Top-Ported Pressure Filter

Features and Benefits
- Bi-directional version of the HS60 includes two housings plumbed in series, allowing for filtration in both directions
- 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
- Available with non-bypass option with high collapse element
- 6000 psi cyclic
- Contact factory for higher flow applications

Model No. of filters in photograph is MHS6013HZ3F24

Flow Rating: Up to 100 gpm (380 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 MHS60: 160 lbs. (72.6 kg)
Element Change Clearance: 4.0" (103 mm)
MHS60 Top-Ported Pressure 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></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>

**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>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

Metric dimensions in ( ).
### Top-Ported Pressure Filter

#### MHS60

<table>
<thead>
<tr>
<th>Type Fluid</th>
<th>Appropriate Schroeder Media</th>
</tr>
</thead>
<tbody>
<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>
</tbody>
</table>

#### Fluid Compatibility

- NF30
- NFS30
- YF30
- CFX30
- PLD
- DF40
- CF40
- PF40
- LC50
- RFS50
- RF60
- CF60
- CTF60
- VF60
- FW60
- LW60
- KF30
- TF50
- KF50
- KC50
- MKF50
- KC65
- NOF30-05
- NOF50
- FOF60-03
- NMF30
- RMF60

#### Element Selection Based on Flow Rate

<table>
<thead>
<tr>
<th>Pressure Series</th>
<th>Part No.</th>
<th>Element Selections</th>
</tr>
</thead>
<tbody>
<tr>
<td>Z-Media®</td>
<td>13HZ3</td>
<td>13HZ3</td>
</tr>
<tr>
<td></td>
<td>13HZ5</td>
<td>13HZ5</td>
</tr>
<tr>
<td></td>
<td>13HZ10</td>
<td>13HZ10</td>
</tr>
<tr>
<td></td>
<td>13HZ25</td>
<td>13HZ25</td>
</tr>
<tr>
<td>Z-Media® (High Collapse)</td>
<td>13HZX3</td>
<td>13HZX3</td>
</tr>
<tr>
<td></td>
<td>13HZX5</td>
<td>13HZX5</td>
</tr>
<tr>
<td></td>
<td>13HZX10</td>
<td>13HZX10</td>
</tr>
<tr>
<td></td>
<td>13HZX25</td>
<td>13HZX25</td>
</tr>
</tbody>
</table>

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

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

<table>
<thead>
<tr>
<th>Flow (L/min)</th>
<th>0</th>
<th>20</th>
<th>40</th>
<th>60</th>
<th>80</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flow gpm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| sp gr = specific gravity

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

\[
\Delta P_{\text{filter}} = \Delta P_{\text{housing}} + \Delta P_{\text{element}}
\]

**Exercise:**
Determine \( \Delta P \) at 85 gpm (320 L/min) for MHS60... using 141 SUS (30 cSt) fluid.

**Solution:**
- \( \Delta P_{\text{housing}} = 13.5 \text{ psi} (0.93 \text{ bar}) \)
- \( \Delta P_{\text{element}} = 85 \times 0.134 \times (141+141) = 11.39 \text{ psi} \)
  - or \( = [320 \times (0.134+54.9) \times (32+32) = .79 \text{ bar}] \)
- \( \Delta P_{\text{total}} = 13.5 + 11.39 = 24.89 \text{ psi} \)
  - or \( = [0.93 + .79 = 1.71 \text{ bar}] \)
# Top-Ported Pressure Filter

## How to Build a Valid Model Number for a Schroeder MHS60:

<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>Filter Series</td>
<td>Element Part Number</td>
<td>Seal Material</td>
<td>Dirt Alarm® Options</td>
<td></td>
</tr>
<tr>
<td>MHS60</td>
<td>13HZ3</td>
<td>Omit = Buna N</td>
<td>Omit = None</td>
<td></td>
</tr>
<tr>
<td>MHSN60 (Non-bypassing: requires ZX high collapse elements)</td>
<td>5 μ Excellement® Z-Media® (synthetic)</td>
<td>V = Viton®</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>10 μ Excellement® Z-Media® (synthetic)</td>
<td>H = EPR</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>15 μ Excellement® Z-Media® (synthetic)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3 μ Excellement® Z-Media® (high collapse center tube)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5 μ Excellement® Z-Media® (high collapse center tube)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>10 μ Excellement® Z-Media® (high collapse center tube)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>25 μ Excellement® Z-Media® (high collapse center tube)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Box 1
- **Filter Series**
  - MHS60
  - MHSN60 (Non-bypassing: requires ZX high collapse elements)

## Box 2
- **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 = 1 1/2” SAE 4-bolt flange Code 62
  - F32 = 2” SAE 4-bolt flange Code 62

## Box 5
- **Dirt Alarm® Options**
  - Omit = None
  - Visual
    - D13 = Visual pop-up
  - Electrical
    - MS55S = Electrical w/ 12 gauge 4-conductor cable
    - MS55SSL = Low current MS5
    - MS10SS = Electrical w/ DIN connector (male end only)
    - MS10SSL = Low current MS10
    - MS11SS = Electrical w/ 12 ft. 4-conductor wire
    - MS12SS = Electrical w/ 5 pin Brad Harrison connector (male end only)
    - MS12SSL = Low current MS12
    - MS16SS = Electrical w/ weather-packed sealed connector
    - MS16SSL = Low current MS16
    - MS17SSL = Electrical w/ 4 pin Brad Harrison male connector
  - Electrical with Thermal Lockout
    - MS55ST = MS5 (see above) w/ thermal lockout
    - MS55STL = Low current MS5T
    - MS10ST = MS10 (see above) w/ thermal lockout
    - MS10STL = Low current MS10T
    - MS12ST = MS12 (see above) w/ thermal lockout
    - MS12STL = Low current MS12T
    - MS16ST = MS16 (see above) w/ thermal lockout
    - MS16STL = Low current MS16T
    - MS17STL = Low current MS17T
  - Electrical Visual
    - MS13SS = Supplied w/ threaded connector & light
    - MS14SS = Supplied w/ 5 pin Brad Harrison connector & light (male end)
  - Electrical Visual with Thermal Lockout
    - MS13SSDT = MS13 (see above), direct current, w/ thermal lockout
    - MS13SSDCLT = Low current MS13DCT
    - MS14SSDT = MS14 (see above), direct current, w/ thermal lockout
    - MS14SSDCLT = Low current MS14DCT

**NOTES:**
- Box 1. MHS60 is two HS60’s plumbed in series facing one another to ensure filtration in both flow directions.
- 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.