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 20 bar (290 psi), filter elements of the type BH/HC must 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*</td>
<td>Hex 27</td>
</tr>
<tr>
<td>60-140</td>
<td>Hex 27</td>
<td>Hex 10*</td>
<td>Hex 27</td>
</tr>
<tr>
<td>160-280</td>
<td>Hex 32</td>
<td>Hex 10*</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 in Nm [ft-lb]</th>
</tr>
</thead>
<tbody>
<tr>
<td>VD – clog ind</td>
<td>33 [24]</td>
</tr>
<tr>
<td>Oil Drain Plug</td>
<td>G1/2 - 52[38]</td>
</tr>
<tr>
<td></td>
<td>G1/4 - 19[14]</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>

2. Element Replacement

2.1 Element Removal
1. Switch off hydraulic system and release filter pressure.
2. Remove oil drain plug (if present). Drain oil into container.
3. Unscrew filter bowl (drain fluid into a suitable container and clean or dispose of it in accordance with environmental regulations).
4. Remove filter element from nozzle in filter head (check surface of element for contamination residue and larger particles; these can indicate damage to components).
5. Replace or clean filter element (only W/HC (wire screen) and V (metal fiber) elements can be cleaned).
6. Clean filter bowl and filter head; particular attention must be given to the threads.
7. Examine filter, especially sealing surfaces, for mechanical damage.
8. Check O-rings and replace parts if necessary.

2.2 Element Installation
1. Lubricate the sealing surfaces and thread on the filter head and bowl, as well as the O-ring, with clean operating fluid.
2. When installing a new filter element, check that the designation corresponds to that of the old element.
3. Place filter element carefully on to the nozzle.
4. Apply silver grade anti-seize (per Mil-PRF-907E) to threads.
5. Screw in filter bowl fully (metal to metal contact).
6. Screw in oil drain plug (if present).
7. Unscrew filter bowl by one quarter-turn.
8. Switch on hydraulic system and vent filter at a suitable point in the system.
9. Check filter for leakage.

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.
3. Spare Parts

3.1. LF 30 – 660; LFF 60 – 240

<table>
<thead>
<tr>
<th>Item</th>
<th>Consists</th>
<th>Description</th>
<th>LF 30</th>
<th>LF / LFF 60</th>
<th>LF / LFF 110</th>
<th>LF / LFF 160</th>
<th>LF / LFF 240</th>
<th>LF / LFF 280</th>
<th>LF 330</th>
<th>LF 660</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>
<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>0160 D...</td>
<td>024 D...</td>
<td>024 D...</td>
<td>0330 D...</td>
<td>0660 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>34 x 3</td>
<td>48 x 3</td>
<td>48 x 3</td>
<td></td>
<td></td>
<td></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>LF 30</th>
<th>LF / LFF 60</th>
<th>LF / LFF 110</th>
<th>LF / LFF 160</th>
<th>LF / LFF 240</th>
<th>LF / LFF 280</th>
<th>LF 330</th>
<th>LF 660</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1</td>
<td>Indicator plug</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>00305932</td>
<td>00305931</td>
</tr>
<tr>
<td>2.2</td>
<td>O-ring</td>
<td>12.37 x 2.62*</td>
<td>22 x 3</td>
<td>34 x 3</td>
<td>48 x 3</td>
<td>48 x 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3. Repair kit LF

<table>
<thead>
<tr>
<th>Item</th>
<th>Consists</th>
<th>Description</th>
<th>LF 30</th>
<th>LF / LFF 60</th>
<th>LF / LFF 110</th>
<th>LF / LFF 160</th>
<th>LF / LFF 240</th>
<th>LF / LFF 280</th>
<th>LF 330</th>
<th>LF 660</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1</td>
<td>O-ring (element)</td>
<td>12.37 x 2.62*</td>
<td>22 x 3</td>
<td>34 x 3</td>
<td>48 x 3</td>
<td>48 x 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.2</td>
<td>O-ring (bowl)</td>
<td>46 x 3</td>
<td>59 x 3</td>
<td>80 x 4</td>
<td>117 x 4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.3</td>
<td>Back-up ring (bowl)</td>
<td>DF...30</td>
<td>DF...60</td>
<td>DF...160</td>
<td>DF...330</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.4</td>
<td>Profile seal ring</td>
<td>VM...</td>
<td>VM...</td>
<td>VM...</td>
<td>VM...</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.5</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>15 x 1.5</td>
<td></td>
<td></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>G 1/2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4. Bowl Assembly

<table>
<thead>
<tr>
<th>Item</th>
<th>Consists</th>
<th>Description</th>
<th>LF 30</th>
<th>LF / LFF 60</th>
<th>LF / LFF 110</th>
<th>LF / LFF 160</th>
<th>LF / LFF 240</th>
<th>LF / LFF 280</th>
<th>LF 330</th>
<th>LF 660</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1</td>
<td>O-ring (bowl)</td>
<td>59 x 3</td>
<td>59 x 3</td>
<td>80 x 4</td>
<td>80 x 4</td>
<td>117 x 4</td>
<td>117 x 4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.2</td>
<td>Back-up ring (bowl)</td>
<td>LF...60</td>
<td>LF...110</td>
<td>LF...160</td>
<td>LF...240</td>
<td>LF...280</td>
<td>LF...330</td>
<td>LF...660</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 complete bowl with seals and plug (if present).

*(AS568A-112)
### 4. Replacement Element Model Code

**Size**
- 0030, 0060, 0110, 0160,
- 0240, 0280, 0330, 0660

**Filtration Rating** (micron)
- 1, 3, 5, 10, 15, 20 = ON
- 25, 74, 149 = W/HC
- 3, 5, 10, 20 = V

**Element Media**
- ON, BH4HC, W/HC, V

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

**Supplementary Details**
- SO263 = Modification of 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)
- SFREE = Element specially designed to minimize electrostatic charge generation

### 5. Clogging Indicator Model Code

**Indicator Prefix**
- VM = G 1/2 3000 psi

**Trip Pressure**
- 2 = 29 psid (2 bar) (optional)
- 5 = 72 psid (5 bar)

**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**
- Seal
  - (omit) = Nitrile rubber (NBR)
  - V = Fluorocarbon elastomer (FKM)
  - EPR = 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)
  - cRUus = Electrical Indicator with underwriter’s recognition

(For additional details and options, see Section G - Clogging Indicators of the HYDAC Filter catalog.)
FILTER MAINTENANCE

6. Maintenance Instructions

6.1 User Instructions for Filters

DANGER!

- 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 enter the soil or watercourses or sewer systems. Please ensure safe and environmentally friendly disposal of hydraulic oils. The relevant regulations in the country concerned with regard to ground water pollution, used oil and waste must be complied with.
- Whenever work is carried out on the filter, be prepared for hot oil to escape which can cause injury or scalding as a result of its high pressure or temperature.

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.
# North America Locations

## USA

### North America Headquarters
**HYDAC TECHNOLOGY CORPORATION**

- **Filter Division**
  - 2260 City Line Road
  - Bethlehem, PA 18017
  - +1.610.266.0100

- **System Division**
  - 1051 Airlie Parkway
  - Denver, CO 80237
  - +1.610.266.0100

- **Sales Office & Operations**
  - 510 Stonegate Drive
  - Katy, TX 77494
  - +1.281.579.8100

### Filter Division
**HYDAC TECHNOLOGY CORPORATION**

- **Process Filter Division**
  - 580 West Park Road
  - Leetsdale, PA 15056
  - +1.724.318.1100

- **Fuel Filtration Division**
  - 580 West Park Road
  - Leetsdale, PA 15056
  - +1.724.318.1100

### System Division
**HYDAC TECHNOLOGY CORPORATION**

- **Hydraulic Division – Compact Hydraulics**
  - 450 / 445 Windy Point Drive
  - Glendale Heights, IL 60139
  - +1.630.545.0800

- **Mobile Hydraulic Division**
  - 1660 Enterprise Parkway • Suite E
  - Wooster, OH 44691
  - +1.610.266.0100

### Cooling System Division
**HYDAC TECHNOLOGY CORPORATION**

- **Sales Office & Operations**
  - 510 Stonegate Drive
  - Katy, TX 77494
  - +1.281.579.8100

### Sales Office
**HYDAC CORPORATION**

- **SE Sales Office**
  - 1051 Airlie Parkway
  - Denver, CO 80237
  - +1.610.266.0100

## Canada

### Sales Office
**HYDAC CORPORATION**

- **Canada**
  - 14 Federal Road
  - Welland, Ontario, Canada L3B 3P2
  - +1.905.714.9322

### Sold by HYDAC CYLINDERS LLC

- **HYDAC CYLINDERS LLC**
  - 540 Carson Road North
  - Birmingham, AL 35217
  - +1.205.520.1220

## Mexico

### HYDAC INTERNATIONAL SA de CV

- **Mexico**
  - Calle Alfredo A Nobel No 35
  - Col Puente de Vistas
  - Tlahuapan, Edo Mexico
  - CP 54090
  - Mexico
  - +011.52.55.4777.1262

### HYDAC CORPORATION

- **Mexico**
  - 5160 75 Street NW
  - Edmonton, Alberta, Canada T6E 6W2
  - +1.780.484.4228

- **Sales Office**
  - Montclair, Quebec, Canada J2M 1K9
  - +1.877.539.3388