Tank-Mounted Filter

**Features and Benefits**
- Low pressure tank-mounted filter
- Designed for high return line flows
- Dual inlet porting
- Top, side or bottom mounting
- Optional check valve prevents reservoir siphoning
- Special filter element design provides aftermarket benefits
- Also available with DirtCatcher® element (BBD)
- Cast iron head available

Model No. of filter in photograph is BFT1BBZ5F.

**Applications**

- INDUSTRIAL
- MOBILE VEHICLES
- PULP & PAPER
- STEEL MAKING
- CONSTRUCTION
- AGRICULTURE

**Filter Housing Specifications**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flow Rating:</td>
<td>Up to 300 gpm (1135 L/min) for 150 SUS (32 cSt) fluids</td>
</tr>
<tr>
<td>Max. Operating Pressure:</td>
<td>100 psi (7 bar)</td>
</tr>
<tr>
<td>Min. Yield Pressure:</td>
<td>250 psi (17 bar), per NFPA T2.6.1</td>
</tr>
<tr>
<td>Rated Fatigue Pressure:</td>
<td>Contact factory, 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: 25 psi (1.7 bar)
                           | Full Flow: 52 psi (3.6 bar) |
| Porting Head & Cap:        | Aluminum |
| Element Case:              | Steel |
| Weight of BFT-1BB:         | 36.7 lbs. (16.6 kg) |
| Element Change Clearance:  | 14.75" (375 mm) |

**IRF**
**TF1**
**KF3**
**KL3**
**LF1-2"**
**MLF1**
**RLD**
**GRTB**
**MTA**
**MTB**
**ZT**
**KFT**
**RT**
**RTI**
**LRT**
**ART**
**KTK**
**LTK**
**MRT**
**BFT**
**PAF1**
**MAF1**
**MF2**
Tank-Mounted Filter

Element Performance Information

<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>BB/BL10</td>
<td>$\beta_{5} \geq 75$</td>
<td>$\beta_{10} \geq 200$</td>
</tr>
<tr>
<td></td>
<td>$\beta_{0} \geq 100$</td>
<td>$\beta_{0} \geq 1000$</td>
</tr>
<tr>
<td>BB/BLZ1</td>
<td>$&lt;1.0$</td>
<td>$&lt;4.0$</td>
</tr>
<tr>
<td>BB/BLZ3</td>
<td>$&lt;2.0$</td>
<td>$&lt;4.8$</td>
</tr>
<tr>
<td>BB/BLZ5</td>
<td>4.0</td>
<td>6.3</td>
</tr>
<tr>
<td>BB/BLZ10</td>
<td>10.0</td>
<td>10.0</td>
</tr>
<tr>
<td>BB/BLZ25</td>
<td>22.5</td>
<td>24.0</td>
</tr>
</tbody>
</table>

Dirt Holding Capacity

<table>
<thead>
<tr>
<th>Element</th>
<th>DHC (gm)</th>
<th>Element</th>
<th>DHC (gm)</th>
<th>Element</th>
<th>DHC (gm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BB10</td>
<td>132</td>
<td>BBDZ1</td>
<td>205</td>
<td>BL10</td>
<td>264</td>
</tr>
<tr>
<td>BB21</td>
<td>268</td>
<td>BBDZ2</td>
<td>163</td>
<td>BLZ1</td>
<td>536</td>
</tr>
<tr>
<td>BB23</td>
<td>275</td>
<td>BBDZ3</td>
<td>229</td>
<td>BLZ3</td>
<td>550</td>
</tr>
<tr>
<td>BB25</td>
<td>301</td>
<td>BBDZ5</td>
<td>229</td>
<td>BLZ5</td>
<td>550</td>
</tr>
<tr>
<td>BB2Z10</td>
<td>272</td>
<td>BBDZ10</td>
<td>183</td>
<td>BLZ10</td>
<td>550</td>
</tr>
<tr>
<td>BB2Z25</td>
<td>246</td>
<td>BBDZ25</td>
<td>186</td>
<td>BLZ25</td>
<td>550</td>
</tr>
</tbody>
</table>

Element Collapse Rating: 150 psid (10 bar)
Flow Direction: Outside In
Element Nominal Dimensions: BB: 5.0" (125 mm) O.D. x 18.0" (460 mm) long
BL: 5.0" (125 mm) O.D. x 36.0" (920 mm) long

Metric dimensions in ( ).
Tank-Mounted Filter

Type Fluid | Appropriate Schroeder Media
--- | ---
Petroleum Based Fluids | All E media (cellulose) and Z-Media\textsuperscript{®} (synthetic)
High Water Content | All Z-Media\textsuperscript{®} (synthetic)
Invert Emulsions | 10 and 25 µ Z-Media\textsuperscript{®} (synthetic)
Water Glycols | 3, 5, 10 and 25 µ Z-Media\textsuperscript{®} (synthetic)
Phosphate Esters | All Z-Media\textsuperscript{®} (synthetic) with H (EPR) seal designation

Skydrol\textsuperscript{®} | 3, 5, 10 and 25 µ Z-Media\textsuperscript{®} (synthetic) with H.5 seal designation (EPR seals and stainless steel wire mesh in element, and light oil coating on housing exterior)

| Pressure | Element Series | Part No. | Element selections are predicated on the use of 150 SUS (32 cSt) petroleum based fluid and a 25 psi (1.7 bar) bypass valve (with check valve option).
--- | --- | --- | ---
Return Line Tank-Mounted | E Media | BB10 | BB10
| | | BB25 | BB25
| | Z-Media\textsuperscript{®} | BBZ/BLZ1 | BBZ1* | BLZ1
| | | BBZ/BLZ3 | BBZ3* | BLZ3
| | | BBZ/BLZ5 | BBZ5 / BLZ5
| | | BBZ/BLZ10 | BBZ10 / BLZ10
| | | BBZ/BLZ25 | BBZ25 / BLZ25

Flow

| gpm | (L/min) |
--- | --- |
0 | 0 |
100 | 400 |
150 | 600 |
200 | 800 |
250 | 1000 |
300 | 1150 |

Showed above are the elements most commonly used in this housing.

*Note: Additional per element flow is available up to 300 gpm when using BFT filter without check valve option.

See housing pressure drop graph below.

**Note:** Contact factory regarding use of E Media in High Water Content, Invert Emulsion and Water Glycol Applications. For more information, refer to Fluid Compatibility: Fire Resistant Fluids, pages 21 and 22.

**Fluid Compatibility**

<table>
<thead>
<tr>
<th>IRF</th>
<th>TF1</th>
<th>KF3</th>
<th>KL3</th>
<th>LF1-2&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAF1</td>
<td>MLF1</td>
<td>RLD</td>
<td>GRTB</td>
<td>MTA</td>
</tr>
<tr>
<td>MTB</td>
<td>ZT</td>
<td>KFT</td>
<td>RT</td>
<td>RTI</td>
</tr>
<tr>
<td>LRT</td>
<td>ART</td>
<td>BFT</td>
<td>QT</td>
<td>KTK</td>
</tr>
<tr>
<td>LTK</td>
<td>MRT</td>
<td>Accessory for Tank-Mounted Filters</td>
<td>PAF1</td>
<td>MF2</td>
</tr>
</tbody>
</table>

**Element Selection**

Based on Flow Rate

**Pressure Drop Information**

Based on Flow Rate and Viscosity

**Exercises:**

**Example:** Determine \( \Delta P \) at 160 gpm (600 L/min) for BFT1BBZ3PCY2 using 200 SUS (44 cSt) fluid.

**Solution:**

\[
\Delta P_{\text{housing}} = 2.5 \text{ psi}[0.20 \text{ bar}]
\]

\[
\Delta P_{\text{element}} = 160 \times 0.05 \times (200+150) = 10.7 \text{ psi}
\]

\[
\Delta P_{\text{total}} = 2.5 + 10.7 = 13.2 \text{ psi}
\]

\[
= [600 \times (0.05+54.9) \times (44+32)] = 8 \text{ bar}
\]

\[
\Delta P_{\text{total}} = 2.5 + 10.7 = 13.2 \text{ psi}
\]

\[
[0.20 + 0.8 = 1 \text{ bar}]
\]

\( \Delta P = \Delta P_{\text{housing}} + \Delta P_{\text{element}} \)

**Exercise:**

Determine \( \Delta P \) at 160 gpm (600 L/min)

for BFT1BBZ3PCY2 using 200 SUS (44 cSt) fluid.

**Solution:**

\[
\Delta P_{\text{housing}} = 2.5 \text{ psi}[0.20 \text{ bar}]
\]

\[
\Delta P_{\text{element}} = 160 \times 0.05 \times (200+150) = 10.7 \text{ psi}
\]

or

\[
= [600 \times (0.05+54.9) \times (44+32)] = 8 \text{ bar}
\]

\[
\Delta P_{\text{total}} = 2.5 + 10.7 = 13.2 \text{ psi}
\]

or

\[
= [0.20 + 0.8 = 1 \text{ bar}]
\]

sp gr = specific gravity

Sizing of elements should be based on element flow information provided in the Element Selection chart above.

**Notes**

| | |
--- | ---
| | |

**SCHROEDER INDUSTRIES 285**
# Tank-Mounted Filter

## How to Build a Valid Model Number for a Schroeder KF3:

<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>BFT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Example:** NOTE: Only box 10 may contain more than one option

<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>BFT</td>
<td>1</td>
<td>BB10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Y2</td>
<td>= BFT1BB10PY2</td>
</tr>
</tbody>
</table>

### Filter Series Number of Elements

<table>
<thead>
<tr>
<th>Element Size and Media</th>
<th>Seal Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>BB Length</td>
<td>Omit = Buna N</td>
</tr>
<tr>
<td>BB3 Length</td>
<td>H = EPR</td>
</tr>
<tr>
<td>BB10</td>
<td>W = Buna N</td>
</tr>
<tr>
<td>BB25</td>
<td>H.5 = Skydrol® compatibility</td>
</tr>
<tr>
<td>BBZ1 Length</td>
<td></td>
</tr>
<tr>
<td>BLZ1</td>
<td></td>
</tr>
<tr>
<td>BBZ3</td>
<td></td>
</tr>
<tr>
<td>BBZ5</td>
<td></td>
</tr>
<tr>
<td>BBZ10</td>
<td></td>
</tr>
<tr>
<td>BBZ25</td>
<td></td>
</tr>
<tr>
<td>BBZ5</td>
<td></td>
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<tr>
<td>BBZ25</td>
<td></td>
</tr>
<tr>
<td>BBDZ1</td>
<td></td>
</tr>
<tr>
<td>BBDZ3</td>
<td></td>
</tr>
<tr>
<td>BBDZ5</td>
<td></td>
</tr>
<tr>
<td>BBDZ10</td>
<td></td>
</tr>
<tr>
<td>BBDZ25</td>
<td></td>
</tr>
<tr>
<td>BBDZ5</td>
<td></td>
</tr>
</tbody>
</table>

### Porting

- P = 2⅛" NPTF
- PP = Dual 2⅛" NPTF
- S = SAE-32
- SS = Dual SAE-32
- F = 2⅛" SAE 4-bolt flange Code 61
- FF = Dual 2⅛" SAE 4-bolt flange Code 61

### Bypass Setting

- Omit = 25 psi cracking
- 40 = 40 psi cracking

### Outlet Porting

- Omit = 3" NPT male
- T = 13" Tube extension

### Optional Check Valve

- Omit = None
- C = Check valve

### Dirt Alarm® Options

- Visual
  - Y2 = Back-mounted tri-color gauge
  - Y2R = Back-mounted gauge mounted on opposite side of standard location
- Electrical
  - ES = Electric switch
  - ESR = Electric switch mounted on opposite side of standard location
  - ES1 = Heavy-duty electric switch with conduit connector
  - ES1R = Heavy-duty electric switch with conduit connector mounted on opposite side of standard location

### Additional Options

- Omit = None
  - GS47 = Two ¼" gauge ports
  - G1476 = Three-terminal electric switch
  - M = Metric thread for SAE 4-bolt flange mounting holes (specify after each port designation)
  - 40 = 40 psi bypass setting

**NOTES:**

- Box 3. Replacement element part numbers are identical to contents of Boxes 3 and 4. E media elements are only available with Buna N seals.
- Box 4. For options H, 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. Skydrol® is a registered trademark of Solutia Inc.
- Box 8. See also “Accessories for Tank-Mounted Filters,” page 307.