Ion eXchange Unit
IXU 1 Series
IXU 4 Series
Operating and Maintenance Instructions
English (translation of original instructions)
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Imprint

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Preface

For you, as the owner of a product manufactured by us, we have produced this manual, comprising the most important instructions for its operation and maintenance.

It is intended to help you become acquainted with the ins and outs of the product and use it properly.

You should keep it in the vicinity of the product so it is always at your fingertips.

Note that the information on the unit's engineering contained in the documentation was that available at the time of publication. Consequently, there might be deviations in technical details, illustrations and dimensions.

If you discover errors while reading the documentation or have suggestions or other useful information, please don't hesitate to contact us:

HYDAC FILTER SYSTEMS GMBH
Technische Dokumentation
Postfach 12 51
66273 Sulzbach / Saar
Germany

We look forward to receiving your input.

“Putting experience into practice”
Customer Service

If you have any questions, suggestions, or encounter any problems of a technical nature, please don't hesitate to contact us. When contacting us, please always include the model/type designation and article no. of the product:

Fax: +49 (0) 6897 / 509 - 846
E-mail: filtersystems@hydac.com

Modifications to the Product

We would like to point out that changes to the product (e.g. purchasing options, etc.) may result in the information in the operating instructions no longer being completely accurate or sufficient.

When making modifications or performing repair work to components affecting the safety of the product, the product may not be put back into operation until it has been examined and released by a HYDAC representative.

Please notify us immediately of any modifications made to the product whether by you or a third party.

Warranty

For the warranty provided by us, please refer to the General Terms of Sale and Delivery of HYDAC Filter Systems GmbH.

You'll find this under www.hydac.com -> Legal information
Using the documentation

Please note that the method described above of locating specific information does not release you from your responsibility for carefully reading the entire manual prior to starting the unit up for the first time and carefully rereading the manual at regular intervals later on.

WHAT do you want to know?
I determine which topic I am looking for.

WHERE can I find the information I'm looking for?
The document has a table of contents at the beginning. I select the chapter I'm looking for and the corresponding page number.

The documentation number with its index enables you to order another copy of the operating and maintenance instructions. The index is incremented every time the manual is revised or changed.
Safety Information and Instructions

These operating instructions contain the key instructions for properly and safely operating the Ion eXchange Unit IXU.

Obligations and Liability

The basic prerequisite for the safe and proper handling and operation of the IXU is knowledge of the safety instructions and warnings.

These Operating Instructions in general, and the safety precautions in particular, are to be adhered by all those who work with the IXU.

Please adhere to pertinent accident prevention regulations applicable at the site where the product is used.

The IXU has been designed and constructed in accordance with the current state of the art and recognized safety regulations. Nevertheless, hazard may be posed to the life and limb of the individual using the product or to third parties.

Only use the IXU for its designated use when it is in a safe, perfect condition.

Immediately remedy any malfunctions that might impair safety.

Our General Terms and Conditions apply. They are made available to the owner upon concluding purchase of the unit at the latest. Any and all warranty and liability claims for personal injuries and damage to property shall be excluded in the event they are attributable to one or more of the following causes:

Improper use of the IXU:
- Improper commissioning, operation and maintenance of the IXU
- Operating the IXU when the safety equipment is defective
- Modifications to the IXU made by the user or purchaser
- Improper monitoring of unit components that are subject to wear and tear
- Improperly performed repair work
Explanation of Symbols and Warnings, etc.

The following designations and symbols are used in these operating instructions to designate hazards, etc.

- **DANGER**
  - Denotes situations which can lead to death if safety precautions are not observed.

- **WARNING**
  - Denotes situations which can lead to death if safety precautions are not observed.

- **CAUTION**
  - Denotes situations which can lead to severe injuries if safety precautions are not observed.

- **NOTICE**
  - Denotes situations which can lead to property damage if safety precautions are not observed.

General Safety Precautions

Operation, adjustment and calibration work may only be carried out by technically skilled and trained personnel.

The safe operation of this unit can only be ensured if it is used for the purpose it was intended. If there is any question about the use, please contact the manufacturer. The manufacturer will not accept responsibility for damages resulting from misuse of this equipment.

The following applies to all work performed using the unit: adherence to pertinent national regulations pertaining to accident prevention and safety at the workplace in addition to any applicable internal rules and regulations of the owner/operator, even though they are not specifically cited herein.

Leaks of dangerous materials must be properly collected and disposed of so as not to harm any persons or the environment. The corresponding statutory regulations are to be followed.

Before beginning any work, you must depressurize the unit.
## Proper/Designated Use

The IXU was developed to remove aggressive acids from flame-resistant hydraulic fluids on a phosphate ester basis (HFD-R).

Any other use shall be deemed to be improper and not in keeping with the product's designated use. The manufacturer will not assume any liability for any damage resulting from such use.

Proper or designated use of the product extends to the following:
- Observing all the notes contained in these operating instructions.
- Performing requisite inspection and maintenance work.

## Improper Use

Improper use will result in hazard to life and limb.

Examples of improper use include:
- Operation with non-approved fluids.

## Safety Devices

Before commissioning, check all safety devices for proper functioning.

Safety devices may not be removed until the product has been shut down and secured against being restarted (e.g. warning sign or padlock on the main switch).

When the product is supplied in partial consignments, the safety devices are to be applied by the operator as specified by law/pertinent regulations.
Informal Safety Precautions

Always keep the operating and maintenance instructions near the IXU.
Apart from the operating instructions, any and all general and local regulations pertaining to accident prevention and environmental protection are to be made available and observance to be maintained to them.
Make sure to keep the safety and hazard symbols and warnings on the IXU in a legible condition and replace these if necessary.
Check the hoses and connectors for leaks on a daily basis. Check the electrical equipment on a monthly basis. Replace any loose or faulty connections or damaged cables immediately.

WARNING

Operating pressure
Danger of bodily injury

► The hydraulic system must be depressurized before performing any work on the hydraulic system
Training and Instruction of Personnel

The IXU may be operated only by properly trained and instructed personnel.

The areas of responsibility of your staff must be established in a clear-cut manner.

Staff undergoing training may not use the IXU unless supervised by an experienced staff member.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Individuals undergoing training</th>
<th>Individuals with technical training/engineering background</th>
<th>Electrician</th>
<th>Supervisor with the appropriate authority</th>
</tr>
</thead>
<tbody>
<tr>
<td>Packing / transportation</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Start up</td>
<td></td>
<td>X X X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operation</td>
<td>X</td>
<td>X X X</td>
<td></td>
<td>X X X</td>
</tr>
<tr>
<td>Troubleshooting/locating the source of malfunction</td>
<td></td>
<td>X X X</td>
<td></td>
<td>X X X</td>
</tr>
<tr>
<td>Remedying of mechanical faults</td>
<td></td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Remedying of electrical faults</td>
<td></td>
<td>X</td>
<td></td>
<td>X X X</td>
</tr>
<tr>
<td>Maintenance</td>
<td>X</td>
<td>X X X</td>
<td></td>
<td>X X X</td>
</tr>
<tr>
<td>Repair work</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Decommissioning / Storage</td>
<td>X</td>
<td>X X X</td>
<td></td>
<td>X X X</td>
</tr>
</tbody>
</table>
Electrical Hazards

DANGER

Electric shock

Danger of fatal injury

► Any work involving the power supply may only be done by a properly trained, certified electrician.

► Pull the power plug before performing work on live parts.

Any work involving the power supply may only be done by a properly trained, certified electrician.

Check the IXU electrical equipment on a monthly basis. Replace any loose connections, damaged cables and hoses immediately with original parts.

Modifications to the lOneXchangeUnit IXU

Do not make any modifications (design modifications, extensions) to the IXU without the prior consent of the manufacturer.

Any modifications require written permission from HYDAC Filter Systems GmbH

Immediately replace any machine components which are not in perfect condition.

Only use original spare parts and consumables.

What to Do in Case of Emergency

In the event of an emergency, immediately disconnect the IXU from the power supply.
Transporting the IXU

Evacuate the IXU completely before transporting it and close the inlets and outlets. Wind the suction and pressure hose and the connection cable around the holders provided for this purpose and fasten them in place.

**NOTICE**

Using components for pushing / pulling

The IXU will be damaged

- Never use the components to push or pull the IXU.
- Use the grips provided for shifting.

Shift the IXU manually using the rollers. When doing so, use only the grips provided on the IXU chassis.

Before shifting the unit, make sure to release the hand brake on the swivel casters. Once the IXU is in its new position, actuate the hand brake on the swivel casters.
Crane

**NOTICE**

**Unsuitable lifting accessories**

The IXU will be damaged / Components will be damaged / destroyed

► Use only suitable lifting accessories to raise or lash the IXU.

► Take care to ensure that the lifting accessories do not cause any pressures to be brought to bear against the components on the IXU.

When transporting by crane, only use suitable lifting accessories/band loops.

IXU 1 stationary

IXU mobile
Train/truck

For transport by rail or truck, supports must be placed under the IXU 4 to such an extent that the rollers are subjected to no load pressure. The IXU is to be secured with suitable belts.
Checking the scope of delivery

Upon receiving the IXU check it for any damage. The IXU may not be set up and installed unless it is in perfect order. Any damage in transit is to be reported to the forwarding agent or the department in charge immediately; the unit may not be commissioned until this damage is properly remedied.

The following items are supplied:

<table>
<thead>
<tr>
<th>Qty.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ion eXchange Unit</td>
</tr>
<tr>
<td>1</td>
<td>Operation and Maintenance Instructions (this document)</td>
</tr>
<tr>
<td>1</td>
<td>EC declaration of conformity</td>
</tr>
<tr>
<td>1</td>
<td>Test certificate</td>
</tr>
</tbody>
</table>
**IXU features**

The ion exchange unit IXU was developed and constructed to remove aggressive acids from flame-resistant hydraulic fluids on a phosphate ester basis (HFD-R).

The oil aging for HFD-R fluids is based on hydrolysis. Aggressive acids are produced as a decomposition product.

Special resins effectively reduce the number of acids and amount of metal soaps. We additionally recommend continuous dewatering, for example using a FluidAqua Mobil - FAM.

![Graph](image)

The advantages of the IXU are:
- inexpensive oil conditioning
- low component wear
- longer service life of the oil
- quick and easy cartridge change
- low operating costs
- compact construction, less space requirement
- low disposal costs
- version with optional filling pump
- with prefilter and safety filter
Components - IXU 1 stationary

The IXU 1 stationary has the following components:

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Motor pump assembly</td>
<td>DRAIN</td>
</tr>
<tr>
<td>2</td>
<td>Prefilter</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Ion exchange column</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Emptying</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Safety filter</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>On/Off switch with motor protection</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>INLET</td>
<td>IN</td>
</tr>
<tr>
<td>12</td>
<td>OUTLET</td>
<td>OUT</td>
</tr>
<tr>
<td>13</td>
<td>Ion exchange column pressure gauge</td>
<td>BLEED</td>
</tr>
<tr>
<td>14</td>
<td>Ion exchange column air vent</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Prefilter/Safety filter air vent</td>
<td>BLEED</td>
</tr>
</tbody>
</table>

The image shows a diagram with labeled components corresponding to the table.
Dimensions - IXU 1 stationary

(All dimensions in mm)
Components - IXU 1 mobile

The IXU 1 mobile has the following components:

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Motor pump assembly</td>
</tr>
<tr>
<td>2</td>
<td>Prefilter</td>
</tr>
<tr>
<td>3</td>
<td>Ion exchange column</td>
</tr>
<tr>
<td>4</td>
<td>Emptying</td>
</tr>
<tr>
<td>5</td>
<td>Safety filter</td>
</tr>
<tr>
<td>6</td>
<td>On/Off switch with motor protection</td>
</tr>
<tr>
<td>10</td>
<td>Chassis</td>
</tr>
<tr>
<td>11</td>
<td>INLET</td>
</tr>
<tr>
<td>12</td>
<td>OUTLET</td>
</tr>
<tr>
<td>13</td>
<td>Ion exchange column pressure gauge</td>
</tr>
<tr>
<td>14</td>
<td>Ion exchange column air vent</td>
</tr>
<tr>
<td>15</td>
<td>Prefilter/Safety filter air vent</td>
</tr>
<tr>
<td>18</td>
<td>Sliding grip</td>
</tr>
</tbody>
</table>

DRAIN
IN
OUT
BLEED
BLEED
Dimensions - IXU 1 mobile

(All dimensions in mm)
## Components - IXU 4 stationary

The IXU 4 stationary has the following components:

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Motor pump assembly</td>
</tr>
<tr>
<td>2</td>
<td>Prefilter</td>
</tr>
<tr>
<td>3</td>
<td>Ion exchange column</td>
</tr>
<tr>
<td>4</td>
<td>Emptying</td>
</tr>
<tr>
<td>5</td>
<td>Safety filter</td>
</tr>
<tr>
<td>6</td>
<td>On/Off switch with motor protection</td>
</tr>
<tr>
<td>10</td>
<td>Base support</td>
</tr>
<tr>
<td>11</td>
<td>INLET</td>
</tr>
<tr>
<td>12</td>
<td>OUTLET</td>
</tr>
<tr>
<td>13</td>
<td>Ion exchange column pressure gauge</td>
</tr>
<tr>
<td>14</td>
<td>Ion exchange column air vent</td>
</tr>
<tr>
<td>15</td>
<td>Prefilter/Safety filter air vent</td>
</tr>
<tr>
<td>17</td>
<td>Foot</td>
</tr>
<tr>
<td>18</td>
<td>Sliding grip</td>
</tr>
<tr>
<td>19</td>
<td>Hose/Cable holder</td>
</tr>
</tbody>
</table>

![Diagram of IXU 4 stationary components]
Dimensions - IXU 4 stationary

(All dimensions in mm)
Components - IXU 4 mobile

The IXU 4 mobile has the following components:

![Diagram of IXU 4 mobile components]

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Motor pump assembly</td>
</tr>
<tr>
<td>2</td>
<td>Prefilter</td>
</tr>
<tr>
<td>3</td>
<td>Ion exchange column</td>
</tr>
<tr>
<td>4</td>
<td>Emptying</td>
</tr>
<tr>
<td>5</td>
<td>Safety filter</td>
</tr>
<tr>
<td>6</td>
<td>On/Off switch with motor protection</td>
</tr>
<tr>
<td>10</td>
<td>Chassis</td>
</tr>
<tr>
<td>11</td>
<td>INLET</td>
</tr>
<tr>
<td>12</td>
<td>OUTLET</td>
</tr>
<tr>
<td>13</td>
<td>Ion exchange column pressure gauge</td>
</tr>
<tr>
<td>14</td>
<td>Ion exchange column air vent</td>
</tr>
<tr>
<td>15</td>
<td>Prefilter/Safety filter air vent</td>
</tr>
<tr>
<td>16</td>
<td>Wheels</td>
</tr>
<tr>
<td>17</td>
<td>Swivel caster with brake</td>
</tr>
<tr>
<td>18</td>
<td>Sliding grip</td>
</tr>
<tr>
<td>19</td>
<td>Hose/Cable holder</td>
</tr>
</tbody>
</table>
Dimensions - IXU 4 mobile

(All dimensions in mm)
Hydraulic diagram

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Motor pump assembly</td>
</tr>
<tr>
<td>2</td>
<td>Prefilter</td>
</tr>
<tr>
<td>3</td>
<td>Ion exchange column</td>
</tr>
<tr>
<td>4</td>
<td>Emptying</td>
</tr>
<tr>
<td>5</td>
<td>Safety filter</td>
</tr>
<tr>
<td>6</td>
<td>On/Off switch with motor protection</td>
</tr>
<tr>
<td>11</td>
<td>INLET</td>
</tr>
<tr>
<td>12</td>
<td>OUTLET</td>
</tr>
</tbody>
</table>

DRAIN

IN

OUT
Using the IXU

The IXU is connected with bypass flow to an existing tank. The ion exchange elements flow through at a precisely determined flow rate and cross-flow speed. During this flow-through, the acids in the fluid are removed. This way, you can improve the oil quality by reducing the neutralization value.

Dimensioning size:

<table>
<thead>
<tr>
<th>Model</th>
<th>Tank volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>IXU 1</td>
<td>&lt; 3,500 liters</td>
</tr>
<tr>
<td>IXU 4</td>
<td>3,500 ... 15,000 liters</td>
</tr>
</tbody>
</table>

Restrictions pertaining to use

**NOTICE**

Unpermitted operating media

The IXU will be damaged

► Use the IXU only in connection with fluids of type HFD-R, flame-resistant hydraulic fluids on a phosphate ester basis.
IXU setup and connection

Observe the following points when setting up the unit:
- Set up the unit horizontally on a level surface. Special mounting is not required.
  Mobile IXU: Activate the hand brake on the swivel casters or secure the unit against rolling away.
- Install the IXU in the immediate vicinity of the tank to be cleaned.
- Observe the ambient temperature range of: 10-50°C
- Make sure that access to the main switch is unimpeded at all times
- Observe that a minimum clearance of 0.8 m must remain free to the right and left of the unit to allow unimpeded access for performing servicing work.

Hydraulic connection of the IXU

Notes on Piping / Hosing

<table>
<thead>
<tr>
<th>NOTICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-permitted pressure at the inlet IN / outlet OUT</td>
</tr>
<tr>
<td>Risk of malfunctions</td>
</tr>
<tr>
<td>► Determine the pressure to be anticipated at the inlet / outlet with the prescribed values.</td>
</tr>
</tbody>
</table>

Make sure that the cross-section of the connected hoses/piping is at least as large as the cross-section of the inlet/outlet port sizes.

In order to keep the pressure loss as low as possible, use few threaded connections.

The pressure differential in a hydraulic line ($\Delta P_{\text{line}}$) depends on the following:
- Flow rate
- Kinematics viscosity
- Pipe dimensions
- Fluid density
The pressure loss in straight pipes ($\Delta P_{\text{line}}$) can be calculated as follows:

$$\Delta p \sim 6.8 \times \frac{L}{d^4} \times Q \times V \times D$$

<table>
<thead>
<tr>
<th>$\Delta p$</th>
<th>Pressure differential in [bar]</th>
</tr>
</thead>
<tbody>
<tr>
<td>$L$</td>
<td>pipe length [m]</td>
</tr>
<tr>
<td>$d$</td>
<td>internal pipe diameter [mm]</td>
</tr>
<tr>
<td>$Q$</td>
<td>Flow rate [l/min]</td>
</tr>
<tr>
<td>$V$</td>
<td>Kinematic viscosity [mm²/s]</td>
</tr>
<tr>
<td>$D$</td>
<td>Density [kg/dm³]</td>
</tr>
</tbody>
</table>

HFD-R oil $\sim 1.14$ kg/dm³.

Additional threaded connections and pipe bends increase the pressure differential and must be taken into account.

Keep the height difference between the IXU and the oil level in the tank as small as possible.

Avoid constrictions in the connected hoses. They compromise output and increase the risk of cavitation.

Make sure that no tension or vibrations are carried over to the pump or filter housing when the pipes are connected. Use hoses or expansion joints if necessary.
Connecting the inlet (IN)

**NOTICE**

**Contamination too high**

The IXU will be damaged

- Do not prime directly at the bottom of the tank
- Do not prime in the sump
- Never prime without a built-in suction screen

The greatest contamination is found on the bottom of the tank. All impurities and other particles are deposited on the bottom of the tank.

The suction pressure at the IXU inlet must be in the range of -0.2 - 1 bar.

Use a negative pressure-resistant, flexible hose or a pipe for the suction-side connection.

Make sure that the cross-section of the connected hoses/piping is at least as large as the cross-section of the inlet/outlet port sizes.

The shape of the tank connection should be set up in such a way that it will always be lower than the level of the oil in the tank.

Install a shut-off valve on the suction side of the tank.
Connect outlet (OUT)

Make sure that the maximum pressure of 2 bar is not exceeded at the outlet.

<table>
<thead>
<tr>
<th>NOTICE</th>
</tr>
</thead>
</table>

**OUT connection closed off**

The IXU will be destroyed

- Check to be sure that all of the locking fixtures at the outlet are in "open" position each time before start-up.

To prevent air from entering the medium, make sure that the pressure hose with lance is always below the oil level in operation.

Install the return port connection depressurized (max. 0.2 bar).

Use pressure hoses that are suitable for a pressure of at least 10 bar.
Electrical connection of the IXU

DANGER

Electric shock

Danger of fatal injury

► Any work involving the electrical system may only be done by a properly trained, certified electrician.

The voltage and frequency indicated on the type label must coincide with the voltage supply present.

If a plug is present on the IXU or if a plug is mounted, then the IXU is to be operated from a correspondingly fused socket.

Switch the pump on and off briefly to check the direction of rotation (jog mode). In the event of incorrect direction of rotation, reverse the polarity of two phases. When viewing from the motor-fan side, the direction of rotation is to the right, in clockwise direction.

The rotating field of the connection socket must be clockwise. If this is not the case, then the phases can be rotated in the 16A / 32 A connection plug with the aid of the phase changing switch in the plug. For the 63A version, the two phases must be switched on the terminal block S0 (e.g. L1 and L2).
Depending on the voltage supply, the motor has to have a Y or delta connection (see type label on the motor).

**Star (Y-) connection**

**Delta connection**

---

**Inserting IXE element / prefilter and safety filter element**

The IXU is delivered with no IXE element or prefilter and safety filter element installed.

Before commissioning, check that all IXE elements and prefilter and safety filter elements are inserted. To do so, proceed as described on the pages:

- Changing IXE elements Page 39
- Changing the prefilter / safety filter element Page 42
Switching the IXU on and off

Switch the IXU on or off at the on/off switch.

After switching on the motor, monitor the suction action of the pump through the suction hose.

If the unit is not feeding medium after a maximum of 5 minutes of operation, switch it off.

Switch the motor off and fill the unit using the suction hose.

Switch the unit on again and monitor the suction action.

Always monitor the ion exchange column's pressure gauge when in operation as well as the contamination indicator on the prefilter and safety filter so as to know when to replace used filter elements in good time.
Bleeding the ion exchange column

**WARNING**

Hot fluid
Risk of burns

▶ Make sure that hot fluid can exit when bleeding.

Bleed the ion exchange column through the air bleed screw (1) in the cover.
Do not unscrew the air bleed screw (1) completely. It has ventilation slits.
If fluid leaks out, tighten the air bleed screw (1) again.

Bleed the housing every time you change or empty or change the element.

Bleeding the prefilter and safety filter

To bleed, carefully open the air bleed screw (Air Bleed) on the filter housing cover.
If fluid leaks out, tighten the air bleed screw (Air Bleed) again.
Performing Maintenance

The safety of all persons coming into contact with the IXU and the availability of the unit for use are extremely dependent on service and maintenance.

**WARNING**

Hydraulic system is under pressure

Danger of bodily injury

- The hydraulic system must be depressurized before performing any work on it.
- Close all shut-off devices from and to the IXU.
- Switch off the main switch on the IXU
- Pull power plug.
Depressurizing

Carry out the depressurization first via the air bleed screw (1). Then open the drain ball valve (2) and collect the escaping fluid with a suitable container.

The visual back-pressure indicator shows the pressure in the housing.

Do not open the housing until you have depressurized it and the pressure gauge shows no pressure.
Changing IXE elements

Monitor the wear and tear of the IXE element via the neutralization count in the laboratory. If the neutralization count increases, change the IXE elements immediately. We recommend a replacement cycle of six months.

There may still be fluid in the filter bowl depending on the type of connections to the unit. Let this fluid out via the lower ball valve (DRAIN).

1. Switch off the IXU at the main switch.
2. Close all shut-off devices at the inlet (IN) and outlet (OUT).
3. Empty the IXE housing completely via the drain ball valve (DRAIN).
4. Loosen the four screws on the cover counterclockwise.

5. Fold the screws down and press them against the ion exchange column.
   This pushes the cover of the ion exchange column up.

6. Take the cover off and remove the IXE element.
7. Clean the inside of the housing from coarse dirt as well as the sealing surfaces on the housing and the cover.

8. For easier installation, wet the O-ring on the IXE element with the operating medium.

   Wear protective gloves when doing so.

9. Put the new IXE element in the housing.

   Do not use excessive force or a hammer, etc.

10. Check the O-ring on the cover for damage and replace it if necessary.

    Lightly wet the O-ring on the cover with medium.

11. Put the cover on.

    Observe correct placement of the O-ring on the cover while doing so. It must not be damaged.
12. Fold the four screws up and turn them clockwise evenly crosswise.

13. Close the drain valve.

14. Switch on the unit at the main switch.

15. Bleed the housing through the air bleed screw in the cover.
   Do not unscrew the air bleed screw completely. It has ventilation slits.
   Check the unit for any leaks.

16. The ion exchange column is ready for operation.
Changing the prefilter / safety filter element

Change the filter element when the visual differential pressure gauge is red.

The bayonet mount on the filter element makes changing the filter element easier. Rotate the filter element 90° clockwise or counterclockwise to separate it from the element receptacle.

1. Switch off the system, make sure that no operating fluid can flow out of the lines into the OLF-5, and make sure that the unit cannot be switched on again during maintenance.

   Depressurize the filter housing.

   To accomplish this, carefully open the drain screw (Air Bleed) on the filter housing cover.

   Be careful when the operating medium flows out

2. Put a suitable container in place to catch the medium in the filter housing.

   The volume is ~ 3 liters.

   Empty the filter housing through the drain screw (Drain) on the connection part.

   Note that without the proper drainage equipment, the draining fluid can flow down to the electric motor.

3. Remove the tensioning clamp on the filter housing cover by completely removing the nut.

   Remove the tensioning clamp.
4. Carefully pull the filter housing cover up and off. 
   Turn it slightly clockwise. This ensures that the filter element remains locked on the cover. 
   - Turn counterclockwise to detach the element from the cover and the dirt catch tray from the element.

5. Remove the dirt catch tray.

6. Remove the filter element from the filter housing cover. 
   Dispose of the old filter element according to local regulations and guidelines.

7. Clean the removed parts and examine them for any possible damage. 
   Check the O-ring on the filter bowl cover for damage. Replace it if necessary. 
   Moisten the O-rings on the filter bowl cover and on the new filter element with operating fluid. 
   Never use grease or other media.

8. Now place the filter bowl cover on the new filter element and lock it in the bayonet mount.
9. Attach the dirt catch tray to the lower end of the filter element and lock it in place by turning it 90° counterclockwise.

10. Place the filter element with the cover and dirt catching tray in the filter housing.

11. Install the tensioning clamps.
   Observe the tightening torque of max. 5 Nm.

12. Tighten the drain screw (Drain) on the connection part of the unit.
   Switch the unit on.
   Bleed the filter bowl through the air bleed screw (Air Bleed) in the cover.

13. The prefilter/safety filter is ready for operation.
Cleaning the suction screen in the lance

NOTICE

Operating without a suction screen

The unit will be destroyed

► Never operate the unit without a suction screen.
► Clean the suction screen regularly

To protect the pump from coarse contamination or foreign bodies, a suction screen is installed in the suction lance. Clean the suction strainer at regular maintenance intervals.

Check/Clean the suction strainer immediately in the event of insufficient suction or delivery action.

Clean the suction strainer by washing it out or by blowing it out with compressed air.

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Hose</td>
</tr>
<tr>
<td>2</td>
<td>Suction lance</td>
</tr>
<tr>
<td>3</td>
<td>O-ring</td>
</tr>
<tr>
<td>4</td>
<td>Suction strainer</td>
</tr>
<tr>
<td>5</td>
<td>Protection pipe</td>
</tr>
<tr>
<td>6</td>
<td>Suction screen set</td>
</tr>
</tbody>
</table>
Decommissioning/Storing the IXU

Drain the unit completely before putting it into storage.
Pull power plug. Wrap up the power cord and fasten it securely on the unit.
Store the unit in a clean, dry environment.
The storage temperature range is: 0 - 60°C.

Disposing of the IXU

Dispose of the packaging material in an environmentally-friendly manner.
After dismantling the unit and separating the various materials, dispose of the unit in an environmentally friendly manner.

Disposing of IXE elements

Dispose of the IXE elements in an environmentally-friendly manner.
Disposal information can be found in the safety data sheet of the IXE element.
### Spare Parts List

<table>
<thead>
<tr>
<th>Designation</th>
<th>Part no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suction screen set for suction lance</td>
<td>349759</td>
</tr>
<tr>
<td>Suction screen 250 µm for suction lance</td>
<td>380385</td>
</tr>
<tr>
<td>O-ring for prefilter cover</td>
<td>FKM</td>
</tr>
<tr>
<td>O-ring for the IXU housing cover</td>
<td>FKM</td>
</tr>
</tbody>
</table>

### Ion eXchange housing

<table>
<thead>
<tr>
<th>Designation</th>
<th>Part no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>IXE 200 (removes acids and metal soaps)</td>
<td>FKM 3348961</td>
</tr>
<tr>
<td>IXE 200 (removes acids and metal soaps)</td>
<td>EPDM 3554752</td>
</tr>
<tr>
<td>IXE 200 D</td>
<td>FKM 3560654</td>
</tr>
<tr>
<td>IXE 210</td>
<td>FKM 3416370</td>
</tr>
<tr>
<td>IXE 220 (removes acids)</td>
<td>FKM 3464744</td>
</tr>
<tr>
<td>IXE 220 (removes acids)</td>
<td>EPDM 3554713</td>
</tr>
<tr>
<td>IXE 250</td>
<td>FKM 3559516</td>
</tr>
<tr>
<td>IXE 400</td>
<td>FKM 3561180</td>
</tr>
<tr>
<td>IXE 420</td>
<td>FKM 3483089</td>
</tr>
<tr>
<td>IXE 430</td>
<td>FKM 3494088</td>
</tr>
<tr>
<td>IXE 460</td>
<td>FKM 3532456</td>
</tr>
</tbody>
</table>

### Filter element for prefilter and contamination filter

<table>
<thead>
<tr>
<th>Designation</th>
<th>Part no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Filter element, 5 µm</td>
<td>N5DM005 3068101</td>
</tr>
<tr>
<td>Filter element, 10 µm</td>
<td>N5DM010 3102924</td>
</tr>
</tbody>
</table>
## Specifications

<table>
<thead>
<tr>
<th>Hydraulic data</th>
<th>IXU 1</th>
<th>IXU 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Terminal value neutralization number</td>
<td>&lt; 0.1 mg KOH / g</td>
<td>&lt; 0.1 mg KOH / g</td>
</tr>
<tr>
<td>Use typically</td>
<td>possible up to a maximum</td>
<td>possible up to a maximum</td>
</tr>
<tr>
<td></td>
<td>TAN 1 mg KOH / g oil</td>
<td>TAN 1 mg KOH / g oil</td>
</tr>
<tr>
<td>Flow rate</td>
<td>~ 2.2 l/min</td>
<td>~ 8.9 l/min</td>
</tr>
<tr>
<td>Permitted fluid temperature range</td>
<td>30 … 60 °C / 86 … 140 °F</td>
<td>30 … 60 °C / 86 … 140 °F</td>
</tr>
<tr>
<td>Operating pressure max.</td>
<td>8 bar / 116 psi</td>
<td>8 bar / 116 psi</td>
</tr>
<tr>
<td>Permissible suction pressure (pump)</td>
<td>-0.2 – 1 bar</td>
<td>-0.2 – 1 bar</td>
</tr>
<tr>
<td>Viscosity range</td>
<td>15 … 80 mm²/s</td>
<td>15 … 80 mm²/s</td>
</tr>
<tr>
<td>Permissible operating fluid</td>
<td>HFD-R Flame resistant, phosphate-based hydraulic fluids.</td>
<td></td>
</tr>
<tr>
<td>Connection IN/OUT</td>
<td>½”</td>
<td></td>
</tr>
<tr>
<td>Pump types</td>
<td>Gear pump / without</td>
<td></td>
</tr>
</tbody>
</table>

### Electrical data

<table>
<thead>
<tr>
<th>IXU 1</th>
<th>IXU 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply voltage</td>
<td>see ordering details</td>
</tr>
<tr>
<td>Power consumption</td>
<td>0.6 kW</td>
</tr>
</tbody>
</table>

### Ambient conditions

<table>
<thead>
<tr>
<th>IXU 1</th>
<th>IXU 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating temperature range</td>
<td>0 … 40 °C / 32 … 104 °F</td>
</tr>
<tr>
<td>Storage temperature range</td>
<td>0 … 60 °C / 32 … 140 °F</td>
</tr>
<tr>
<td>Relative humidity</td>
<td>0 … 80%, non-condensing</td>
</tr>
<tr>
<td>Protection class to DIN 40050</td>
<td>IP 55</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### General data

<table>
<thead>
<tr>
<th></th>
<th>IXU 1</th>
<th>IXU 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length of electrical connection cable (for options PKZ, FA1, FA2)</td>
<td>10 m</td>
<td>10 m</td>
</tr>
<tr>
<td>Length of suction / pressure hose</td>
<td>without / 5 m</td>
<td>without / 5 m</td>
</tr>
<tr>
<td>Sealing material</td>
<td>FKM</td>
<td>FKM</td>
</tr>
<tr>
<td>Sound level at 1m</td>
<td>&lt; 80 dB(A)</td>
<td>&lt; 80 dB(A)</td>
</tr>
<tr>
<td>Empty weight</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stationary version</td>
<td>~ 70 kg</td>
<td>~ 300 kg</td>
</tr>
<tr>
<td>Mobile version</td>
<td>~ 90 kg</td>
<td>~ 300 kg</td>
</tr>
<tr>
<td>Required fluid cleanliness</td>
<td>ISO 19/17/14 according to ISO 4406:1999</td>
<td>9A/9B/9C according to SAE AS4059</td>
</tr>
<tr>
<td></td>
<td>In order to ensure the required fluid cleanliness, we recommend operating with the optional prefilter.</td>
<td></td>
</tr>
</tbody>
</table>
### Model Code

**Type**
- IXU = Ion eXchange Unit

**Filter Size**
- 1 = 1x Ion eXchange element
  - Volume flow ~ 2.2 l/min
- 4 = 4x Ion eXchange element
  - Volume flow ~ 8.9 l/min

**Mechanical type**
- M = mobile
- S = stationary

**Pump version**
- G = Without pump
- z = Gear pump with motor

**Voltage, frequency, power supply**
- A = 400 V, 50 Hz, 3 Ph
- B = 415 V, 50 Hz, 3 Ph
- C = 200 V, 50 Hz, 3 Ph
- D = 200 V, 50 Hz, 3 Ph
- E = 220 V, 60 Hz, 3 Ph
- F = 230 V, 60 Hz, 1 Ph
- G = 380 V, 60 Hz, 3 Ph
- H = 440 V, 60 Hz, 3 Ph
- I = 500 V, 50 Hz, 3 Ph
- K = 480 V, 60 Hz, 3 Ph
- L = 220 V, 50 Hz, 3 Ph
- M = 230 V, 50 Hz, 1 Ph
- N = 575 V, 60 Hz, 3 Ph
- O = 460 V, 60 Hz, 3 Ph
- X = other voltages on request
- 460 V, 60 Hz, 3 Ph
- 0 V, 60 Hz, 3 Ph

**Prefilter**
- z = Without electro motor
Type label

The type plate is located on the IXU in a readily visible position. Always supply the specifications from the type label when asking questions.

Customer service

The shipping address for service and repair is:

Germany

HYDAC Service GmbH
Product Support, Werk 13
Friedrichsthaler Straße 15A
66540 Neunkirchen-Heinitz
Telephone: Phone: +49 (0) 6897 509 883
Telefax: Fax: ++49 (0) 6897 509 324
E-mail: E-mail: service@hydac.com

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EU Declaration of Conformity

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Telefon: ++49 (0) 6897 509 01
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EC declaration of conformity

We hereby declare that the following designated product, on the basis of its design and construction, and in the version which we have brought to market, corresponds to the fundamental safety and health requirements contained in the standards listed below.

Any modification of this product that is not coordinated with us in writing will cause this declaration to lose its validity.

<table>
<thead>
<tr>
<th>Designation</th>
<th>IXU Ion eXchange Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Typ</td>
<td>IXU 1 series / IXU 4 series</td>
</tr>
<tr>
<td>Part no.</td>
<td>-</td>
</tr>
<tr>
<td>Serial no.</td>
<td>-</td>
</tr>
<tr>
<td>EU-Machinery Directive</td>
<td>2006/42/EC</td>
</tr>
<tr>
<td>EU Electrical Equipment Regulations</td>
<td>2006/95/EC</td>
</tr>
<tr>
<td>Safety of machinery and devices</td>
<td>EN 12100-1/2</td>
</tr>
</tbody>
</table>

2010-02-26
Dr. Andreas Schunk

Date
Name
(CE official)

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