Filters

DF, DFF & DFFX Series
Service and Parts

up to 528 gpm (2000 l/min), up to 6000 psi (420 bar)

1. Maintenance

1.1 General
Please follow the maintenance instructions.

1.2 Installation
Before installing the filter into the system, check that the operating pressure of the system does not exceed the permitted operating pressure of the filter. Refer to the type code label on the filter.

Important:
When using filters without bypass valve and at operating pressures above 290 psi (20 bar), high differential pressure-resistant filter elements of the type BH4HC should be used for safety reasons.

1.3 Commissioning
Check that the correct filter element is installed. Screw in bowl again fully and then unscrew by one quarter-turn (the sealing effect will not be improved by overtightening).

Switch on the hydraulic system and check filter for leakage.

Vent filter at an appropriate point in the system.

Under extreme conditions (e.g. cold start), bypass valves will allow a partial flow past the element for a short time.

1.4 Maintenance Tools

<table>
<thead>
<tr>
<th>Size</th>
<th>Wrench for filter bowl</th>
<th>Allen key for oil drain plug</th>
<th>Wrench for VD 0 A.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
<td>Hex 24</td>
<td>Hex 6&quot;</td>
<td>Hex 27</td>
</tr>
<tr>
<td>60-140</td>
<td>Hex 27</td>
<td>Hex 10&quot;</td>
<td>Hex 27</td>
</tr>
<tr>
<td>160-280</td>
<td>Hex 32</td>
<td>Hex 10&quot;</td>
<td>Hex 27</td>
</tr>
<tr>
<td>330-4000</td>
<td>Hex 36</td>
<td>Hex 10</td>
<td>Hex 27</td>
</tr>
</tbody>
</table>

*for SO184

1.5 Torque Values

<table>
<thead>
<tr>
<th>Type</th>
<th>Torque Nm(ft-lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>VD-clog ind</td>
<td>100 [74]</td>
</tr>
<tr>
<td></td>
<td>50 [37] (A, LE, LZ)</td>
</tr>
<tr>
<td>Oil Drain Plug</td>
<td>80 [59] – G½</td>
</tr>
<tr>
<td></td>
<td>30 [22] – G¼</td>
</tr>
<tr>
<td>Bowl/ Lid or end cover</td>
<td>Do not Torque</td>
</tr>
<tr>
<td></td>
<td>(See 1.3 and 2.2)</td>
</tr>
</tbody>
</table>

NOTE:
Contamination or incomplete pressure release on disassembly can lead to seizing of the bowl thread.

Filter elements which cannot be cleaned must be disposed of in accordance with environmental protection regulations.
### FILTER MAINTENANCE

#### 3. Spare Parts

**3.1 DF 30 – 660, 2000; DFF 60 – 660; DFFX 330 – 660 (One-piece bowl); DF top removable 330 – 660**

<table>
<thead>
<tr>
<th>Item</th>
<th>Consists</th>
<th>Description</th>
<th>30</th>
<th>60</th>
<th>110</th>
<th>140</th>
<th>160</th>
<th>240</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Filter element</td>
<td>See Point 4. Replacement elements</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.1</td>
<td>Filter element</td>
<td>0030 D...</td>
<td>0060 D...</td>
<td>0110 D...</td>
<td>0140 D...</td>
<td>0160 D...</td>
<td>0240 D...</td>
<td></td>
</tr>
<tr>
<td>1.2</td>
<td>O-ring</td>
<td>12.37 x 2.62</td>
<td>22 x 3</td>
<td>22 x 3</td>
<td>22 x 3</td>
<td>34 x 3</td>
<td>34 x 3</td>
<td></td>
</tr>
</tbody>
</table>

**2. Clogging indicator or indicator plug**

<table>
<thead>
<tr>
<th>Item</th>
<th>Consists</th>
<th>Description</th>
<th>30</th>
<th>60</th>
<th>110</th>
<th>140</th>
<th>160</th>
<th>240</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1</td>
<td>Screw plug</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.2</td>
<td>Profile seal ring</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.3</td>
<td>O-ring</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**3. Repair kit DF**

<table>
<thead>
<tr>
<th>Item</th>
<th>Consists</th>
<th>Description</th>
<th>280</th>
<th>330</th>
<th>500</th>
<th>660</th>
<th>2000</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1</td>
<td>Filter element</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.2</td>
<td>O-ring (bowl)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.3</td>
<td>Profile seal ring (indicator)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.4</td>
<td>O-ring (indicator)</td>
<td>15 x 1.5</td>
<td>15 x 1.5</td>
<td>15 x 1.5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.6</td>
<td>Oil drain plug</td>
<td>G 1/4</td>
<td>G 1/2</td>
<td>G 1/2</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*If present.  - O-Ring durometer can range from 70-80Sh. EPR Seal Kits available on request.
- Bowl assembly kits on request – kits include bowl with seals, drain plug (DF30-280 SO184, DF330-4000) and threaded pin (DF330-4000 2.0).
3.2 Spare Parts Drawing DF 660 – 1500, 3000, 4000; DFF 660 – 1500; DFFX 660 – 1320 (Two-piece bowl); DF top removable 660 – 1320

<table>
<thead>
<tr>
<th>Item</th>
<th>Consists</th>
<th>Description</th>
<th>660</th>
<th>990</th>
<th>1320</th>
<th>1500</th>
<th>3000</th>
<th>4000</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Filter element</td>
<td>See Point 4. Replacement elements</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.1</td>
<td>Filter element</td>
<td></td>
<td>0660 D...</td>
<td>0990 D...</td>
<td>1320 D...</td>
<td>1500 D...</td>
<td>3 x 0990D ...</td>
<td>3 x 1320 D...</td>
</tr>
<tr>
<td>1.2</td>
<td>O-ring</td>
<td></td>
<td>48 x 3</td>
<td>48 x 3</td>
<td>48 x 3</td>
<td>59.92 x 3.53</td>
<td>48 x 3</td>
<td>48 x 3</td>
</tr>
<tr>
<td>2.</td>
<td>Clogging indicator or indicator plug</td>
<td>See Point 5. Replacement clogging indicator</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.1</td>
<td>Indicator plug</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>00305932</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>00505931</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.2</td>
<td>Profile seal ring</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>VM...</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.3</td>
<td>O-ring</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>15 x 1.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Repair kit DF</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.1</td>
<td>Repair kit DF -V</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.2</td>
<td>O-ring (bowl)</td>
<td></td>
<td>117 x 4</td>
<td>132.72 x 5.33</td>
<td>117 x 4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.3</td>
<td>Back-up ring (bowl)</td>
<td></td>
<td>DF...330</td>
<td>DF1000</td>
<td>DF...330</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.4</td>
<td>Profile seal ring (indicator)</td>
<td>VM...</td>
<td>VM...</td>
<td>VM...</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.5</td>
<td>O-ring (indicator)</td>
<td></td>
<td>15 x 1.5</td>
<td>15 x 1.5</td>
<td>15 x 1.5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.6</td>
<td>Oil drain plug</td>
<td></td>
<td>G 1/2</td>
<td>G 1/2</td>
<td>G 1/2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.7</td>
<td>Threaded pin</td>
<td></td>
<td>M4 x 120</td>
<td>M4 x 135</td>
<td>M4 x 120</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*If present. - O-Ring durometer can range from 70-80Sh. EPR Seal Kits available on request.
- Bowl assembly kits on request – kits include bowl with seals, drain plug (DF30-280 SO184, DF330-4000) and threaded pin(DF330-4000 2.0).
FILTER MAINTENANCE

4. Replacement Element Model Code

Size

- 0030, 0060, 0110, 0160,
  0240, 0280, 0330, 0660, 1320

Filtration Rating (micron)

- 3, 5, 10, 20 = BH4HC
- 1, 3, 5, 10, 15, 20 = ON
- 25, 74, 149 = W/HC

Element Media

- BH4HC, ON, W/HC, V

Seals

- (omit) = Nitrile rubber (NBR) (standard)
- V = Fluorocarbon elastomer (FKM)
- EP = Ethylene propylene rubber (EPR)

Supplementary Details

- SO263 = Modification of ON, BH/HC & W/HC elements for Skydrol or HYJET phosphate ester fluids
- W = Modification of “V” elements for use with oil water emulsions (HFA) and water polymer solutions (HFC) usually polyglycol
- SFREE = Element specially designed to minimize electrostatic charge generation

5. Clogging Indicator Model Code

Indicator Prefix

- VD = G 1/2 6000 psi

Trip Pressure

- 2 = 29 psid (2 bar) (option)
- 5 = 72 psid (5 bar) (standard)

Optional 15 psid (1 bar) & 116 psid (8 bar) available upon request

Type of Indicator

- A = No indicator, plugged port
- B = Pop-up indicator (auto reset)
- BM = Pop-up indicator (manual reset)
- C = Electric switch – SPDT
- D = Electric switch and LED light – SPDT

Modification Number

- Supplementary Details

Seals
- (omit) = Nitrile rubber (NBR) (standard)
- V = Fluorocarbon elastomer (FKM)
- EP = Ethylene propylene rubber (EPR)

Light Voltage (D type indicators only)

- L24 = 24V
- L110 = 110V

Thermal Lockout (VM, VD types C, D, J, and J4 only)

- T100 = Lockout below 100°F

Underwriters Recognition (VM, VD types C, D, J, and J4 only)

- cRUas = Electrical Indicators with underwriter’s recognition

W = “VD…” indicator modified with a brass piston for use with High water based emulsions/solutions (HFA) & (HFC)

For additional details and options, see Section G - Clogging Indicators of the HYDAC Filter catalog.
6. Maintenance Instructions

6.1 User Instructions for Filters

- This pressure equipment must only be put into operation in conjunction with a machine or system.
- The pressure equipment must only be used as stipulated in the operating instructions of the machine or system.
- This pressure equipment must only be operated using hydraulic or lubricating fluid.
- It is the responsibility of the operator to comply with the water regulations of the country concerned.

CAUTION

- The user must take appropriate action (e.g. venting) to prevent the formation of air pockets.
- Repairs, maintenance work and commissioning must only be carried out by trained personnel.
- Allow the pressure equipment to cool before handling.
- The stipulations of the operating instructions of the machine or the system must be followed.
- Statutory accident prevention regulations, safety regulations and safety data sheets for fluids must be observed.
- Filter housing must be grounded.
- When working on, or in the vicinity of, hydraulic systems, open flames, sparks and smoking are forbidden.
- Hydraulic oils and water-polluting fluids must not be allowed to escape which can cause injury or scalding as a result of its high pressure or temperature.

DANGER!

- Caution: pressure equipment! Before any work is carried out on the pressure equipment, ensure the pressure chamber concerned (filter housing) is depressurized.
- On no account must any modifications (welding, drilling, opening by force...) be carried out on the pressure equipment.
- When using electrical clogging indicators, the electrical power supply to the system must be switched off before removing the clogging indicator connector.

6. Maintenance, General

This section describes maintenance work which must be carried out periodically. The operational safety and life expectancy of the filter, and whether it is ready for use, depend to a large extent on regular and careful maintenance.

6.3 Maintenance Measures

- Spare parts must fulfil the technical requirements specified by the manufacturer.
- This is always ensured when using original HYDAC spare parts.
- Keep tools, working area and equipment clean.
- After disassembling the filter, clean all parts, check for damage or wear and replace parts if necessary.
- When changing a filter element, a high level of cleanliness must be observed.

6.4 Interval Between Element Changes

In principle we recommend that the filter element is changed every 6 months or upon indication, whichever occurs first.

We recommend installing the filter with a clogging indicator (visual and/or electrical or electronic) to monitor the filter element.

If the clogging indicator responds, it is necessary to change or clean the filter element without delay (only W/HC and V elements can be cleaned).

When no clogging indicator has been installed, we recommend changing the elements at specific intervals. (The frequency of changing the filter elements depends on the filter design and the conditions under which the filter is operated). When filter elements are subject to high dynamic loading it may prove necessary to change them more frequently. The same applies when the hydraulic system is commissioned, repaired or when the oil is changed.

The standard clogging indicators only respond when fluid is flowing through the filter. With electrical indicators the signal can also be converted into a continuous display on the control panel. In this case the continuous display must be switched off during a cold start or after changing the element.

If the clogging indicator responds during a cold start only, it is possible that the element does not yet need to be changed.

Customer Information in respect of Machinery Directive 2006/42/EC

Hydraulic filters are defined as fluid power parts / components and are therefore excluded from the scope of the Machinery Directive, sections 1.4.1 - 1.4.3. They do not bear the CE mark.

Before using these components, ensure compliance with the specifications provided by HYDAC Technology Corporation. The specifications also contain information on the relevant essential health and safety requirements (based on Machinery Directive 2006/42/EC).

We hereby declare that the filters are intended to be incorporated into machinery within the terms of the Directive 2006/42/EC. It is prohibited to put the filters into service until the machinery as a whole is in conformity with the provisions of the Machinery Directive.

Service address

HYDAC Technology Corporation
Filter Division

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+1.610.266.0100

NOTE

The information in this brochure relates to the operating conditions and applications described.

For applications or operating conditions not described, please contact the relevant technical department.

Subject to technical modifications.
INTERNATIONAL

North America Locations

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