

This manual is effective for all filters of the type series

- HDD - EHD
- HDNL - Filter battery BHDD 901-1351
- HDN - Filter battery BHDNL 401
- MDD

and related specifications. It contains certain requirements and instructions which ensure unobjectionable operation of the filter. It can be completed with specific additional instructions by the operator himself if necessary. The pressure filters listed above are intended for the filtering of liquid media.

1. Safety instructions

- Prior to operating the filter, manual and maintenance instructions have to be read carefully.
- Follow the instructions of this manual under any circumstances!
- The manufacturer does not assume liability for any damage, which occurs due to the disregarding of these instructions.
- If operations are carried out differently, the safety of the pressurized device can not be assured!
- Operating conditions given in the data sheet, especially excess pressure and temperature range, have to be followed unconditionally. Variation of these parameters can cause damage to important pressure holding parts and sealing. Also take in consideration the compatibility of filter components with the operating fluid.
- Under working conditions the filter housing is pressurized. Do not try to loosen or remove any part of the filter or the filter housing during operation. The operating fluid could escape at high pressure and high temperatures.
- Leaking operating fluid always brings a danger of injuries and burns!
- Do not open the filter housing until you made sure that it is not pressurized any more!
- Touching parts of the filter may cause burning, depending on the operating temperature.
- When exchanging the filter keep in mind that it might have operating temperature. Danger of burning!
- Always wear safety goggles and gloves when working on the filter!
- If you come into contact with the operating fluid please follow the instructions of the fluid manufacturer!
- Only use original spare parts.

For filters being used in hazardous locations the INTERNORMEN documentation N° 41269 "Supplementation of the Operating Manual for the use of filters in potential explosive areas.

2. Installation

The filter is supplied and delivered ready to be installed. The filter has to be fitted according to the fitting position the corresponding data sheet on a flat vertical surface.

The fitting of the filter has to be carried out in the way that the least possible transmission of tensile forces on the filter housing is given.

Ensure upon assembling that

- no dirt and no impurities of foreign fluids penetrate the filter
- the connection for input and output are correctly connected to the pipe system
- the pipe system is connected with the filter; as stressfree as possible
- the extension to demount and the accessibility to the service elements is guaranteed

Filter with electrical respectively electronical clogging indicators have to be installed according to the unit specific conditions and according to the technical parameters of the corresponding data sheets.

3. Commissioning

Before commissioning the completeness of the filter (filter elements and seals) and the cleanness have to be controlled. Airbleeding of the controlled filter has to be carried out according to the following instructions:

- The positioning pin of the selector shaft has to be located in the middle position
- If screw fittings are present, connect a high pressure hose of type M16 to the outlets III and IV (V and VI for MDD, HDN, HDD 61-151) according to data sheet 1650, or connect a suitable air-bleed line to the G ¼ thread of the outlets III and IV (V and VI for MDD, HDN, HDD 61-151) after removing the sealing screws
- Connection of the unit volume flow (reduced volume flow; from 10 to 50 l/min) until bubble-free operating fluid flows out of both airbleeding tubes
- Disconnection of the unit volume flow
- Remove the airbleeding tubes and close the air-bleed bore holes or air-bleed connections (air-bleed connections according to data sheet 1651)
- Connection to the required filter side at the positioning pin of the selector shaft

The positioning pin of the selector shaft shows always in direction to the operating filter side. The airbleeding has to be done parallel at all filters in the case of paralleling filters.

4. Change of Element

The changing of the filter elements is necessary when reaching the unit specific pressure difference respectively reaching the maximum pressure difference given by the clogging indicator. If should is no unit specific definition, the change of the elements should be done at a maximum of $\Delta p = 6$ bar.

This has to be carried out as follows:

- Opening of the pressure balance valve
- Switching over the positioning pin from the operating side to the other side
- Closing the pressure balance valve
- At the serviced filter side the connection III or IV (V or VI for MDD, HDN, HDD 61-151) has to be opened by connecting a high pressure tube M16 according to sheet to data sheet 1650 or should be connected to a suitable air-bleed line if no screw fittings are present. A vessel should be held ready to catch the emerging fluid
- Should an air-bleed screw be present on the filter housing, or on the closing cap of the filter tube, open this and let out the system fluid
- Unscrew the filter housing or closing cap of the filter tube
- Remove the filter elements
- Clean the filter housing or closing cap of the filter tube
- Replace the new or the cleaned filter elements
- Screw the filter housing or filter tube closing cap back on and tighten it. (Torque = 70 Nm for NG 30, 80 Nm for NG 40-150 and NG 61-161, 120 Nm for NG 170-450 and NG 171-451, 140 Nm for NG 601-1351)
- Close up any outlets
- Airbleeding of the serviced filter side (see item 5)

Now, the serviced filter side is ready for operation.

In general take care of the absolute cleanness during the changing of elements. No dirt respectively no impurities should penetrate the filter. The new elements should be taken out of their packing shortly before they are replaced in the filter housings because of mechanical damage.

During the changing of the elements control the availability and quality of the seals. Damaged seals have to be replaced by new ones. As a matter of principle the elements in filter batteries have to be changed in all operating filters in a single operation. In the first instance all single filter have to be changed over to the opposite side. The next steps are the same as above.

5. Airbleeding of the Filter

The airbleeding of the filter during the change of elements is different to the airbleeding of commissioning. there is a airbleeding only at the filter side to be maintained. The airbleeding is done during the operation of the unit.

- Open outlet III or IV (V or VI for MDD, HDN, HDD 61-151) of the non-operational filter being serviced by connecting it to a high pressure hose of type M16, or any other suitable line
 - Open the pressure release valve until bubble-free fluid emerges from the high pressure hose, or attached line
- Repeat the procedure for filters HDD 601-1351, HDNL 401 and their corresponding filter banks, since these filters must be bled of air on the dirt side (outlet III) as well as on the clean side (outlet IV)
- After removing the air-bleed line close the pressure release valve

The serviced filter side is now air-bleeded and is ready for operation without air inside the unit.

In the case of paralleling filters the airbleeding has to be done as described above in on step for the whole filters.

6. Cleaning of the Filter Element

Filter elements with filter materials such as glass fibre (VG) or paper (P) are not cleanable. They have to be replaced after the dirt retention capacity has been reached. Filter elements with filter material such as wire mesh (G) are cleanable and could be used again.

The cleaning of the filter elements has to be done according to the cleaning specification for INTERNORMEN-Filter elements (metal), sheet-no. 21070-4 and 39448-4.

7. Pressure Difference Measuring

In case of filters installed with clogging indicators a permanent measuring of the pressure difference takes place. The indication corresponds to the kind of clogging indicators; either visual or visual-electrical respectively electronic.

Additionally the connections III and IV could be installed on the selector shaft to be used for external pressure gauges.

At paralleling filters there are additional measuring connections „IN“ and „OUT“ at the connecting block for measuring the pressure difference of the whole paralleling filters.

8. Service

The service will be performed by

INTERNORMEN Technology GmbH
Friedensstr. 41
D-68804 Altlussheim
Germany

phone: +49(0)6205-2094-0
fax: +49(0)6205-2094-40
e-mail: info@internormen.com
url: www.internormen.com

Special questions about the operation of the filter will also be answered within this area.

Spare parts respectively wearing parts have to be ordered according to the spare part list of the filter-data-sheet.