
<tr>
<td>KZW5/KKZW5</td>
<td>5.1</td>
<td>6.4</td>
</tr>
<tr>
<td>KZW10/KKZW10</td>
<td>6.9</td>
<td>8.6</td>
</tr>
<tr>
<td>KZW25/KKZW25</td>
<td>15.4</td>
<td>18.3</td>
</tr>
<tr>
<td>KZX3/KKZX3/27KZX3</td>
<td>5.8</td>
<td></td>
</tr>
<tr>
<td>KZX10/KKZX10/27KZX10</td>
<td>9.8</td>
<td></td>
</tr>
</tbody>
</table>

**Element Collapse Rating:**
- 150 psid (10 bar) for standard elements
- 3000 psid (210 bar) for high collapse (ZX) versions

**Flow Direction:** Outside In

**Element Nominal Dimensions:**
- K: 3.9" (99 mm) O.D. x 9.0" (230 mm) long
- KK: 3.9" (99 mm) O.D. x 18.0" (460 mm) long
- 27K: 3.9" (99 mm) O.D. x 27.0" (690 mm) long
**Exercise:**

Determine $\Delta P_{\text{filter}}$ at 100 gpm (379 L/min) for MKF504KZ10PD5 using 160 SUS (34 cSt) fluid.

Use the housing pressure curve to determine $\Delta P_{\text{housing}}$ at 100 gpm. In this case, $\Delta P_{\text{housing}}$ is 8 psi (.55 bar) on the graph for the MKF50 housing.

Use the element pressure curve to determine $\Delta P_{\text{element}}$ at 100 gpm. In this case, $\Delta P_{\text{element}}$ is 8 psi (.14 bar) according to the graph for the KZ10 element.

Because the viscosity in this sample is 160 SUS (34 cSt), we determine the Viscosity Factor ($V_f$) by dividing the Operating Fluid Viscosity with the Standard Viscosity of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential, $\Delta P_{\text{filter}}$, is calculated by adding $\Delta P_{\text{housing}}$ with the true element pressure differential, $(\Delta P_{\text{element}} \times V_f)$. The $\Delta P_{\text{element}}$ from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

**Solution:**

$\Delta P_{\text{housing}} = 8 \text{ psi} \ ( .55 \text{ bar}) \quad | \quad \Delta P_{\text{element}} = 2 \text{ psi} \ ( .14 \text{ bar})$

$V_f = 160 \text{ SUS} \ (34 \text{ cSt}) / 150 \text{ SUS} \ (32 \text{ cSt}) = 1.1$

$\Delta P_{\text{filter}} = 8 \text{ psi} + (2 \text{ psi} \times 1.1) = 10.2 \text{ psi}$

OR

$\Delta P_{\text{filter}} = .55 \text{ bar} + (.14 \text{ bar} \times 1.1) = .70 \text{ bar}$

$\Delta P_{\text{element}} = \frac{160 \text{ SUS}}{150 \text{ SUS}} = 1.1$

$\Delta P_{\text{filter}} = 8 \text{ psi} + (2 \text{ psi} \times 1.1) = 10.2 \text{ psi}$

OR

$\Delta P_{\text{filter}} = .55 \text{ bar} + (.14 \text{ bar} \times 1.1) = .70 \text{ bar}$
Base-Ported Pressure Filter

How to Build a Valid Model Number for a Schroeder MFK50:

<table>
<thead>
<tr>
<th>Box 1</th>
<th>Box 2</th>
<th>Box 3</th>
<th>Box 4</th>
<th>Box 5</th>
<th>Box 6</th>
<th>Box 7</th>
<th>Box 8</th>
<th>Box 9</th>
<th>Box 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>MKF50</td>
<td>2K</td>
<td>Z</td>
<td>10</td>
<td>P</td>
<td>D5</td>
<td></td>
<td></td>
<td></td>
<td>= MKF502KZ10PD5</td>
</tr>
</tbody>
</table>

Filter Series
- MKF50
- MKFN50
- GMKF50
- MKC50
- MKCN50
- WK50

Number & Size of Elements
- 2: K, KK, 27K
- 4: K
- 6: K
- GeoSeal® Options
  - 2: KG, KKG, 27KG
  - 4: KG
  - 6: KG

Media Type
- Omit = E Media (Cellulose) (MKF50 only)
- A5 = Anti-Stat Media (synthetic)
- Z = Excellement® Z-Media® (synthetic)
- ZX = Excellement® Z-Media® (High Collapse centertube) (MKFN50 Only)
- ZW = Aqua-Excellement ZW Media (MKF50 Only)
- W = W Media (water removal)
- M = Media (reusable metal mesh) (MKF50 & MKFN50 Only)

Micron Rating
- 1 = 1 Micron (DZ, Z, ZW, ZX media)
- 3 = 3 Micron (AS, DZ, E, Z, ZW, ZX media)
- 5 = 5 Micron (AS, DZ, Z, ZW, ZX media)
- 10 = 10 Micron (AS, DZ, E, Z, ZW, ZX media)
- 25 = 25 Micron (E, DZ, M, Z, ZW, ZX media)
- 60 = 60 Micron (M media)
- 150 = 150 Micron (M media)
- 260 = 260 Micron (M media)

Seal Material
- Omit = Buna N
- V = Viton®
- H = EPR
- H5 = Skydrol® compatibility
- F40 = 2½” NPTF
- F32 = 2” 4 SAE bolt flange Code 61
- B32 = ISO 228 G-2

Porting
- P = 2½” NPTF
- L = Two ¾” NPTF
- U = Series 1215 ¾ UNF Schroeder Check Test Point installed in cap (upstream)

Test points
- L = Two ¾” NPTF inlet and outlet female test ports
- U = Series 1215 ¾ UNF Schroeder Check Test Point installed in cap (upstream)

Dirt Alarm® Options
- None
- Visual
- Electrical
- Electrical with Thermal Lockout

Additional Options
- N = No-Element Indicator (not available w/ MKF50)
- Omit = None

Notes:
- Box 2: Number of elements must equal 2 when using K or 27K elements. Replacing element part numbers are identical to contents of Boxes 2, 3, 4, and 5. Double and triple stacking of K-size elements can be replaced by single KK and 27K elements, respectively. ZW media not available in 27K length. For standard elements, a plastic connector SAP P/N: 7630900 (LF-1997) is used to connect two or three K elements. For high collapse, a steel connector is required SAP P/N: 7608360 (LF-3255C).
- Box 5: H5 seal designation includes the following: EPR seals, stainless steel wire mesh on elements, and light oil coating on housing exterior. Viton® is a registered trademark of DuPont Dow Elastomers. Skydrol® is a registered trademark of Solutia Inc.
- Box 7: When X is paired with a standard filter series, a standard bushing and spring plate will be used.
- Box 8: Standard indicator setting for non-bypassing model is 50 psi unless otherwise specified.
- Box 10: N option should be used in conjunction with dirt alarm.
Base-Ported Pressure Filter

**KC65**

- **Flow Rating:** Up to 100 gpm (380 L/min) for 150 SUS (32 cSt) fluids
- **Max. Operating Pressure:** 6500 psi (450 bar)
- **Min. Yield Pressure:** 19,500 psi (1345 bar), per NFPA T2.6.1
- **Rated Fatigue Pressure:** 5000 psi (345 bar), per NFPA T2.6.1-2005
- **Temp. Range:** -20°F to 225°F (-29°C to 107°C)
- **Bypass Setting:** Cracking: 40 psi (2.8 bar)  
  Full Flow: 75 psi (5.2 bar)  
  Non-bypassing model has a blocked bypass.

**Features and Benefits**

- **Base-ported high pressure filter**
- **Patented dirt-tolerant cap design**
- **Can be installed in vertical or horizontal position**
- **Meets HF4 automotive standard**
- **Element changeout from top minimizes oil spillage**
- **Offered in flanged porting**
- **No-Element indicator option available**
- **Available with non-bypass option with high collapse element**
- **Integral inlet and outlet female test points option available**
- **Double and triple stacking of K-size element can be replaced by single KK or 27K-size element**
- **Available with quality-protected GeoSeal® Elements (GKC65)**

**Fluid Compatibility**

<table>
<thead>
<tr>
<th>Type Fluid</th>
<th>Appropriate Schroeder Media</th>
</tr>
</thead>
<tbody>
<tr>
<td>Petroleum Based Fluids</td>
<td>All E media (cellulose) and Z-Media® (synthetic)</td>
</tr>
<tr>
<td>High Water Content</td>
<td>All Z-Media® and ASP® Media (synthetic)</td>
</tr>
<tr>
<td>Invert Emulsions</td>
<td>10 and 25 µ Z-Media® (synthetic), 10 µ ASP® Media (synthetic)</td>
</tr>
<tr>
<td>Water Glycols</td>
<td>3, 5, 10 and 25 µ Z-Media® (synthetic) and all ASP® Media (synthetic)</td>
</tr>
<tr>
<td>Phosphate Esters</td>
<td>All Z-Media® and ASP® Media (synthetic) with H (EPR) seal designation and 3 and 10 µ E media (cellulose) with H (EPR) seal designation</td>
</tr>
<tr>
<td>Skydrol®</td>
<td>3, 5, 10 and 25 µ Z-Media® (synthetic) and ASP® Media (synthetic) with H5 seal designation (EPR seals and stainless steel wire mesh in element, and light oil coating on housing exterior)</td>
</tr>
</tbody>
</table>

**Model No. of filter in photograph is KC651K10FD9.**
### Base-Ported Pressure Filter

**Metric dimensions in ( ). Dimensions shown are inches (millimeters) for general information and overall envelope size only. For complete dimensions please contact Schroeder Industries to request a certified print.**

**Element Nominal Dimensions:**
- **K:** 3.9” (99 mm) O.D. x 9.0” (230 mm) long
- **KK:** 3.9” (99 mm) O.D. x 18.0” (460 mm) long
- **27K:** 3.9” (99 mm) O.D. x 27.0” (690 mm) long

**Filtration Ratio Per ISO 4572/NFPA T3.10.8.8**
- Using automated particle counter (APC) calibrated per ISO 4402

<table>
<thead>
<tr>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>DHC (gm)</td>
<td>&lt;1.0</td>
<td>&lt;1.0</td>
<td>&lt;2.0</td>
<td>4.0</td>
<td>4.8</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>4.8</td>
<td>5.1</td>
<td>6.9</td>
<td>15.4</td>
</tr>
<tr>
<td>DHC (gm)</td>
<td>7.4</td>
<td>8.2</td>
<td>10.0</td>
<td>8.0</td>
<td>10.0</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>6.9</td>
<td>5.1</td>
<td>6.9</td>
<td>8.6</td>
</tr>
</tbody>
</table>

**Filtration Ratio Per ISO 16889**
- Using APC calibrated per ISO 11171

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>DHC (gm)</td>
<td>&lt;4.0</td>
<td>&lt;4.0</td>
<td>&lt;2.0</td>
<td>4.0</td>
<td>4.8</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>4.8</td>
<td>5.1</td>
<td>6.9</td>
<td>15.4</td>
</tr>
<tr>
<td>DHC (gm)</td>
<td>7.4</td>
<td>8.2</td>
<td>10.0</td>
<td>8.0</td>
<td>10.0</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>6.9</td>
<td>5.1</td>
<td>6.9</td>
<td>8.6</td>
</tr>
</tbody>
</table>

**Element Collapse Rating:**
- 150 psid (10 bar) for standard elements
- 3000 psid (210 bar) for high collapse (ZX) versions

**Flow Direction:** Outside In

**Element Nominal Dimensions:**
- K: 3.9” (99 mm) O.D. x 9.0” (230 mm) long
- KK: 3.9” (99 mm) O.D. x 18.0” (460 mm) long
- 27K: 3.9” (99 mm) O.D. x 27.0” (690 mm) long

---

**Note:** Based on 100 psi terminal pressure.
δP

Pressure Drop Information
Based on Flow Rate and Viscosity

KC65 ∆P

δP

Based on Flow Rate and Viscosity

KC65 ∆P

for fluids with sp gr (specific gravity) = 0.86:

δP

Exercise:

Determine δP at 50 gpm (189.5 L/min) for KC651KZ10FD9 using 160 SUS (34 cSt) fluid.

Use the housing pressure curve to determine δP at 50 gpm. In this case, δP is 4 psi (.27 bar) according to the graph for the KC65 housing.

Use the element pressure curve to determine δP at 50 gpm. In this case, δP is 2.5 psi (.17 bar) according to the graph for the KZ10 element.

Because the viscosity in this sample is 160 SUS (34 cSt), we determine the Viscosity Factor (Vf) by dividing the Operating Fluid Viscosity with the Standard Viscosity of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential, δP, is calculated by adding δP with the true element pressure differential, (δP ∗ Vf). The δP from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

Solution:

δP = 4 psi (.27 bar) | δP = 2.5 psi (.17 bar)

Vf = 160 SUS (34 cSt) / 150 SUS (32 cSt) = 1.1

δP = 4 psi + (2.5 psi * 1.1) = 6.8 psi

OR

δP = .27 bar + (.17 bar * 1.1) = .46 bar

Note:

If your element is not graphed, use the following equation:

δP = Flow Rate x δP. Plug this variable into the overall pressure drop equation.

<table>
<thead>
<tr>
<th>Ele.</th>
<th>δP</th>
<th>Ele.</th>
<th>δP</th>
<th>Ele.</th>
<th>δP</th>
</tr>
</thead>
<tbody>
<tr>
<td>K3</td>
<td>0.25</td>
<td>K3K3</td>
<td>0.12</td>
<td>K3K3</td>
<td>0.05</td>
</tr>
<tr>
<td>K10</td>
<td>0.09</td>
<td>K10K10</td>
<td>0.05</td>
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<tr>
<td>K25</td>
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<td>K25K25</td>
<td>0.01</td>
<td>K25K25</td>
<td>0.02</td>
</tr>
<tr>
<td>KAS3</td>
<td>0.10</td>
<td>KAS3KAS3</td>
<td>0.05</td>
<td>KAS3KAS3</td>
<td>0.02</td>
</tr>
<tr>
<td>KAS5</td>
<td>0.08</td>
<td>KAS5KAS5</td>
<td>0.04</td>
<td>KAS5KAS5</td>
<td>0.01</td>
</tr>
<tr>
<td>KAS10</td>
<td>0.05</td>
<td>KAS10KAS10</td>
<td>0.03</td>
<td>KAS10KAS10</td>
<td>0.08</td>
</tr>
<tr>
<td>KZX10</td>
<td>0.22</td>
<td>KZX10KZX10</td>
<td>0.11</td>
<td>KZX10KZX10</td>
<td>0.03</td>
</tr>
<tr>
<td>KZXW1</td>
<td>0.43</td>
<td>KZXW1KZXW1</td>
<td>0.16</td>
<td>KZXW1KZXW1</td>
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<td>KZXW3</td>
<td>0.32</td>
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<td>KZXW5</td>
<td>0.28</td>
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<td>0.14</td>
<td>KZXW5KZXW5</td>
<td>0.02</td>
</tr>
<tr>
<td>KZXW10</td>
<td>0.23</td>
<td>KZXW10KZXW10</td>
<td>0.12</td>
<td>KZXW10KZXW10</td>
<td>0.02</td>
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<tr>
<td>KZXW25</td>
<td>0.14</td>
<td>KZXW25KZXW25</td>
<td>0.07</td>
<td>KZXW25KZXW25</td>
<td>0.07</td>
</tr>
</tbody>
</table>

SCHROEDER INDUSTRIES 117
How to Build a Valid Model Number for a Schroeder KC65:

**BOX 1**

- **Filter Series**: KC65
- **Number & Size of Elements**:
  - 1K, KK, 27K
  - K
  - GeoSeal® Options:
    - 1K, KKG, 27KKG
    - 2K
    - 3K
- **Media Type**
  - Omits = E Media (Cellulose)
  - AS = Anti-Stat Media (synthetic)
  - Z = Excellence® Z-Media® (synthetic)
  - ZX = Excellence® Z-Media® (High Collapse centertube) (KC65 Only)
  - W = W Media (water removal)
  - M = Media (reusable metal mesh) (KC65 & KCN65 Only)

**BOX 2**

- **Micron Rating**:
  - 1 = 1 Micron (Z, ZW, ZX media)
  - 3 = 3 Micron (AS, E, Z, ZW, ZX media)
  - 5 = 5 Micron (AS, Z, ZW, ZX media)
  - 10 = 10 Micron (AS, E, M, Z, ZW, ZX media)
  - 25 = 25 Micron (E, M, Z, ZW, ZX media)
  - 60 = 60 Micron (M media)
  - 150 = 150 Micron (M media)
  - 260 = 260 Micron (M media)
- **Seal Material**
  - Omits = Buna N
  - V = Viton®
  - H = EPR
  - H5 = Skydrol® compatibility

**BOX 3**

- **Bypass**
  - Omits = 40 PSI Bypass
  - X = Blocked bypass
  - 50 = 50 psi bypass setting
  - (Omit Box If a KCN65 is selected)
- **Test Points**
  - Omits = None
  - L = Two 1⁄2 NPTF inlet & outlet female test ports
  - U = Series 1215 ¼ UNF Schroeder Check Test Point installed in cap (upstream)
  - UU = Series 1215 ¼ UNF Schroeder Check Test Point installed in block (upstream and downstream)
- **Porting**
  - F = 1⁄2” SAE 4-bolt/flange Code 62

**BOX 4**

- **Dirt Alarm® Options**
  - None
  - Visual:
    - MS14DC = Low current MS14 direct current
  - Electrical:
    - MS11SSL = Current MS11
  - Electrical with Thermal Lockout:
    - MS14DC = Low current MS14 direct current

**BOX 5**

- **Magnet Option**
  - Omits = None
  - M = Magnet inserts (not available w/ indicator in cap)

**BOX 6**

- **Visual**
  - MS14 (see above), direct current, w/ thermal lockout
  - MS13 (see above), direct current, w/ thermal lockout
  - MS12T = MS12 (see above) w/ thermal lockout
  - MS11T = MS11 (see above) w/ thermal lockout

**BOX 7**

- **Additional Options**
  - N = No-Element Indicator (not available w/ KCN65 or housings w/ indicator in cap)
  - GS09 = Dirt Alarm and drain opposite standard

**BOX 8**

- **Visual**
  - MS14DC = Low current MS14 direct current, w/ thermal lockout
  - MS13DC = Low current MS13 direct current, w/ thermal lockout

**BOX 9**

- **Electrical**
  - MS11SSL = Low current MS11
  - MS11SSL = Low current MS11

**BOX 10**

- **Electrical**
  - MS11SSL = Low current MS11
  - MS11SSL = Low current MS11

**BOX 11**

- **Electrical**
  - MS11SSL = Low current MS11
  - MS11SSL = Low current MS11

---

**NOTES:**

**Box 2.** Number of elements must equal 1 when using KK or 27K elements. Replacement element part numbers are identical to contents of Boxes 2, 3, 4 and 5. Double and triple stacking of K-size elements can be replaced by single KK and 27K elements, respectively. ZW media not available in 27K length. For standard elements, a plastic connector SAP P/N: 7608360 (LF-325C).

**Box 5.** H5 seal designation includes the following: EPR seals, stainless steel wire mesh on elements, and light oil coating on housing exterior. Viton® is a registered trademark of DuPont Dow Elastomers. Skydrol® is a registered trademark of Solutia Inc.

**Box 7.** For option F, bolt depth 1.12” (30 mm).

**Box 8.** When X is paired with a standard filter series, a standard bushing and spring plate will be used.

**Box 10.** Standard indicator setting for non-bypassing model is 50 psi unless otherwise specified.

**Box 11.** Option N is not available with KCN65. N option should be used in conjunction with dirt alarm.
**Base-Ported Pressure Filter**

**Features and Benefits**
- Base-ported high pressure dual filter manifold mounted
- Meets HF4 automotive standard
- Element changeout from top minimizes oil spillage
- Offered in pipe porting (contact factory for other porting options)
- No-Element indicator option available
- Available with non-bypass option with high collapse element
- Integral inlet and outlet female test points option available
- Double and triple stacking of K-size elements can be replaced by single KK or 27K-size elements

**Flow Rating:**
- Up to 200 gpm (760 L/min) for 150 SUS (32 cSt) fluids
- Up to 300 gpm (1,136 L/min) for Water/Oil Emulsions

**Max. Operating Pressure:** 6000 psi (413 bar)

**Min. Yield Pressure:** 18,000 psi (1240 bar), per NFPA T2.6.1

**Rated Fatigue Pressure:** 4500 psi (310 bar), per NFPA T2.6.1-2005

**Temp. Range:** -20°F to 225°F (-29°C to 107°C)

**Bypass Setting:**
- Cracking: 40 psi (2.8 bar)
- Optional Cracking: 50 psi (3.5 bar)
- Full Flow: 61 psi (4.2 bar)
- Non-bypassing model has a blocked bypass.

**Porting Base & Cap:**
- Element Case: Ductile Iron

**Weight:**
- Weight of MKC65-2K: 216.0 lbs. (98.0 kg)
- Weight of MKC65-4K: 245.0 lbs. (111.1 kg)
- Weight of MKC65-6K: 286.4 lbs. (129.9 kg)

**Element Change Clearance:**
- 8.50” (215 mm) for 1K; 17.50” (445 mm) for KK; 26.5” (673 mm) for 27K

**Model No. of filter in photograph is MKC65K10BD5.**

---

**Fluid Compatibility**

<table>
<thead>
<tr>
<th>Type Fluid</th>
<th>Appropriate Schroeder Media</th>
</tr>
</thead>
<tbody>
<tr>
<td>Petroleum Based Fluid</td>
<td>All E-Media (cellulose) and Z-Media and ASP Media (synthetic)</td>
</tr>
<tr>
<td>High Water Content</td>
<td>All Z-Media and ASP Media (synthetic)</td>
</tr>
<tr>
<td>Invert Emulsions</td>
<td>10 and 25 µ Z-Media (synthetic), 10 µ ASP Media (synthetic)</td>
</tr>
<tr>
<td>Water Glycols</td>
<td>3, 5, 10 and 25 µ Z-Media (synthetic), and all ASP Media Media</td>
</tr>
<tr>
<td>Phosphate Esters</td>
<td>All Z-Media and ASP Media (synthetic) with H (EPR) seal designation and 3 and 10 µ E media (cellulose) with H (EPR) seal designation</td>
</tr>
<tr>
<td>Skydrol</td>
<td>3, 5, 10 and 25 µ Z-Media (synthetic), and all ASP Media (synthetic) with H.5 seal designation (EPR seals and stainless steel wire mesh in element, and light oil coating on housing exterior)</td>
</tr>
</tbody>
</table>

*Rated for Water/Oil Emulsions

---

**Filter Housing Specifications**

<table>
<thead>
<tr>
<th>Flow Rating</th>
<th>200 gpm (760 L/min)</th>
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</thead>
<tbody>
<tr>
<td>300 gpm*</td>
<td>1,136 L/min*</td>
</tr>
<tr>
<td>6000 psi</td>
<td>413 bar</td>
</tr>
</tbody>
</table>

---

**SCHROEDER INDUSTRIES 119**
Base-Ported Pressure Filter

Element Performance Information & Dirt Holding Capacity

Metric dimensions in ( ).
Dimensions shown are inches (millimeters) for general information and overall envelope size only. For complete dimensions please contact Schroeder Industries to request a certified print.

Element Collapse Rating: 150 psid (10 bar) for standard elements
3000 psid (210 bar) for high collapse (ZX) versions

Flow Direction: Outside In

Element Nominal Dimensions:
- K: 3.9” (99 mm) O.D. x 9.0” (230 mm) long
- KK: 3.9” (99 mm) O.D. x 18.0” (460 mm) long
- 27K: 3.9” (99 mm) O.D. x 27.0” (690 mm) long

Filtration Ratio Per ISO 4572/NFPA T3.10.8.8
Using automated particle counter (APC) calibrated per ISO 4402

Filtration Ratio per ISO 16889
Using APC calibrated per ISO 11171

<table>
<thead>
<tr>
<th>Element</th>
<th>DHC (gm)</th>
<th>DHC (gm)</th>
<th>DHC (gm)</th>
<th>DHC (gm)</th>
<th>DHC (gm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>KZ1/KKZ1/27KZ1</td>
<td>&lt;1.0</td>
<td>&lt;1.0</td>
<td>&lt;1.0</td>
<td>&lt;4.0</td>
<td>4.2</td>
</tr>
<tr>
<td>KZ3/KKZ3/27KZ3</td>
<td>&lt;1.0</td>
<td>&lt;1.0</td>
<td>&lt;2.0</td>
<td>&lt;4.0</td>
<td>4.8</td>
</tr>
<tr>
<td>KZ5/KKZ5/27KZ5</td>
<td>2.5</td>
<td>3.0</td>
<td>4.0</td>
<td>4.8</td>
<td>6.3</td>
</tr>
<tr>
<td>KZ10/KKZ10/27KZ10</td>
<td>7.4</td>
<td>8.2</td>
<td>10.0</td>
<td>8.0</td>
<td>10.0</td>
</tr>
<tr>
<td>KZW1</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>&lt;4.0</td>
<td>&lt;4.0</td>
</tr>
<tr>
<td>KZW3/KKZW3</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>4.0</td>
<td>4.8</td>
</tr>
<tr>
<td>KZW5/KKZW5</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>5.1</td>
<td>6.4</td>
</tr>
<tr>
<td>KZW10/KKZW10</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>6.9</td>
<td>8.6</td>
</tr>
<tr>
<td>KZW25/KKZW25</td>
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<td>N/A</td>
<td>N/A</td>
<td>15.4</td>
<td>18.5</td>
</tr>
<tr>
<td>KZX10/27KX10</td>
<td>7.4</td>
<td>8.2</td>
<td>10.0</td>
<td>8.0</td>
<td>9.8</td>
</tr>
</tbody>
</table>

* Based on 100 psi terminal pressure

* * *
Pressure Drop Information Based on Flow Rate and Viscosity

MKC65 \( \Delta P_{\text{housing}} \) for fluids with sp gr (specific gravity) = 0.86:

\[
\Delta P_{\text{filter}} = \Delta P_{\text{housing}} + (\Delta P_{\text{element}} \cdot V_f)
\]

**Exercise:**
Determine \( \Delta P_{\text{filter}} \) at 100 gpm (379 L/min) for MKC654KZ10PD5 using 160 SUS (34 cSt) fluid.

Use the housing pressure curve to determine \( \Delta P_{\text{housing}} \) at 100 gpm. In this case, \( \Delta P_{\text{housing}} \) is 8 psi (.55 bar) on the graph for the MKC65 housing.

Use the element pressure curve to determine \( \Delta P_{\text{element}} \) at 100 gpm. In this case, \( \Delta P_{\text{element}} \) is 8 psi (.14 bar) according to the graph for the KZ10 element.

Because the viscosity in this sample is 160 SUS (34 cSt), we determine the Viscosity Factor (\( V_f \)) by dividing the Operating Fluid Viscosity with the Standard Viscosity of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential, \( \Delta P_{\text{filter}} \), is calculated by adding \( \Delta P_{\text{housing}} \) with the true element pressure differential, \( \Delta P_{\text{element}} \cdot V_f \). The \( \Delta P_{\text{element}} \) from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

**Solution:**
\( \Delta P_{\text{housing}} = 8 \text{ psi} (.55 \text{ bar}) \)
\( \Delta P_{\text{element}} = 2 \text{ psi} (.14 \text{ bar}) \)

\( V_f = 160 \text{ SUS} / 150 \text{ SUS} = 1.1 \)

\( \Delta P_{\text{filter}} = 8 \text{ psi} + (2 \text{ psi} \cdot 1.1) = 10.2 \text{ psi} \)

**OR**
\( \Delta P_{\text{filter}} = .55 \text{ bar} + (.14 \text{ bar} \cdot 1.1) = .70 \text{ bar} \)
How to Build a Valid Model Number for a Schroeder MKC65:

**Filter Series**

<table>
<thead>
<tr>
<th>BOX 1</th>
<th>BOX 2</th>
<th>BOX 3</th>
<th>BOX 4</th>
<th>BOX 5</th>
<th>BOX 6</th>
<th>BOX 7</th>
<th>BOX 8</th>
<th>BOX 9</th>
<th>BOX 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>MKC65</td>
<td>2K</td>
<td>Z</td>
<td>10</td>
<td>B</td>
<td>D5</td>
<td></td>
<td></td>
<td></td>
<td>= MKC652KZ10BD5</td>
</tr>
</tbody>
</table>

**Number & Size of Elements**

- 2 K, KK, 27K
- 4 K
- 6 K

**GeoSeal Options**

- KG, KKG, 27KG
- ZW

**Micron Rating**

- 1 = 1 Micron (DZ, Z, ZW, ZX media)
- 3 = 3 Micron (AS, DZ, E, Z, ZW, ZX media)
- 5 = 5 Micron (AS, DZ, Z, ZW, ZX media)
- 10 = 10 Micron (AS, DZ, E, M, ZW, ZX media)
- 25 = 25 Micron (M media)
- 60 = 60 Micron (M media)
- 150 = 150 Micron (M media)
- 260 = 260 Micron (M media)

**Seal Material**

- Omit = Buna N
- V = Viton®
- H = EPR
- H.5 = Skydrol® compatibility

**Porting Option**

- B = 2” BSPP

**Bypass**

- Omit = 40 PSI Bypass
- X = Blocked bypass
- 50 = 50 PSI Bypass

**Test Points**

- L = Two 1/4” NPTF inlet and outlet female test ports
- U = Series 1215 1/8” UNF Schroeder Check Test Point installed in cap (upstream)

**Dirt Alarm Options**

- None
- D = Pointer
- D5 = Visual pop-up
- D5C = D5 in cap
- D9 = All stainless D5
- DPG = Differential pressure gauge
- DB = Visual with thermal lockout
- DBC = DBC in cap

**Electrical**

- M55 = Electrical w/ 12 in 18 gauge 4-conductor cable
- M55LC = Low current M55
- M510 = Electrical w/ DIN connector (male end only)
- M510LC = Low current M510
- M511 = Electrical w/ 12 ft. 4-conductor wire
- M512 = Electrical w/ 5 pin Brad Harrison connector (male end only)
- M512LC = Low current M512
- M516 = Electrical w/ weather-packed sealed connector
- M516LC = Low current M516
- M517LC = Electrical w/ 4 pin Brad Harrison male connector

**Dirt Alarm**

- MS = Cam operated switch w/ 1/2” conduit female connection
- MS13 = Supplied w/ threaded connector & light
- MS13 = Supplied w/ 3 pin Brad Harrison connector & light (male end)

**Electrical with Thermal Lockout**

- MS5T = M55 (see above) w/ thermal lockout
- MS10T = M510 (see above) w/ thermal lockout
- MS12T = M512 (see above) w/ thermal lockout
- MS12TLC = Low current MS12T
- MS16T = M516 (see above) w/ thermal lockout
- MS16TLC = Low current MS16T
- MS17T = Low current MS17T

**Electrical with Visual with Thermal Lockout**

- MS13DCT = MS13 (see above), direct current, w/ thermal lockout
- MS14DCT = MS14 (see above), direct current, w/ thermal lockout
- MS14DCLCT = Low current MS14DCT

**NOTES:**

- Box 2. Number of elements must equal 2 when using KK or 27K elements. Replacement element part numbers are identical to contents of Boxes 2, 3, 4 and 5. Double and triple stacking of K-size elements can be replaced by single KK and 27K elements, respectively. ZW media not available in 27K length. For standard elements, a plastic connector SAP P/N: 7630900 (LF-1997) is used to connect two or three K elements. For high collapse, a steel connector is required SAP P/N: 7608360 (LF-3255C).

- Box 5. H.5 seal designation includes the following: EPR seals, stainless steel wire mesh on elements, and light oil coating on housing exterior. Viton® is a registered trademark of DuPont Dow Elastomers. Skydrol® is a registered trademark of Solutia Inc.

- Box 7. When X is paired with a standard filter series, a standard bushing and spring plate will be used.

- Box 9. Standard indicator setting for non-bypassing model is 50 psi unless otherwise specified.

- Box 10. N option should be used in conjunction with dirt alarm.
Hydrostatic Top-Ported Pressure Filter

HS60/MHS60

Features and Benefits
- Full flow reverse flow check valve diverts flow past the element in hydrostatic applications
- Top-ported design capable of handling 100 gpm flow
- Offered in SAE straight thread and flange porting
- Thread on bowl with drain plug for easy element service
- 6000 psi cyclic
- Certified for Offshore Standard DNVGL-OS-D101 "Marine and Machinery Systems and Equipment"
- Contact factory for higher flow applications

Model No. of filters in photograph are HS6013HZ3F24 and MHS6013HZ3F24.

Filter Housing Specifications

Flow Rating: Up to 120 gpm (450 L/min)
Max. Operating Pressure: 6000 psi (415 bar) only for flange ported models
Min. Yield Pressure: Contact factory
Rated Fatigue Pressure: 6000 psi (415 bar) (only with 4-bolt flange porting)
Temp. Range: -20°F to 225°F (-29°C to 107°C)
Bypass Setting: Cracking: 87 psi (5.9 bar)
Porting Head: Ductile Iron
Element Case: Steel
Weight of HS60-13H: 75 lbs. (34.2 kg)
Weight of MHS60: 160 lbs. (72.6 kg)
Element Change Clearance: 4.0" (103 mm)

Fluid Compatibility

Type Fluid | Appropriate Schroeder Media
--- | ---
High Water Content | All Z-Media’ (synthetic)
Invert Emulsions | 10 and 25 µ Z-Media’ (synthetic)
Water Glycols | 3, 5, 10 and 25 µ Z-Media’ (synthetic)
Phosphate Esters | All Z-Media’ (synthetic) with H (EPR) seal designation

SCHROEDER INDUSTRIES 123
Hydrostatic Top-Ported Pressure Filter

Metric dimensions in ( ).
Dimensions shown are inches (millimeters) for general information and overall envelope size only. For complete dimensions please contact Schroeder Industries to request a certified print.

<table>
<thead>
<tr>
<th>Element</th>
<th>Filtration Ratio Per ISO 4572/NFPA T3.10.8.8</th>
<th>Filtration Ratio per ISO 16889</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Using automated particle counter (APC) calibrated per ISO 4402</td>
<td>Using APC calibrated per ISO 11171</td>
</tr>
<tr>
<td>Element</td>
<td>$\beta_x \geq 75$</td>
<td>$\beta_x \geq 100$</td>
</tr>
<tr>
<td>13HZ3/13HZX3</td>
<td>&lt;1.0</td>
<td>&lt;1.0</td>
</tr>
<tr>
<td>13HZ5/13HZX5</td>
<td>2.5</td>
<td>3.0</td>
</tr>
<tr>
<td>13HZ10/13HZX10</td>
<td>7.4</td>
<td>8.2</td>
</tr>
<tr>
<td>13HZ25/13HZX25</td>
<td>18.0</td>
<td>20.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Element</th>
<th>DHC (gm)</th>
<th>Element</th>
<th>DHC (gm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>13HZ3</td>
<td>100.7</td>
<td>13HZX3</td>
<td>75.7</td>
</tr>
<tr>
<td>13HZ5</td>
<td>113.2</td>
<td>13HZX5</td>
<td>74.1</td>
</tr>
<tr>
<td>13HZ10</td>
<td>119.7</td>
<td>13HZX10</td>
<td>81.4</td>
</tr>
<tr>
<td>13HZ25</td>
<td>123.5</td>
<td>13HZX25</td>
<td>92.9</td>
</tr>
</tbody>
</table>

Element Collapse Rating:
- 290 psi (20 bar) for standard elements
- 3045 psi (210 bar) for high collapse (ZX) versions

Flow Direction: Outside In

Element Nominal Dimensions: 13HZ: 3.5" (90 mm) O.D. x 13" (325 mm) long
Pressure Drop Information
Based on Flow Rate and Viscosity

**HS60/MHS60**

<table>
<thead>
<tr>
<th>Ele.</th>
<th>ΔP</th>
</tr>
</thead>
<tbody>
<tr>
<td>13HZX3</td>
<td>0.176</td>
</tr>
<tr>
<td>13HZX5</td>
<td>0.104</td>
</tr>
<tr>
<td>13HZX10</td>
<td>0.054</td>
</tr>
<tr>
<td>13HZX25</td>
<td>0.048</td>
</tr>
</tbody>
</table>

**Exercise:**

Determine $\Delta P_{\text{filter}}$ at 30 gpm (113.7 L/min) for HS6013HZ10S24D13 using 160 SUS (34 cSt) fluid.

Use the housing pressure curve to determine $\Delta P_{\text{housing}}$ at 30 gpm. In this case, $\Delta P_{\text{housing}}$ is 7 psi (.48 bar) on the graph for the HS60 housing.

Use the element pressure curve to determine $\Delta P_{\text{element}}$ at 30 gpm. In this case, $\Delta P_{\text{element}}$ is 2 psi (.14 bar) according to the graph for the 13HZ10 element.

Because the viscosity in this sample is 160 SUS (34 cSt), we determine the Viscosity Factor ($V_f$) by dividing the Operating Fluid Viscosity with the Standard Viscosity of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential, $\Delta P_{\text{filter}}$, is calculated by adding $\Delta P_{\text{housing}}$ with the true element pressure differential, $(\Delta P_{\text{element}} \times V_f)$. The $\Delta P_{\text{element}}$ from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

**Solution:**

\[
\Delta P_{\text{filter}} = \Delta P_{\text{housing}} + (\Delta P_{\text{element}} \times V_f)
\]

$\Delta P_{\text{filter}} = 7 \text{ psi} [0.48 \text{ bar}] + (2 \text{ psi} \times 1.1) = 9.2 \text{ psi}

OR

$\Delta P_{\text{filter}} = 0.48 \text{ bar} + (0.14 \text{ bar} \times 1.1) = 0.63 \text{ bar}$
### Hydrostatic Top-Ported Pressure Filter

**How to Build a Valid Model Number for a Schroeder HS60:**

<table>
<thead>
<tr>
<th>BOX 1</th>
<th>BOX 2</th>
<th>BOX 3</th>
<th>BOX 4</th>
<th>BOX 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>HS60</td>
<td>13HZ3</td>
<td>F24</td>
<td>D13</td>
<td></td>
</tr>
</tbody>
</table>

Example: NOTE: One option per box

<table>
<thead>
<tr>
<th>BOX 1</th>
<th>BOX 2</th>
<th>BOX 3</th>
<th>BOX 4</th>
<th>BOX 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>HS60</td>
<td>13HZ3</td>
<td></td>
<td>F24</td>
<td>D13</td>
</tr>
</tbody>
</table>

**BOX 1**

**Element Part Number**

- 13HZ3 = 3 μ Excellement® Z-Media® (synthetic)
- 13HZ5 = 5 μ Excellement® Z-Media® (synthetic)
- 13HZ10 = 10 μ Excellement® Z-Media® (synthetic)
- 13HZ25 = 25 μ Excellement® Z-Media® (synthetic)
- 13HZX3 = 3 µ Excellement® Z-Media® (high collapse center tube)
- 13HZX5 = 5 µ Excellement® Z-Media® (high collapse center tube)
- 13HZX10 = 10 µ Excellement® Z-Media® (high collapse center tube)
- 13HZX25 = 25 µ Excellement® Z-Media® (high collapse center tube)

**BOX 3**

**Seal Material**

- Omit = Buna N
- V = Viton®
- H = EPR

**BOX 4**

**Porting Options**

- S24 = SAE-24
- F24 = 1½” SAE 4-bolt flange Code 62
- F32 = 2”SAE 4-bolt flange Code 62

**BOX 5**

**Dirt Alarm® Options**

<table>
<thead>
<tr>
<th>None</th>
<th>Omit = None</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visual</td>
<td>D13 = Visual pop-up</td>
</tr>
</tbody>
</table>

**Electrical**

- MSSSS = Electrical w/ 12 in. 18 gauge 4-conductor cable
- MSSSSLCT = Low current MSS
- MS10SS = Electrical w/ DIN connector (male end only)
- MS10SSLCT = Low current MS10
- MS11SS = Electrical w/ 12 ft. 4-conductor wire
- MS12SS = Electrical w/ 5 pin Brad Harrison connector (male end only)
- MS12SSLCLCT = Low current MS12
- MS16SS = Electrical w/ weather-packed sealed connector
- MS16SSLCLCT = Low current MS16
- MS17SSLCLCT = Electrical w/ 4 pin Brad Harrison male connector

**Electrical with Thermal Lockout**

- MS13SS = Supplied w/ threaded connector & light
- MS14SS = Supplied w/ 5 pin Brad Harrison connector & light (male end)
- MS13SSDCT = MS13 (see above), direct current, w/ thermal lockout
- MS13SSDCLCT = Low current MS13DCT
- MS14SSDCT = MS14 (see above), direct current, w/ thermal lockout
- MS14SSDCLCT = Low current MS14DCT

**NOTES:**

Box 2. Replacement element part numbers are identical to contents of Boxes 2 and 3.

Box 3. Viton® is a registered trademark of DuPont Dow Elastomers.

Box 5. All Dirt Alarm® Indicators must be Stainless Steel. Standard indicator setting is 75 psi. For replacement indicators, contact the factory.
Hydrostatic Base-Ported Filter

Features and Benefits

- Base-ported Hydrostatic high pressure filter
- Hydrostatic transmission filter for reversing loop systems
- Filters in the “in to out” direction, bypasses in reverse direction
- Element changeout from top minimizes oil spillage
- Offered in pipe, SAE straight thread, flanged and ISO 228 porting
- Integral inlet and outlet female test points option available
- Offered in conventional subplate porting
- Completion of application questionnaire a requirement L-2549 (contact factory)
- Double and triple stacking of K-size elements can be replaced by single KK or 27K-size elements

Flow Rating: Up to 70 gpm (265 L/min) for 150 SUS (32 cSt) fluids

Max. Operating Pressure: 5000 psi (345 bar)

Min. Yield Pressure: 15,000 psi (1035 bar), per NFPA T2.6.1

Rated Fatigue Pressure: 3500 psi (240 bar), per NFPA T2.6.1-2005

Temp. Range: -20°F to 225°F (-29°C to 107°C)

Bypass Setting: Cracking: 40 psi (2.8 bar)
Full Flow: 61 psi (4.2 bar)

Porting Base & Cap: Ductile Iron
Element Case: Steel

Weight of KFH50-1K: 60.0 lbs. (27.2 kg)
Weight of KFH50-2K: 80.3 lbs. (36.4 kg)
Weight of KFH50-3K: 100.5 lbs. (45.6 kg)

Element Change Clearance: 8.50” (215 mm) for 1K; 17.50” (445 mm) for KK; 26.5” (673 mm) for 27K

Fluid Compatibility

<table>
<thead>
<tr>
<th>Type Fluid</th>
<th>Appropriate Schroeder Media</th>
</tr>
</thead>
<tbody>
<tr>
<td>Petroleum Based Fluids</td>
<td>All E media (cellulose), Z-Media’ and ASP’ Media (synthetic)</td>
</tr>
<tr>
<td>High Water Content</td>
<td>All Z-Media’ (synthetic)</td>
</tr>
<tr>
<td>Invert Emulsions</td>
<td>10 and 25 µ Z-Media’ (synthetic)</td>
</tr>
<tr>
<td>Water Glycols</td>
<td>3, 5, 10 and 25 µ Z-Media’ (synthetic)</td>
</tr>
<tr>
<td>Phosphate Esters</td>
<td>All Z-Media’ (synthetic) with H (EPR) seal designation and 3 and 10 µ E media (cellulose) with H (EPR) seal designation</td>
</tr>
<tr>
<td>Skydrol®</td>
<td>3, 5, 10 and 25 µ Z-Media’ (synthetic) with H.5 seal designation (EPR seals and stainless steel wire mesh in element, and light oil coating on housing exterior)</td>
</tr>
</tbody>
</table>

Filter Housing Specifications

Model No. of filter in photograph is KFH501K10SD5.
# KFH50

## Hydrostatic Base-Ported Filter

### Element Performance Information & Dirt Holding Capacity

Metric dimensions in ( ).
Dimensions shown are inches (millimeters) for general information and overall envelope size only.
For complete dimensions please contact Schroeder Industries to request a certified print.

<table>
<thead>
<tr>
<th>Element</th>
<th>Filtration Ratio Per ISO 4572/NFPA T3.10.8.8</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Using automated particle counter (APC) calibrated per ISO 4402</td>
</tr>
<tr>
<td></td>
<td>Filtration Ratio per ISO 16889</td>
</tr>
<tr>
<td></td>
<td>Using APC calibrated per ISO 11171</td>
</tr>
<tr>
<td></td>
<td>$\beta_x \geq 75$</td>
</tr>
</tbody>
</table>

| KZ1/KKZ1/27KZ1 | <1.0 | <1.0 | <1.0 | <4.0 | 4.2 |
| KZ3/KKZ3/27KZ3 | <1.0 | <1.0 | <2.0 | <4.0 | 4.8 |
| KZ5/KKZ5/27KZ5 | 2.5  | 3.0  | 4.0  | 4.8  | 6.3 |
| KZ10/KKZ10/27KZ10 | 7.4  | 8.2  | 10.0 | 8.0  | 10.0 |
| KZ25/KKZ25/27KZ25 | 18.0 | 20.0 | 22.5 | 19.0 | 24.0 |
| KZW1         | N/A  | N/A  | N/A  | <4.0 | <4.0 |
| KZW3/KKZW3   | N/A  | N/A  | N/A  | 4.0  | 4.8 |
| KZW5/KKZW5   | N/A  | N/A  | N/A  | 5.1  | 6.4 |
| KZW10/KKZW10 | N/A  | N/A  | N/A  | 6.9  | 8.6 |
| KZW25/KKZW25 | N/A  | N/A  | N/A  | 15.4 | 18.5 |
| KZX3/KKZX3/27KZX3 | <1.0 | <1.0 | <2.0 | 4.7  | 5.8 |
| KZX10/KKZX10/27KZX10 | 7.4  | 8.2  | 10.0 | 8.0  | 9.8 |

<table>
<thead>
<tr>
<th>Element</th>
<th>DHC (gm)</th>
<th>Element</th>
<th>DHC (gm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>KZ1</td>
<td>112</td>
<td>KKZ1</td>
<td>224</td>
</tr>
<tr>
<td>KZ3</td>
<td>115</td>
<td>KKZ3</td>
<td>230</td>
</tr>
<tr>
<td>KZ5</td>
<td>119</td>
<td>KKZ5</td>
<td>238</td>
</tr>
<tr>
<td>KZ10</td>
<td>108</td>
<td>KKZ10</td>
<td>216</td>
</tr>
<tr>
<td>KZ25</td>
<td>93</td>
<td>KKZ25</td>
<td>186</td>
</tr>
<tr>
<td>KZX3</td>
<td>81*</td>
<td>KKZX3</td>
<td>163*</td>
</tr>
<tr>
<td>KZX10</td>
<td>90*</td>
<td>KKZX10</td>
<td>182*</td>
</tr>
</tbody>
</table>

* Based on 100 psi terminal pressure

Element Collapse Rating:
- 150 psid (10 bar) for standard elements
- 3000 psid (210 bar) for high collapse (ZX) versions

Flow Direction: Outside In

Element Nominal Dimensions:
- K: 3.9” (99 mm) O.D. x 9.0” (230 mm) long
- KK: 3.9” (99 mm) O.D. x 18.0” (460 mm) long
- 27K: 3.9” (99 mm) O.D. x 27.0” (690 mm) long

---

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Exercise:
Determine $\Delta P_{\text{filter}}$ at 30 gpm (113.7 L/min) for KFH50/KZ10SD5 using 160 SUS (34 cSt) fluid.

Use the housing pressure curve to determine $\Delta P_{\text{housing}}$ at 30 gpm. In this case, $\Delta P_{\text{housing}}$ is 9 psi (.62 bar) according to the graph for the KFH50 housing.

Use the element pressure curve to determine $\Delta P_{\text{element}}$ at 30 gpm. In this case, $\Delta P_{\text{element}}$ is 1.5 psi (.10 bar) according to the graph for the KZ10 element.

Because the viscosity in this sample is 160 SUS (34 cSt), we determine the Viscosity Factor ($V_f$) by dividing the Operating Fluid Viscosity with the Standard Viscosity of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential, $\Delta P_{\text{filter}}$, is calculated by adding $\Delta P_{\text{housing}}$ with the true element pressure differential, $(\Delta P_{\text{element}} \times V_f)$. The $\Delta P_{\text{element}}$ from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

Solution:
$\Delta P_{\text{housing}} = 9 \text{ psi} (.62 \text{ bar})$ | $\Delta P_{\text{element}} = 1.5 \text{ psi} (.10 \text{ bar})$

$V_f = 160 \text{ SUS (34 cSt) / 150 SUS (32 cSt) = 1.1}$

$\Delta P_{\text{filter}} = 9 \text{ psi} + (1.5 \text{ psi} \times 1.1) = 10.7 \text{ psi}$

OR

$\Delta P_{\text{filter}} = .62 \text{ bar} + (.10 \text{ bar} \times 1.1) = .73 \text{ bar}$
How to Build a Valid Model Number for a Schroeder KFH50:

**Box 1**: KFH50

**Box 2**: Number of Elements

<table>
<thead>
<tr>
<th>Filter Series</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>KFH50</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Box 3**: Element Part Number

<table>
<thead>
<tr>
<th>K Length</th>
<th>KK Length</th>
<th>2K Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>K3</td>
<td>KK3</td>
<td>2K3</td>
</tr>
<tr>
<td>K10</td>
<td>KK10</td>
<td>2K10</td>
</tr>
<tr>
<td>K2S</td>
<td>KK2S</td>
<td>2K2S</td>
</tr>
<tr>
<td>K2Z1</td>
<td>KK2Z1</td>
<td>2K2Z1</td>
</tr>
<tr>
<td>K2Z3</td>
<td>KK2Z3</td>
<td>2K2Z3</td>
</tr>
<tr>
<td>K2Z5</td>
<td>KK2Z5</td>
<td>2K2Z5</td>
</tr>
<tr>
<td>K2Z10</td>
<td>KK2Z10</td>
<td>2K2Z10</td>
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<tr>
<td>K2Z2S</td>
<td>KK2Z2S</td>
<td>2K2Z2S</td>
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<td>2KM150</td>
</tr>
<tr>
<td>KM260</td>
<td>KKM260</td>
<td>2KM260</td>
</tr>
</tbody>
</table>

**Box 4**: Seal Material

- Omit = Buna N
- V = Viton®
- H = EPR
- Skydrol® compatibility

**Box 5**: Porting

- P = 1\(\frac{1}{8}\) NPTF
- S = SAE-24
- F = 1\(\frac{1}{8}\) SAE 4-bolt flange
- Code 62
- O = Subplate
- B = ISO 228 G-1

**Box 6**: Bypass

- Omit = 40 PSI Bypass
- 50 = 50 PSI Bypass

**Box 7**: Test Points

- Omit = None
- L = Two \(\frac{1}{8}\) NPTF inlet and outlet female test ports
- U = Series 1215 UNF Schroeder Check Test Point installation in cap (upstream)
-UU = Series 1215 UNF Schroeder Check Test Point installation in block (upstream and downstream)

**Box 8**: Dirt Alarm Options

- MS = Electrical w/ 12 in. 18 gauge 4-conductor cable
- MS5LC = Low current MS5
- MS10 = Electrical w/ DIN connector (male end only)
- MS10LC = Low current MS10
- MS11 = Electrical w/ 12 ft. 4-conductor wire
- MS12 = Electrical w/ 5 pin Brad Harrison connector (male end only)
- MS12LC = Low current MS12
- MS16 = Electrical w/ weather-packed sealed connector
- MS16LC = Low current MS16
- MS17LC = Electrical w/ 4 pin Brad Harrison male connector

**Box 9**: Additional Options

- Omit = None
- G509 = Dirt alarm and drain opposite standard
Features and Benefits (LC60)
- Compact design allows for in-line installation.
- Small profile allows filter to be mounted in tight areas.
- Quick and easy cartridge element change outs.
- Durable, compact design.
- Uses 10 micron stainless steel wire mesh filtration.
- Perfect for pilot pressure circuits and pressure compensated pump protection.

Model No. of filter in photograph is LC601SSD10S.

### Flow Rating
Up to 8 gpm (30 L/min) for 150 SUS (32 cSt) fluids

### Max. Operating Pressure
6000 psi (414 bar)

### Min. Yield Pressure
18000 psi (1241 bar), per NFPA T2.6.1

### Rated Fatigue Pressure
6000 psi (414 bar), per NFPA T2.6.1

### Temp. Range
-20°F to 225°F (-29°C to 107°C)

### Porting Head
Steel

### Element Case
Steel

### Weight
0.93 lbs. (0.42 kg)

### Element Change Clearance
2.50" (63.5 mm)

### Type Fluid
Appropriate Schroeder Media

### Petroleum Based Fluids
All Stainless Steel Wire Mesh

### Invert Emulsions
10 µ Stainless Steel Wire Mesh

### Water Glycols
10 µ Stainless Steel Wire Mesh

Metric dimensions in ( ).

Dimensions shown are inches (millimeters) for general information and overall envelope size only.
For complete dimensions please contact Schroeder Industries to request a certified print.
In-Line Filter

Element Performance & Dirt Holding Capacity

<table>
<thead>
<tr>
<th>Element</th>
<th>Filtration Ratio Per ISO 4572/NFPA T3.10.8.8</th>
<th>Filtration Ratio per ISO 16889</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Using automated particle counter (APC) calibrated per ISO 4402</td>
<td>Using APC calibrated per ISO 11171</td>
</tr>
<tr>
<td>β₁ ≥ 75</td>
<td>β₁ ≥ 100</td>
<td>β₁(c) ≥ 200</td>
</tr>
<tr>
<td>β₁(c) ≥ 100</td>
<td>β₁ ≥ 200</td>
<td>β₁(c) ≥ 1000</td>
</tr>
</tbody>
</table>

*Please contact manufacture for more details*

Pressure Drop Information

\[ \Delta P_{\text{Housing}} \]

\( \Delta P_{\text{Housing}} \) for fluids with sp gr (specific gravity) = 0.86:

![Element Pressure Drop versus Flow Rate at 32 cSt (150 SUS)](image)

How to Build a Valid Model Number for a Schroeder LC60:

Example:

<table>
<thead>
<tr>
<th>BOX 1</th>
<th>BOX 2</th>
<th>BOX 3</th>
<th>BOX 4</th>
<th>BOX 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>LC60</td>
<td>1</td>
<td>SSD10</td>
<td></td>
<td>S</td>
</tr>
</tbody>
</table>

S = SAE-6

BOX 1

Filter Series

LC60

BOX 2

Number of Elements

1

Element Part Number

SSD10 = 10 µ Stainless Steel Wire Mesh

BOX 4

Seal Material

Omit = Buna N

BOX 5

Porting

S = SAE-6
In-Line Filter

Model No. of filter in photograph is LC351BS10S.

Flow Rating: Up to 15 gpm (57 L/min) for 150 SUS (32 cSt) fluids
Max. Operating Pressure: 3500 psi (241 bar)
Min. Yield Pressure: 10500 psi (724 bar), per NFPA T2.6.1
Rated Fatigue Pressure: 2200 psi (152 bar), per NFPA T2.6.1
Temp. Range: -20°F to 225°F (-29°C to 107°C)
Porting Head: Steel
Element Case: Steel
Weight: 1.32 lbs. (0.60 kg)
Element Change Clearance: 3.25" (82.6 mm)

Features and Benefits (LC35)
- Compact design allows for in-line installation.
- Small profile allows filter to be mounted in tight areas.
- Quick and easy cartridge element change outs.
- Durable, compact design.
- Uses 10 or 40 micron Sintered Bronze filtration.
- Perfect for pilot pressure circuits and pressure compensated pump protection.

Fluid Compatibility

<table>
<thead>
<tr>
<th>Type Fluid</th>
<th>Appropriate Schroeder Media</th>
</tr>
</thead>
<tbody>
<tr>
<td>Petroleum Based Fluids</td>
<td>All Sintered Bronze</td>
</tr>
<tr>
<td>Invert Emulsions</td>
<td>10 and 40 µ Sintered Bronze</td>
</tr>
<tr>
<td>Water Glycols</td>
<td>10 and 40 µ Sintered Bronze</td>
</tr>
</tbody>
</table>

Filter Housing Specifications

Metric dimensions in ( ).
Dimensions shown are inches (millimeters) for general information and overall envelope size only.
For complete dimensions please contact Schroeder Industries to request a certified print.
In-Line Filter

Element Performance Information & Dirt Holding Capacity

Filtration Ratio Per ISO 4572/NFPA T3.10.8.8 Using automated particle counter (APC) calibrated per ISO 4402

\[ \beta_x \geq 75 \quad \beta_x \geq 100 \quad \beta_x \geq 200 \]

Filtration Ratio per ISO 16889 Using APC calibrated per ISO 11171

\[ \beta_{x(c)} \geq 200 \quad \beta_{x(c)} \geq 1000 \]

*Please contact manufacturer for more details*

Pressure Drop Information Based on Flow Rate and Viscosity

\[ \Delta P_{\text{Housing}} \]

LC35 \( \Delta P_{\text{Housing}} \) for fluids with sp gr (specific gravity) = 0.86:

Pressure Drop versus Flow Rate at 32 cSt (150 SUS)

How to Build a Valid Model Number for a Schroeder LC35:

BOX 1  BOX 2  BOX 3  BOX 4  BOX 5

Example:

\[ \text{BOX 1} \quad \text{BOX 2} \quad \text{BOX 3} \quad \text{BOX 4} \quad \text{BOX 5} \]

\[ \text{LC35} \quad 1 \quad \text{BS10} \quad \_ \quad S = \text{LC351BS10S} \]

BOX 1

Filter Series

LC35

BOX 2

Number of Elements

1

BOX 3

Element Part Number

\[ \text{BS10} = 10 \, \mu \text{sintered Bronze} \]

\[ \text{BS25} = 25 \, \mu \text{sintered Bronze} \]

\[ \text{BS40} = 40 \, \mu \text{sintered Bronze} \]

\[ \text{BS70} = 70 \, \mu \text{sintered Bronze} \]

BOX 4

Seal Material

Omit = Buna N

BOX 5

Porting

S = SAE-6
In-Line Filter

**Features and Benefits**
- In-line pressure filter
- Designed for high pressure last chance protection
- Available with indicator, which is unique for in-line filters of this kind.
- Cap handles provide for easy element changeout

**Flow Rating:** 35 gpm (130 L/min)
**Max. Operating Pressure:** 5000 psi (345 bar)
**Min. Yield Pressure:** 300 psi (21 bar), per NFPA T2.6.1
**Rated Fatigue Pressure:** Contact Factory

**Temp. Range:** -20°F to 225°F (-29°C to 107°C)
**Bypass Setting:**
- Cracking: 50 psi (3.4 bar)
- Full Flow: 55 psi (3.8 bar)

**Housing:** Ductile Iron
**Cap:** Steel
**Weight:** 10.0 lbs. (4.5 kg)
**Element Change Clearance:** 7.1 (178 mm)

**Filter Housing Specifications**

<table>
<thead>
<tr>
<th>Type Fluid</th>
<th>Appropriate Schroeder Media</th>
</tr>
</thead>
<tbody>
<tr>
<td>Petroleum Based Fluids</td>
<td>Z-Media® and ASP® media (synthetic)</td>
</tr>
<tr>
<td>High Water Content</td>
<td>All Z-Media® and ASP® media (synthetic)</td>
</tr>
<tr>
<td>Invert Emulsions</td>
<td>10 and 25 µ Z-Media® and 10 µ ASP® media (synthetic)</td>
</tr>
<tr>
<td>Water Glycols</td>
<td>3, 5, 10 and 25 µ Z-Media® and all ASP® media (synthetic)</td>
</tr>
<tr>
<td>Phosphate Esters</td>
<td>All Z-Media® (synthetic) with H (EPR) seal designation and all ASP® media (synthetic)</td>
</tr>
</tbody>
</table>

Model No. of filter in photograph is LI50IZ10SMS13DC.
### LI50 In-Line Filter

#### Element Performance Information & Dirt Holding Capacity

<table>
<thead>
<tr>
<th>Element</th>
<th>Filtration Ratio Per ISO 4572/NFPA T3.10.8.8 Using automated particle counter (APC) calibrated per ISO 4402</th>
<th>Filtration Ratio per ISO 16889 Using APC calibrated per ISO 11171</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$\beta_x \geq 75$</td>
<td>$\beta_x \geq 100$</td>
</tr>
<tr>
<td>IZ1</td>
<td>&lt;1.0</td>
<td>&lt;1.0</td>
</tr>
<tr>
<td>IZ3</td>
<td>&lt;1.0</td>
<td>&lt;1.0</td>
</tr>
<tr>
<td>IZ5</td>
<td>2.5</td>
<td>3.0</td>
</tr>
<tr>
<td>IZ10</td>
<td>7.4</td>
<td>8.2</td>
</tr>
<tr>
<td>IZ25</td>
<td>18.0</td>
<td>20.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Element</th>
<th>DHC (gm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>IZ1</td>
<td>8.3</td>
</tr>
<tr>
<td>IZ3</td>
<td>7.1</td>
</tr>
<tr>
<td>IZ5</td>
<td>7.9</td>
</tr>
<tr>
<td>IZ10</td>
<td>7.0</td>
</tr>
<tr>
<td>IZ25</td>
<td></td>
</tr>
</tbody>
</table>

**Element Collapse Rating:** 290 psid  
**Flow Direction:** Inside Out  
**Element Nominal Dimensions:** 2.04" OD x (52mm OD x 155 mm long)  
**6.12" long**

Metric dimensions in ( ).
Exercise:
Determine $\Delta P_{\text{filter}}$ at 200 gpm (758 L/min) for LI50IZ10SMS13DC using 160 SUS (34 cSt) fluid.

Use the housing pressure curve to determine $\Delta P_{\text{housing}}$ at 35 gpm. In this case, $\Delta P_{\text{housing}}$ is 19 psi (1.31 bar) on the graph for the LI50 housing.

Use the element pressure curve to determine $\Delta P_{\text{element}}$ at 35 gpm. In this case, $\Delta P_{\text{element}}$ is 7 psi (.48 bar) according to the graph for the IZ10 element.

Because the viscosity in this sample is 160 SUS (34 cSt), we determine the Viscosity Factor ($V_f$) by dividing the Operating Fluid Viscosity with the Standard Viscosity of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential, $\Delta P_{\text{filter}}$, is calculated by adding $\Delta P_{\text{housing}}$ with the true element pressure differential, $\Delta P_{\text{element}}\times V_f$. The $\Delta P_{\text{element}}$ from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

Solution:
$\Delta P_{\text{housing}} = 19 \text{ psi} [1.31 \text{ bar}] \quad | \quad \Delta P_{\text{element}} = 7 \text{ psi} [.48 \text{ bar}]$

$V_f = 160 \text{ SUS (34 cSt)} / 150 \text{ SUS (32 cSt)} = 1.1$

$\Delta P_{\text{filter}} = 2 \text{ psi} + (7 \text{ psi} \times 1.1) = 9.7 \text{ psi}$

OR

$\Delta P_{\text{filter}} = 1.31 \text{ bar} + (.48 \text{ bar} \times 1.1) = 1.84 \text{ bar}$
How to Build a Valid Model Number for a Schroeder QT:

Example: NOTE: One option per box

LI50 IZ10 S MS13DC = LI50IZ10SMS13DC
**In-Line Filter**

**LC50**

**Features and Benefits**
- Compact design allows for in-line installation on hose reels
- High quality synthetic ZX-Media high collapse elements ensure all fluid is filtered
- Available with SAE or NPT threading
- Convenient 2 ¼” Hex for easy service

**Flow Rating**: Up to 9 gpm (35 L/min) for 150 SUS (32 cSt) fluids
**Max. Operating Pressure**: 5000 psi (350 bar)
**Min. Yield Pressure**: 15,000 psi (1050 bar)
**Rated Fatigue Pressure**: 5000 psi (350 bar), per NFPA T2.6.1-R1-2005
**Temp. Range**: -20°F to 225°F (-29°C to 107°C)
**Body and Cap**: Steel
**Element Case**: Steel
**Weight of LC50**: 3.63 lbs. (1.65 kg)
**Element Change Clearance**: 3.25” (83 mm)

**Type Fluid** | **Appropriate Schroeder Media**
---|---
**Petroleum Based Fluids** | All Z-Media® (synthetic)
**High Water Content** | All Z-Media® (synthetic)
**Invert Emulsions** | 10 and 25 µ Z-Media® (synthetic)
**Water Glycols** | 10 and 25 µ Z-Media® (synthetic)

**Model No. of filter in photograph is LC501LZX10S.**

**Metric dimensions in ()**.
Dimensions shown are inches (millimeters) for general information and overall envelope size only. For complete dimensions please contact Schroeder Industries to request a certified print.
**In-Line Filter**

**Filtration Ratio per ISO 16889**
Using APC calibrated per ISO 11171

<table>
<thead>
<tr>
<th>Element</th>
<th>( \beta_{x(c)} \geq 200 )</th>
<th>( \beta_{x(c)} \geq 1000 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>LZX3</td>
<td>&lt;4.0</td>
<td>4.8</td>
</tr>
<tr>
<td>LZX10</td>
<td>8.0</td>
<td>10.0</td>
</tr>
<tr>
<td>LZX25</td>
<td>19.0</td>
<td>24.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Element</th>
<th>DHC (gm)</th>
<th>Element</th>
<th>DHC (gm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LZX3</td>
<td>1.1</td>
<td>LZX25</td>
<td>1.0</td>
</tr>
<tr>
<td>LZX10</td>
<td>1.0</td>
<td>LZX40</td>
<td>0.9</td>
</tr>
</tbody>
</table>

Element Collapse Rating: 3000 psi (207 bar)
Flow Direction: Outside In
Element Nominal Dimensions: 1.4” (43 mm) O.D. x 1.7” (35 mm) long

\( \Delta P_{\text{housing}} \)
LC50 \( \Delta P_{\text{housing}} \) for fluids with sp.gr (specific gravity) = 0.86:

**How to Build a Valid Model Number for a Schroeder LC50:**

- **BOX 1:** Filter Series
- **BOX 2:** Number of Elements
- **BOX 3:** Element Part Number
- **BOX 4:** Seal Material
- **BOX 5:** Porting

**BOX 1**

**LC50**

**BOX 2**

1

**BOX 3**

- **LCX3 =** 3 \( \mu \) Excellement® Z-Media™ (high collapse center tube)
- **LCX10 =** 10 \( \mu \) Excellement® Z-Media™ (high collapse center tube)
- **LCX25 =** 25 \( \mu \) Excellement® Z-Media™ (high collapse center tube)
- **LCX40 =** 40 \( \mu \) Excellement® Z-Media™ (high collapse center tube)

**BOX 4**

- Omit = Buna N
- V = Viton™

**BOX 5**

- S = SAE-12
- P = \( \frac{3}{8} \) NPT
High-Pressure Sandwich Filter

Model No. of filter in photograph is NOF301NNZX305D5.

Features and Benefits
- Sandwich filter configured for D05 subplate
- Withstands high pressure surges, high static pressure loads
- 3000 psi collapse elements

Flow Rating: Up to 12 gpm (45 L/min) for 150 SUS (32 cSt) fluids
Max. Operating Pressure: 3000 psi (210 bar)
Min. Yield Pressure: 10,000 psi (690 bar), per NFPA T2.6.1
Rated Fatigue Pressure: Contact Factory
Temp. Range: -20°F to 225°F (-29°C to 107°C)
Bypass Setting: High collapse elements are standard
Porting Base & Cap: Aluminum
Element Case: Aluminum
Weight of NOF30-1NN: 6.6 lbs. (3.0 kg)
Element Change Clearance: 4.50” (115 mm)

Fluid Compatibility

<table>
<thead>
<tr>
<th>Type Fluid</th>
<th>Appropriate Schroeder Media</th>
</tr>
</thead>
<tbody>
<tr>
<td>Petroleum Based Fluids</td>
<td>All Z-Media’ (synthetic)</td>
</tr>
<tr>
<td>High Water Content</td>
<td>3, 10 and 25 µ Z-Media’ (synthetic)</td>
</tr>
<tr>
<td>Invert Emulsions</td>
<td>10 and 25 µ Z-Media’ (synthetic)</td>
</tr>
<tr>
<td>Water Glycols</td>
<td>3, 10 and 25 µ Z-Media’ (synthetic)</td>
</tr>
</tbody>
</table>
Element DHC (gm)

NNZX3 11*
NNZX10 13*

Element Collapse Rating: 3000 psid (210 bar) for high collapse (ZX) versions
Flow Direction: Outside In
Element Nominal Dimensions: 1.75" (45 mm) O.D. x 8.00" (200 mm) long

Filtration Ratio Per ISO 4572/NFPA T3.10.8.8
Using automated particle counter (APC) calibrated per ISO 4402

<table>
<thead>
<tr>
<th>Element</th>
<th>$\beta_x \geq 75$</th>
<th>$\beta_x \geq 100$</th>
<th>$\beta_x \geq 200$</th>
<th>$\beta_x(c) \geq 200$</th>
<th>$\beta_x(c) \geq 1000$</th>
</tr>
</thead>
<tbody>
<tr>
<td>NNZX3</td>
<td>&lt;1.0</td>
<td>&lt;1.0</td>
<td>&lt;2.0</td>
<td>4.7</td>
<td>5.8</td>
</tr>
<tr>
<td>NNZX10</td>
<td>7.4</td>
<td>8.2</td>
<td>10.0</td>
<td>8.0</td>
<td>9.8</td>
</tr>
</tbody>
</table>

Filtration Ratio per ISO 16889
Using APC calibrated per ISO 11171

<table>
<thead>
<tr>
<th>Element</th>
<th>$\beta_x(c) \geq 200$</th>
<th>$\beta_x(c) \geq 1000$</th>
</tr>
</thead>
<tbody>
<tr>
<td>NNZX3</td>
<td>5.8</td>
<td>9.8</td>
</tr>
<tr>
<td>NNZX10</td>
<td>8.0</td>
<td>9.8</td>
</tr>
</tbody>
</table>

*Based on 100 psi terminal pressure

Metric dimensions in ( ).
Dimensions shown are inches (millimeters) for general information and overall envelope size only.
For complete dimensions please contact Schroeder Industries to request a certified print.
$$\Delta P_{\text{filter}} = \Delta P_{\text{housing}} + (\Delta P_{\text{element}} \times V_f)$$

**Exercise:**
Determine $\Delta P_{\text{filter}}$ at 5 gpm (19 L/min) for NOF31NNZX1005D5 using 160 SUS (34 cSt) fluid.

Use the housing pressure curve to determine $\Delta P_{\text{housing}}$ at 5 gpm. In this case, $\Delta P_{\text{housing}}$ is 5 psi (.34 bar) on the graph for the NOF30 housing.

Use the element pressure curve to determine $\Delta P_{\text{element}}$ at 5 gpm. In this case, $\Delta P_{\text{element}}$ is 3 psi (.21 bar) according to the graph for the NNZX10 element.

Because the viscosity in this sample is 160 SUS (34 cSt), we determine the Viscosity Factor ($V_f$) by dividing the Operating Fluid Viscosity with the Standard Viscosity of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential, $\Delta P_{\text{filter}}$, is calculated by adding $\Delta P_{\text{housing}}$ with the true element pressure differential, $(\Delta P_{\text{element}} \times V_f)$. The $\Delta P_{\text{element}}$ from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

**Solution:**
$\Delta P_{\text{housing}} = 5 \text{ psi} \ (0.34 \text{ bar}) \quad | \quad \Delta P_{\text{element}} = 3 \text{ psi} \ (0.21 \text{ bar})$

$v_f = \frac{160 \text{ SUS} \ (34 \text{ cSt})}{150 \text{ SUS} \ (32 \text{ cSt})} = 1.1$

$$\Delta P_{\text{filter}} = 5 \text{ psi} \times (3 \text{ psi} \times 1.1) = 8.3 \text{ psi}$$

OR

$$\Delta P_{\text{filter}} = 0.34 \text{ bar} \times (0.21 \text{ bar} \times 1.1) = 0.57 \text{ bar}$$
## How to Build a Valid Model Number for a Schroeder NOF30-05:

<table>
<thead>
<tr>
<th>BOX 1</th>
<th>BOX 2</th>
<th>BOX 3</th>
<th>BOX 4</th>
<th>BOX 5</th>
<th>BOX 6</th>
<th>BOX 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOF30</td>
<td>1</td>
<td>NNZX3</td>
<td>05</td>
<td>D5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\[ \text{NOF30}1\text{NNZX3}05\text{D5} = \text{NOF301NNZX305D5} \]

### Filter Series
- NOF30

### Number & Size of Elements
- 1

### Element Part Number
- NNZX3 = NN size 3 µ high collapse media
- NNZX10 = NN size 10 µ high collapse media
- NNZX25 = NN size 25 µ high collapse media

### Seal Material
- Omit = Buna N
- V = Viton®
- W = Buna N

### Porting
- 05 = D05

### Dirt Alarm® Options

<table>
<thead>
<tr>
<th>Options</th>
<th>Dirt Alarm® Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Omit = None</td>
<td>Visual D5 = Visual pop-up</td>
</tr>
<tr>
<td>Visual with Thermal Lockout</td>
<td>Visual D8 = Visual w/ thermal lockout</td>
</tr>
</tbody>
</table>

### Electrical
- MS5 = Electrical w/ 12 in. 18 gauge 4-conductor cable
- MS5LC = Low current MS5
- MS10 = Electrical w/ DIN connector (male end only)
- MS10LC = Low current MS10
- MS11 = Electrical w/ 12 ft. 4-conductor wire
- MS12 = Electrical w/ 5 pin Brad Harrison connector (male end only)
- MS12LC = Low current MS12
- MS16 = Electrical w/ weather-packed sealed connector
- MS16LC = Low current MS16
- MS17 = Electrical w/ 4 pin Brad Harrison male connector
- MS17LC = Electrical w/ 4 pin Brad Harrison male connector

### Electrical with Thermal Lockout
- MS5T = MS5 (see above) w/ thermal lockout
- MS5LCT = Low current MS5T
- MS10T = MS10 (see above) w/ thermal lockout
- MS10LCT = Low current MS10T
- MS12T = MS12 (see above) w/ thermal lockout
- MS12LCT = Low current MS12T
- MS16T = MS16 (see above) w/ thermal lockout
- MS16LCT = Low current MS16T
- MS17T = MS17 (see above) w/ thermal lockout
- MS17LCT = Low current MS17T

### Electrical Visual with Thermal Lockout
- MS13DC = Supplied w/ threaded connector & light
- MS14DC = Supplied w/ 5 pin Brad Harrison connector & light (male end)

### Electrical Visual with Thermal Lockout
- MS13DCT = MS13 (see above), direct current, w/ thermal lockout
- MS13DCLCT = Low current MS13DCT
- MS14DCT = MS14 (see above), direct current, w/ thermal lockout
- MS14DCLCT = Low current MS14DCT

### Notes:
- Box 3. Replacement element part numbers are identical to contents of Boxes 3 and 4.
- Box 4. For options V and W, all aluminum parts are anodized. Viton® is a registered trademark of DuPont Dow Elastomers.
High-Pressure Servo Sandwich Filter

Model No. of filter in photograph is NOF501SVZ3760.

Features and Benefits
- Localized protection at the servo helps to eliminate downtime and protect critical applications from contamination-related servo valve failures
- Sandwich style 4-bolt design – no additional lines to connect
- Designed to protect these commonly installed servo valves: Moog 761 & 62, Vickers SM4-20 and Parker BD15
- High collapse elements, rated to 3000 psi (210 bar)
- Easily applied to new and existing systems
- All steel construction

Flow Rating: Up to 15 gpm (57 L/min) for 150 SUS (32 cSt) fluids
Max. Operating Pressure: 5000 psi (345 bar)
Min. Yield Pressure: 15,000 psi (1034 bar), per NFPA T2.6.1
Rated Fatigue Pressure: 4000 psi (276 bar) per NFPA T2-6.1 R2-2005
Temp. Range: -20°F to 225°F (-29°C to 107°C)
Non-Bypass Model: Standard with high collapse elements
Porting Head: Steel
Element Case: Steel
Weight of NOF50-1SV: 17 lb. (7.7 kg)
Element Change Clearance: 4.50” (115 mm)

Filter
Housing
Specifications

Fluid
Compatibility

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Type Fluid  | Appropriate Schroeder Media
---|---
Petroleum Based Fluids  | All Z-Media® (synthetic)
High Water Content  | 3, 10 and 25 µ Z-Media® (synthetic)
Invert Emulsions  | 10 and 25 µ Z-Media® (synthetic)
Water Glycols  | 3, 10 and 25 µ Z-Media® (synthetic)

---

Filter
Model No. of filter in photograph is NOF501SVZ3760.
### High-Pressure Servo Sandwich Filter

**Element Collapse Rating:** 3000 psid (210 bar) for high collapse (ZX) versions

**Flow Direction:** Outside In

**Element Nominal Dimensions:** 1.75" (45 mm) O.D. x 8.0" (200 mm) long

#### Filtration Ratio Per ISO 4572/NFPA T3.10.8.8

Using automated particle counter (APC) calibrated per ISO 4402

<table>
<thead>
<tr>
<th>Element</th>
<th>$\beta_x \geq 75$</th>
<th>$\beta_x \geq 100$</th>
<th>$\beta_x \geq 200$</th>
<th>$\beta_x(c) \geq 200$</th>
<th>$\beta_x(c) \geq 1000$</th>
</tr>
</thead>
<tbody>
<tr>
<td>SVZX3</td>
<td>&lt;1.0</td>
<td>&lt;1.0</td>
<td>&lt;2.0</td>
<td>4.7</td>
<td>5.8</td>
</tr>
<tr>
<td>SVZX10</td>
<td>7.4</td>
<td>8.2</td>
<td>10.0</td>
<td>8.0</td>
<td>9.7</td>
</tr>
</tbody>
</table>

#### Filtration Ratio per ISO 16889

Using APC calibrated per ISO 11171

<table>
<thead>
<tr>
<th>Element</th>
<th>$\beta_{x(c)} \geq 200$</th>
<th>$\beta_{x(c)} \geq 1000$</th>
</tr>
</thead>
<tbody>
<tr>
<td>SVZX3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SVZX10</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Dirt Alarm or Electric Switch (Optional)**

**Bowl Installation Torque:** 45 ft-lbs

**DHC (gm):**

<table>
<thead>
<tr>
<th>Element</th>
<th>DHC (gm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SVZX3</td>
<td>11*</td>
</tr>
<tr>
<td>SVZX10</td>
<td>13*</td>
</tr>
</tbody>
</table>

*Based on 100 psi terminal pressure

---

**Metric dimensions in ( ).**

Dimensions shown are inches (millimeters) for general information and overall envelope size only.

For complete dimensions please contact Schroeder Industries to request a certified print.

---

**NOTES:**

- 100 psi terminal pressure
- 760 Model Mounting Shown

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**Element DIHM DHC (gm)**

**SVZX3**

**SVZX10**

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**Schroeder Industries**

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**NOF50**
Pressure Drop Information
Based on Flow Rate and Viscosity

High-Pressure Servo Sandwich Filter

\[ \Delta P_{\text{filter}} = \Delta P_{\text{housing}} + (\Delta P_{\text{element}} \times V_f) \]

Exercise:
Determine \( \Delta P_{\text{filter}} \) at 5 gpm (19 L/min) for NOF501SVZX10760D5 using 160 SUS (34 cSt) fluid.

Use the housing pressure curve to determine \( \Delta P_{\text{housing}} \) at 5 gpm. In this case, \( \Delta P_{\text{housing}} \) is 15 psi (1 bar) on the graph for the NOF30 housing.

Use the element pressure curve to determine \( \Delta P_{\text{element}} \) at 5 gpm. In this case, \( \Delta P_{\text{element}} \) is 3 psi (.21 bar) according to the graph for the SVZX10 element.

Because the viscosity in this sample is 160 SUS (34 cSt), we determine the Viscosity Factor (\( V_f \)) by dividing the Operating Fluid Viscosity with the Standard Viscosity of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential, \( \Delta P_{\text{filter}} \), is calculated by adding \( \Delta P_{\text{housing}} \) with the true element pressure differential, \( \Delta P_{\text{element}} \times V_f \). The \( \Delta P_{\text{element}} \) from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

Solution:
\( \Delta P_{\text{housing}} = 15 \text{ psi} \) [1 bar]  |  \( \Delta P_{\text{element}} = 3 \text{ psi} \) [21 bar]

\( V_f = 160 \text{ SUS} \) (34 cSt) / 150 SUS (32 cSt) = 1.1
\( \Delta P_{\text{filter}} = 15 \text{ psi} + (3 \text{ psi} \times 1.1) = 18.3 \text{ psi} \)

OR
\( \Delta P_{\text{filter}} = 1 \text{ bar} + (.21 \text{ bar} \times 1.1) = 1.2 \text{ bar} \)
# High-Pressure Servo Sandwich Filter

## Model Number Selection

How to Build a Valid Model Number for a Schroeder NOF50:

<table>
<thead>
<tr>
<th>BOX 1</th>
<th>BOX 2</th>
<th>BOX 3</th>
<th>BOX 4</th>
<th>BOX 5</th>
<th>BOX 6</th>
<th>BOX 7</th>
<th>BOX 8</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOF50</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Example: **NOTE:** One option per box

NOF50 1 SVZX3 760 D5 = NOF501SVZX3760D5

- **BOX 1:** Filter Series
- **BOX 2:** Number of Elements
- **BOX 3:** Element Part Number
  - SVZX3 = S size 3 µ high collapse media
  - SVZX10 = S size 10 µ high collapse media
  - SVZX25 = S size 25 µ high collapse media
- **BOX 4:** Seal Material
  - Omit = Buna N
  - V = Viton®
- **BOX 5:** Porting
  - 760 = Moog servo configuration
  - 761 = Moog servo configuration

- **BOX 6:** Options
  - Omit = 60 psid
  - 90 = 90 psid

- **BOX 7:** Optional Test Point
  - Omit = None
  - U = Series 1215 3⁄8”-20 UNF Schroeder Check Test Point installation

- **BOX 8:** Dirt Alarm® Options
  - None
  - Visual
  - Visual with Thermal Lockout
    - D5 = Visual pop-up
    - DB = Visual w/ thermal lockout
  - Electrical
    - MSS = Electrical w/ 12 in. 18 gauge 4-conductor cable
    - MS5LC = Low current MS
    - MS10 = Electrical w/ DIN connector (male end only)
    - MS10LC = Low current MS10
    - MS11 = Electrical w/ 12 ft. 4-conductor wire
    - MS12 = Electrical w/ 5 pin Brad Harrison connector (male end only)
    - MS12LC = Low current MS12
    - MS16 = Electrical w/ weather-packed sealed connector
    - MS16LC = Low current MS16
    - MS17LC = Electrical w/ 4 pin Brad Harrison male connector
  - Electrical with Thermal Lockout
    - MSST = MS5 (see above) w/ thermal lockout
    - MS5LCST = Low current MSST
    - MS10T = MS10 (see above) w/ thermal lockout
    - MS10LCST = Low current MS10T
    - MS12T = MS12 (see above) w/ thermal lockout
    - MS12LCST = Low current MS12T
    - MS16T = MS16 (see above) w/ thermal lockout
    - MS16LCST = Low current MS16T
    - MS17LCST = Low current MS17T
  - Electrical Visual
    - MS13 = Supplied w/ threaded connector & light
    - MS14 = Supplied w/ 5 pin Brad Harrison connector & light (male end)
  - Electrical Visual with Thermal Lockout
    - MS13DCT = MS13 (see above), direct current, w/ thermal lockout
    - MS13DCLCT = Low current MS13DCT
    - MS14DCT = MS14 (see above), direct current, w/ thermal lockout
    - MS14DCLCT = Low current MS14DCT

### NOTES:

- **Box 3:** Replacement element part numbers are identical to contents of Boxes 3 and 4.
- **Box 4:** Viton® is a registered trademark of DuPont Dow Elastomers.
- **Box 6:** Please note indicator flow limitations on pressure drop graph, previous page.
High-Pressure Sandwich Filter

Features and Benefits
- Sandwich filter configured for D03 subplate pattern
- Withstands high pressure surges, high static pressure loads
- 3000 psi collapse elements

Flow Rating: Up to 12 gpm (45 L/min) for 150 SUS (32 cSt) fluids
Max. Operating Pressure: 6000 psi (415 bar)
Min. Yield Pressure: 26,000 psi (1790 bar), per NFPA T2.6.1
Rated Fatigue Pressure: 4000 psi (275 bar), per NFPA T2.6.1
Temp. Range: -20°F to 225°F (-29°C to 107°C)
Non-Bypass Model: Available with high collapse elements
Porting Head: Steel
Element Case: Steel
Weight: 7.3 lbs. (3.3 kg)
Element Change Clearance: 4.50” (115 mm)

Type Fluid | Appropriate Schroeder Media
---|---
Petroleum Based Fluids | All Z-Media® (synthetic)
High Water Content | 3 and 10 µ Z-Media® (synthetic)

Model No. of filter in photograph is FOF601FZX303BD5.
High-Pressure Sandwich Filter

Element Performance Information & Dirt Holding Capacity

Metric dimensions in ( ). Dimensions shown are inches (millimeters) for general information and overall envelope size only. For complete dimensions please contact Schroeder Industries to request a certified print.

Filtration Ratio Per ISO 4572/NFPA T3.10.8.8 Using automated particle counter (APC) calibrated per ISO 4402

<table>
<thead>
<tr>
<th>Element</th>
<th>$\beta_{x} \geq 75$</th>
<th>$\beta_{x} \geq 100$</th>
<th>$\beta_{x} \geq 200$</th>
<th>Filtration Ratio per ISO 16889 Using APC calibrated per ISO 11171</th>
</tr>
</thead>
<tbody>
<tr>
<td>FZX3</td>
<td>&lt;1.0</td>
<td>&lt;1.0</td>
<td>&lt;2.0</td>
<td>$\beta_{x(c)} \geq 200$</td>
</tr>
<tr>
<td>FZX10</td>
<td>7.4</td>
<td>8.2</td>
<td>10.0</td>
<td>$\beta_{x(c)} \geq 1000$</td>
</tr>
</tbody>
</table>

Element Collapse Rating: 3000 psid (210 bar) for high collapse (ZX) versions
Flow Direction: Outside In
Element Nominal Dimensions: 1.25" (30 mm) O.D. x 3.25" (85 mm) long

*Based on 100 psi terminal pressure
Pressure Drop Information
Based on Flow Rate and Viscosity

ΔP_{housing}

FOF60-03 ΔP_{housing} for fluids with sp gr (specific gravity) = 0.86:

\[ \Delta P_{filter} = \Delta P_{housing} + (\Delta P_{element} \times V_f) \]

Exercise:
Determine ΔP_{filter} at 5 gpm (19 L/min) for FOF601FX1003BD5 using 160 SUS (34 cSt) fluid.

Use the housing pressure curve to determine ΔP_{housing} at 5 gpm. In this case, ΔP_{housing} is 60 psi (4.1 bar) on the graph for the FOF60 housing.

Use the element pressure curve to determine ΔP_{element} at 5 gpm. In this case, ΔP_{element} is 22 psi (1.5 bar) according to the graph for the FZX10 element.

Because the viscosity in this sample is 160 SUS (34 cSt), we determine the Viscosity Factor (V_f) by dividing the Operating Fluid Viscosity with the Standard Viscosity of 150 SUS (32 cSt). To best determine your Operating Fluid Viscosity, please reference the chart in Appendix D.

Finally, the overall filter pressure differential, ΔP_{filter}, is calculated by adding ΔP_{housing} with the true element pressure differential, (ΔP_{element} \times V_f). The ΔP_{element} from the graph has to be multiplied by the viscosity factor to get the true pressure differential across the element.

Solution:
ΔP_{housing} = 60 psi [4.1 bar] \quad | \quad ΔP_{element} = 22 psi [1.5 bar]

\[ V_f = \frac{160 \text{ SUS (34 cSt)}}{150 \text{ SUS (32 cSt)}} = 1.1 \]

\[ ΔP_{filter} = 60 \text{ psi} + (22 \text{ psi} \times 1.1) = 64.2 \text{ psi} \]

OR

\[ ΔP_{filter} = 4.1 \text{ bar} + (1.5 \text{ bar} \times 1.1) = 5.8 \text{ bar} \]
How to Build a Valid Model Number for a Schroeder FOF60-03:

- **BOX 1**: Filter Series
- **BOX 2**: Number of Elements
- **BOX 3**: Element Part Number
- **BOX 4**: Seal Material
- **BOX 5**: Porting
- **BOX 6**: Filter Bowl Location
- **BOX 7**: Dirt Alarm® Options

**Example:**

<table>
<thead>
<tr>
<th>BOX 1</th>
<th>BOX 2</th>
<th>BOX 3</th>
<th>BOX 4</th>
<th>BOX 5</th>
<th>BOX 6</th>
<th>BOX 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>FOF60</td>
<td>1</td>
<td>FZX3</td>
<td>-</td>
<td>-</td>
<td>03</td>
<td>A</td>
</tr>
</tbody>
</table>

- **FOF601FZX303AD5**

**NOTES:**

- Box 3. Replacement element part numbers are identical to contents of Boxes 3 and 4.
- Box 4. Viton® is a registered trademark of DuPont Dow Elastomers.
- Box 7. Dirt Alarm® cannot be used beyond 4 gpm. Filters ordered without a Dirt Alarm do not include a machined indicator port. Therefore, one cannot be added at a later date.
Features and Benefits

- Allows for effective filtration in customer’s manifold

---

**Flow Rating:** Up to 20 gpm (75 L/min) for 150 SUS (32 cSt) fluids

**Max. Operating Pressure:** 3000 psi (210 bar)*

**Min. Yield Pressure:** 10,000 psi (690 bar)*, per NFPA T2.6.1

**Rated Fatigue Pressure:** 2400 psi (185 bar)*, per NFPA T2.6.1

**Temp. Range:** -20°F to 225°F (-29°C to 107°C)

**Element Case:** Aluminum

**Element Change Clearance:** 4.50" (115 mm)

*Only with manifold material properties equivalent to aluminum 6061-T651.

---

**Type Fluid**

- Petroleum Based Fluids
- High Water Content

---

Model No. of filter in photograph is NMF301NNZX10.

---

**Filter Housing Specifications**

**Fluid Compatibility**

- NMF30
- NFS30
- YF30
- CFX30
- PLD
- CF40
- DF40
- PF40
- RFS50
- RF60
- CF60
- CTF60
- VF60
- LW60
- KF30
- KF50
- TF50
- KC50
- MKF50
- MKC50
- KC65
- MKC65
- HS60
- MHS60
- KFH50
- LC60
- LC35
- LI50
- LC50
- NOF30-05
- NOF-50-760
- FOF60-03
- NMF30
- RMF60
- 14-CRZX10

---

Metric dimensions in ( ).
Dimensions shown are inches (millimeters) for general information and overall envelope size only.
For complete dimensions please contact Schroeder Industries to request a certified print.
### Filter Model Number Selection

**How to Build a Valid Model Number for a Schroeder NMF30:**

<table>
<thead>
<tr>
<th>BOX 1</th>
<th>BOX 2</th>
<th>BOX 3</th>
<th>BOX 4</th>
<th>BOX 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>NMF30</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Example: **NOTE:** One option per box

```
NMF30 - 1 - NNZX3 = NMF301NNZX3
```

**Filter Series**
- NMF30

**Number of Elements**
- 1

**Element Part Number**
- NNZX3 = NN size 3 µ high collapse media
- NNZX10 = NN size 10 µ high collapse media
- NNZX25 = NN size 25 µ high collapse media

**Seal Material**
- Omit = Buna N
- V = Viton®

**Bushing**
- Omit = Included
- N = Not included

### Element Performance Information & Dirt Holding Capacity

<table>
<thead>
<tr>
<th>Element</th>
<th>Filtration Ratio Per ISO 4572/NFPA T3.10.8.8 Using automated particle counter (APC) calibrated per ISO 4402</th>
<th>Filtration Ratio per ISO 16889 Using APC calibrated per ISO 11171</th>
<th>Dirt Holding Capacity (gm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NNZX3</td>
<td>1.0</td>
<td>4.7</td>
<td>11*</td>
</tr>
<tr>
<td>NNZX10</td>
<td>7.4</td>
<td>8.0</td>
<td>13*</td>
</tr>
</tbody>
</table>

**Element Collapse Rating:** 3000 psid (210 bar)

**Flow Direction:** Outside In

**Element Nominal Dimensions:** 1.75" (45 mm) O.D. x 8.00" (200 mm) long

### Notes:

- Box 3: Replacement element part numbers are identical to contents of Boxes 3 and 4.
- Box 4: For options V and W, all aluminum parts are anodized. Viton® is a registered trademark of DuPont Dow Elastomers.
Flow Rating: Up to 30 gpm (115 L/min) for 150 SUS (32 cSt) fluids
Max. Operating Pressure: 6000 psi (415 bar)*
Min. Yield Pressure: 18,000 psi (1240 bar)*
Rated Fatigue Pressure: 2300 psi (159 bar)*
Temp. Range: -20°F to 225°F (-29°C to 107°C)
Element Case: Steel
Element Change Clearance: 3.0" (75 mm)

*Only with manifold material properties equivalent to AISI 1018 C.R.S.

Type Fluid
Petroleum Based Fluids
High Water Content

Metric dimensions in ( ).
Dimensions shown are inches (millimeters) for general information and overall envelope size only.
For complete dimensions please contact Schroeder Industries to request a certified print of drawing 7638211
# Manifold Filter Kit

## Element Performance Information & Dirt Holding Capacity

<table>
<thead>
<tr>
<th>Element</th>
<th>Filtration Ratio Per ISO 4572/NFPA T3.10.8.8</th>
<th>Filtration Ratio per ISO 16889</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Using automated particle counter (APC) calibrated per ISO 4402</td>
<td>Using APC calibrated per ISO 11171</td>
</tr>
<tr>
<td>NNXZ3</td>
<td>$\beta_p \geq 75$</td>
<td>$\beta_{p,c} \geq 200$</td>
</tr>
<tr>
<td></td>
<td>$\beta_p \geq 100$</td>
<td>$\beta_{p,c} \geq 1000$</td>
</tr>
<tr>
<td>NNXZ10</td>
<td>$&lt;1.0$</td>
<td>4.7</td>
</tr>
<tr>
<td></td>
<td>$&lt;1.0$</td>
<td>5.8</td>
</tr>
<tr>
<td></td>
<td>$&lt;2.0$</td>
<td>8.0</td>
</tr>
<tr>
<td></td>
<td>10.0</td>
<td>9.8</td>
</tr>
</tbody>
</table>

Element Collapse Rating: 3000 psid (210 bar)
Flow Direction: Outside In
Element Nominal Dimensions: 2.18" (55mm) O.D. x 8.15" (206 mm) long

## How to Build a Valid Model Number for a Schroeder RMF60:

**Example:**

```
RMF60 – 8 – RZX3 – – = RMF608RZX3
```

- **Note:** One option per box.

## Filter Model Number Selection

**Filter Series:** RMF60

**Element Length:** 8

**Element Size and Media:**
- RZX3 = E size 3 µ Excellement® Z-Media® (high collapse center tube)
- RZX10 = E size 10 µ Excellement® Z-Media® (high collapse center tube)
- RZX25 = E size 25 µ Excellement® Z-Media® (high collapse center tube)

**Seal Material:**
- Ommit = Buna N
- V = Viton®
- H = EPR

**Bushing:**
- Ommit = Included
- N = Not included

**NOTES:**
- Box 2: Replacement element part numbers are a combination of Boxes 2, 3, and 4. Example: 8RZX3V
- Box 4: Viton ® is a registered trademark of DuPont Dow Elastomers.
Cartridge Element

Features and Benefits (14-CRZX10)

- Cartridge filters are designed to be mounted directly in the manifold
- Withstands high pressure surges—3000 psi (210 bar) collapse rating

Max. Operating Pressure: 3000 psi (210 bar)
Temp. Range: -20°F to 225°F (-29°C to 107°C)
Element Change Clearance: 14-CRZX10: 4.50" (115 mm)

Type Fluid Appropriate Schroeder Media
Petroleum Based Fluids All Z-Media® (synthetic)
High Water Content 3 and 10 µ Z-Media® (synthetic)

Contact factory for other media options.

Element Nominal Dimensions:
Using automated particle counter (APC) calibrated per ISO 4402
Filtration Ratio per ISO 16889 Using APC calibrated per ISO 11171

\[
\begin{array}{cccc}
\text{Element} & \beta_x \geq 75 & \beta_x \geq 100 & \beta_x \geq 200 & \beta_x^{(c)} \geq 200 & \beta_x^{(c)} \geq 1000 \\
ZX10 & 7.4 & 8.2 & 10.0 & 8.0 & 9.8 \\
\end{array}
\]

Contact factory for other media options.

Flow Direction: Outside In

Element Collapse Rating: 3000 psid (210 bar) for high collapse (ZX) versions

How to Build a Valid Model Number for a Schroeder 14-CRZX10:

Example: NOTE: One option per box

<table>
<thead>
<tr>
<th>BOX 1</th>
<th>BOX 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>14-CRZX10</td>
<td>P</td>
</tr>
</tbody>
</table>

Example: 8RZX3V

NOTES:
Box 2: Replacement element part numbers are a combination of Boxes 2, 3, and 4. Example: 8RZX3V

Viton® is a registered trademark of DuPont Dow Elastomers.
**20-CRZX10**

**Cartridge Element**

**Features and Benefits (20-CRZX10)**

- Cartridge filters are designed to be mounted directly in the manifold
- Withstands high pressure surges–3000 psi (210 bar) collapse rating

**Filter Housing Specifications**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. Operating Pressure</td>
<td>3000 psi (210 bar)</td>
</tr>
<tr>
<td>Temp. Range</td>
<td>-20°F to 225°F (-29°C to 107°C)</td>
</tr>
<tr>
<td>Element Change Clearance</td>
<td>20-CRZX10: 3.50° (90 mm)</td>
</tr>
</tbody>
</table>

**Fluid Compatibility**

<table>
<thead>
<tr>
<th>Type Fluid</th>
<th>Appropriate Schroeder Media</th>
</tr>
</thead>
<tbody>
<tr>
<td>Petroleum Based Fluids</td>
<td>All Z-Media® (synthetic)</td>
</tr>
<tr>
<td>High Water Content</td>
<td>3 and 10 µ Z-Media® (synthetic)</td>
</tr>
</tbody>
</table>

**Element Performance Information & Dirt Holding Capacity**

- **Element Nominal Dimensions:**
  - Element Collapse Rating: 3000 psid (210 bar) for high collapse (ZX) versions
  - Flow Direction: Outside In
  - *Based on 100 psi terminal pressure

**Filter Model Number Selection**

**How to Build a Valid Model Number for a Schroeder 20-CRZX10:**

```
BOX 1  | BOX 2
20-CRZX10 |   
```

Example: NOTE: One option per box

```
BOX 1  | BOX 2
20-CRZX10 | P   = 20-CRZX10P
```

**NOTES:**

- Box 2: Replacement element part numbers are a combination of Boxes 2, 3, and 4. Example: 8RZX3V
- Box 4: Viton® is a registered trademark of DuPont Dow Elastomers.