

Discfilter HSF2200 - 1/2F - PFC

Operataion and maintenance manual

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1. INTRODUCTION

This manual contains instructions for the operation and maintenance of the Hydrotech Disc filter in the HSF2200 series.

Pay attention to all warning symbols that appear in this manual. If this information is ignored it may result in serious personal injury and/or damage to equipment.

Personnel who work on the equipment must have access to the manual at all times.

It is important that:

- ▶ The manual and other relevant documents are kept carefully throughout the life of the equipment. The manual and other relevant documents are part of the equipment.
- ▶ The manuals are read carefully by all personnel who handle the equipment.

2. SAFETY INSTRUCTIONS

Hydrotech Disc filters in the HSF2200 series are designed for safe operation provided that they are installed correctly and used in accordance with the enclosed instructions. The equipment must be installed correctly and in accordance with local regulations. The equipment is designed for use by one or more operators. You must read the relevant sections of this manual before using the equipment or carrying out maintenance work.

- ▶ Pay attention to all warning symbols that appear in this manual. Failure to do so may result in serious personal injury and/or damage to the equipment.
- ▶ Assume all electrical equipment to be live.
- ▶ Assume all hoses and pipes to be pressurised.
- ▶ The main power switch (see Figure 2.3) must be turned to OFF (0) and locked with a padlock before maintenance work is performed.
- ▶ Maintenance and service may only be performed by authorised personnel.
- ▶ Adequate lighting should be used while operating the filter and when working in close proximity to the filter.

2.1 Warning symbols



Figure 1



Figure 2.1

Warning symbols are used in this manual to draw attention to potentially dangerous situations:



Information that warns you of a potential risk of personal injury and/or damage to equipment.

Warning stickers (see Figure 2.1) are affixed to the filter to warn personnel and act as reminders to keep hands and fingers away from the filter's moving parts.

2.2 CE marking



Figure 2.2

This equipment is CE marked (see Figure 2.2), which guarantees that the equipment is designed, manufactured and described in accordance with the requirements set out in the EU Machinery Directive.

2.3 Conversion

The CE marking does not include any components that are not approved by Hydrotech AB and which are used in conversion/reconstruction of the equipment.

The warning symbols and CE marking must be attached where they are fully visible. If any part of

the equipment with a warning symbol is replaced, a new symbol must be attached in the same position. Damaged symbols and CE markings must be replaced immediately.

2.4 Personnel requirements

To prevent personal injury and damage to the equipment, only personnel who have been trained in the equipment and local codes and regulations are allowed to perform service and maintenance work. Service and maintenance personnel may only handle those parts of the equipment they have been trained for.

The operator may work inside the safety barrier and in the safety zone during maintenance and set-up before operation.

2.5 Emergency stop

The filter is equipped with a main power switch (see Figure 2.3).

To perform an emergency stop, turn the main power switch to OFF (0).

In the event of a power failure, turn the main power switch to OFF (0) to prevent the filter drum from unintentionally starting to rotate when the power is reconnected.

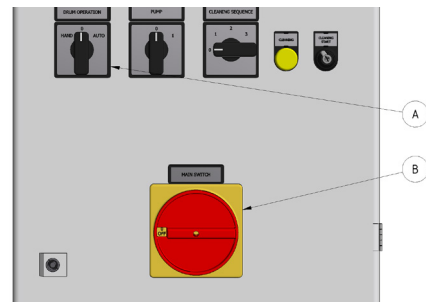


Figure 2.3
A. Mode selector
B. Main power switch

2.6 Electrical safety

Electrical installation must be carried out by a qualified electrician and in accordance with local regulations. Also see Appendix D.

The filter tank or the frame must be connected to earth. Also see section 4.4. The main power switch/emergency stop must be fitted in accordance with applicable regulations.

2.7 Safety instructions

The filter is activated by turning the main power switch to ON (1) and then selecting HAND or AUTO with the operating mode switch on the front of the control cabinet. The filter stops if the operating mode switch is turned to 0 (OFF).

NB See instructions in section 5.1.



Turn the main power switch to OFF (0) and lock it with a padlock before performing any work on the filter.



Access to the filter by unauthorised persons is strictly prohibited. Outdoor installations must be fenced in.



The drum can start rotating without warning if automatic control is activated. Moving parts must not be touched.

Safety guards are fitted around the power transmission. Make sure these are secured and correctly fitted.



The aerosols from the backwash water may contain harmful substances.

Measured noise levels from the filter are less than 74 dB (A). Personnel should use appropriate protection, when necessary, in accordance with local regulations.

3. HYDROTECH DISC FILTER HSF2200 SERIES

3.1 Reception

The equipment must be inspected for transit damage upon delivery. Document any transit damage before further handling of the equipment.

The consignment note, manual and spare part kit are attached to the equipment.

Check that all parts have been delivered as listed on the consignment note. Some parts may be delivered unassembled. Handle fragile parts with care. Before lifting the equipment, see section 4.1.

3.2 Storage

Some precautions must be taken to prevent damage to the equipment if a long storage time is necessary (several weeks or more):

- ▶ The equipment should preferably be stored indoors, in a frost-free area.
- ▶ If stored outdoors, protect the filter from direct sunlight. Heat and UV radiation can damage the filter panels.
- ▶ If the filters are delivered inside plastic covered wooden crates, a special type of corrosion can occur if stored outdoors, especially in coastal areas. The moisture inside the plastic acts as an anode and the exposed dry components as a cathode. In these areas, filters must therefore be unpacked immediately upon delivery.

3.3 Overview

3.3.1 HSF2200 type 1, filter with tank

NB Also see section 3.3.2 (HSF2200 type 2, filter without tank) where several filter parts are shown.

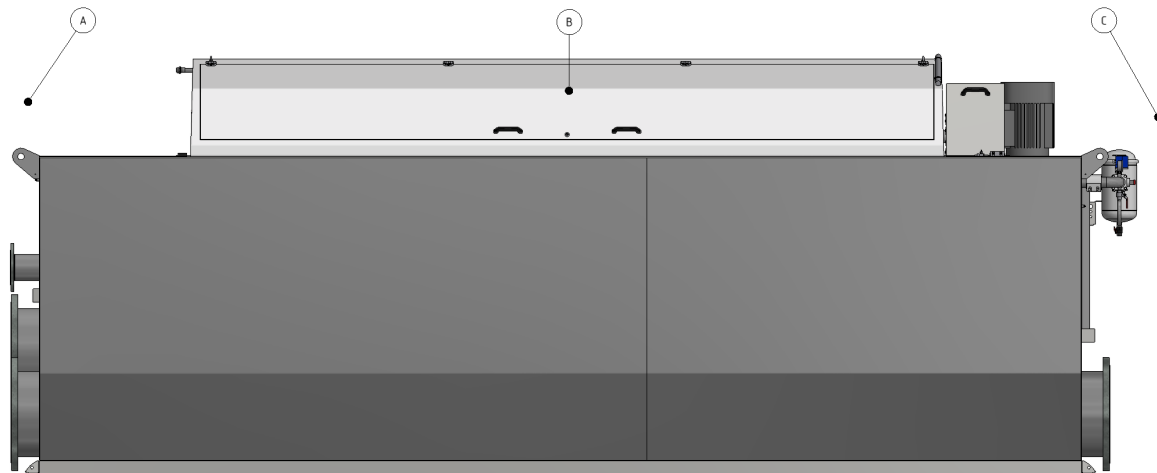


Figure 3.1 Hydrotech Disc filter in the HSF2200 series type 1 (side view).

- A. Inlet side
- B. Filter cover
- C. Outlet side

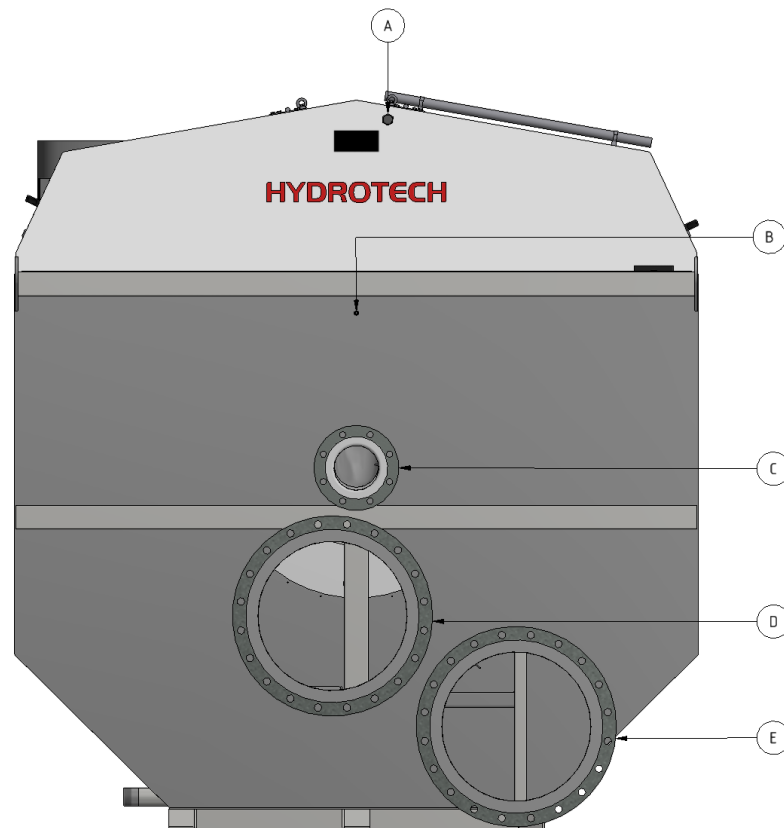


Figure 3.2 Hydrotech Disc filter in the HSF2200 series type 1 (inlet side).

- A. Connection, chemical cleaning
- B. Lubrication point
- C. Sludge outlet
- D. Inlet
- E. Outlet, separate emergency overflow (bypass) (optional)

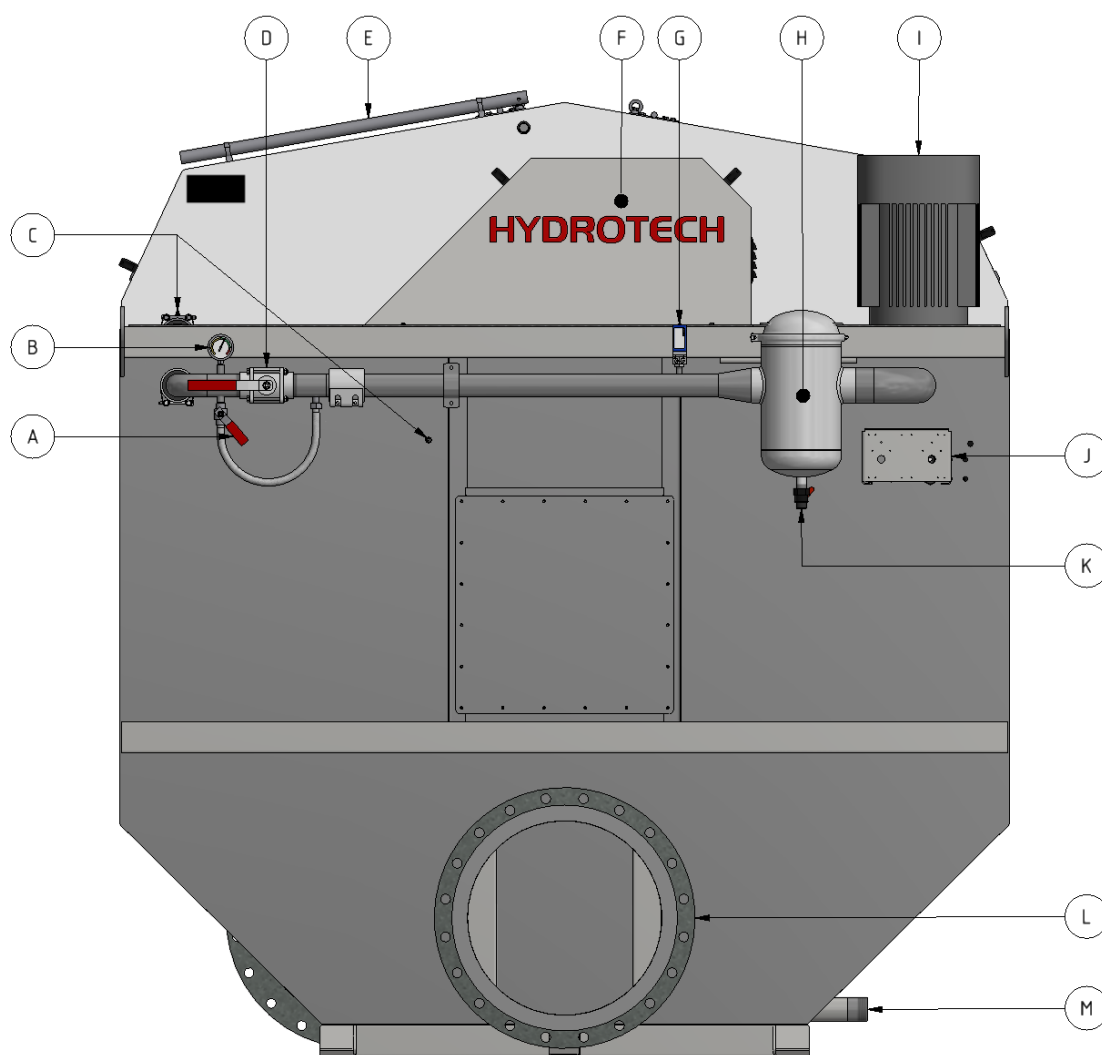


Figure 3.3 Hydrotech Disc filter in the HSF2200 series type 1 (outlet side).

- A. Bypassvalve for nozzle check
- B. Manometer
- C. Lubrication point
- D. Shut off valve for wash pipe
- E. Wash ramp lever
- F. Drive unit
- G. Pressure switch - dry running protection for pump (optional)
- H. Wash water filter
- I. Backwash pump
- J. Electrical connection box
- K. Drain valve
- L. Outlet
- M. Drain (tank)

3.3.2 HSF2200 type 2, filter without tank

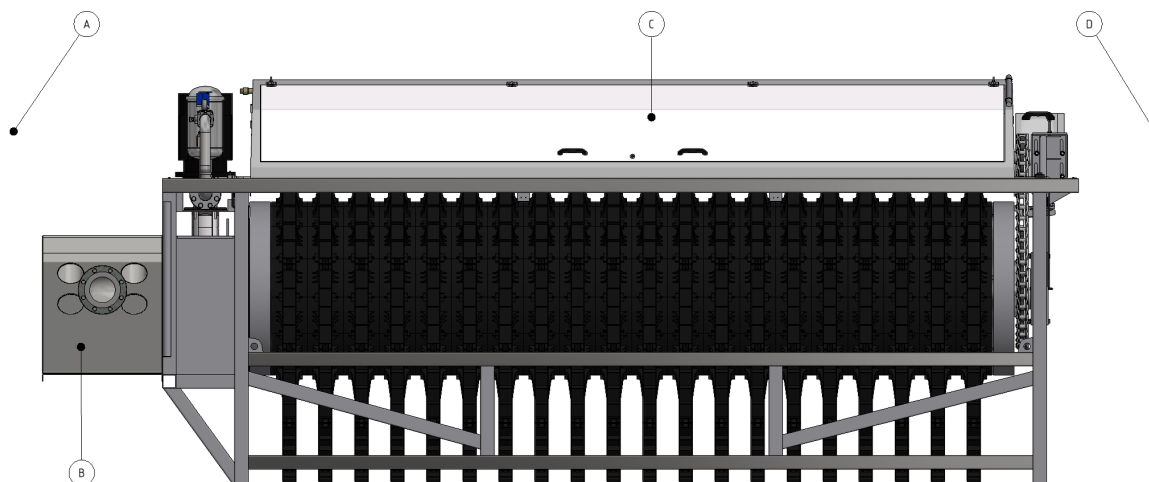


Figure 3.4 Hydrotech Disc filter in the HSF2200 series type 2 (side view).

- A. Inlet side
- B. Inlet passage
- C. Filter cover
- D. Outlet side

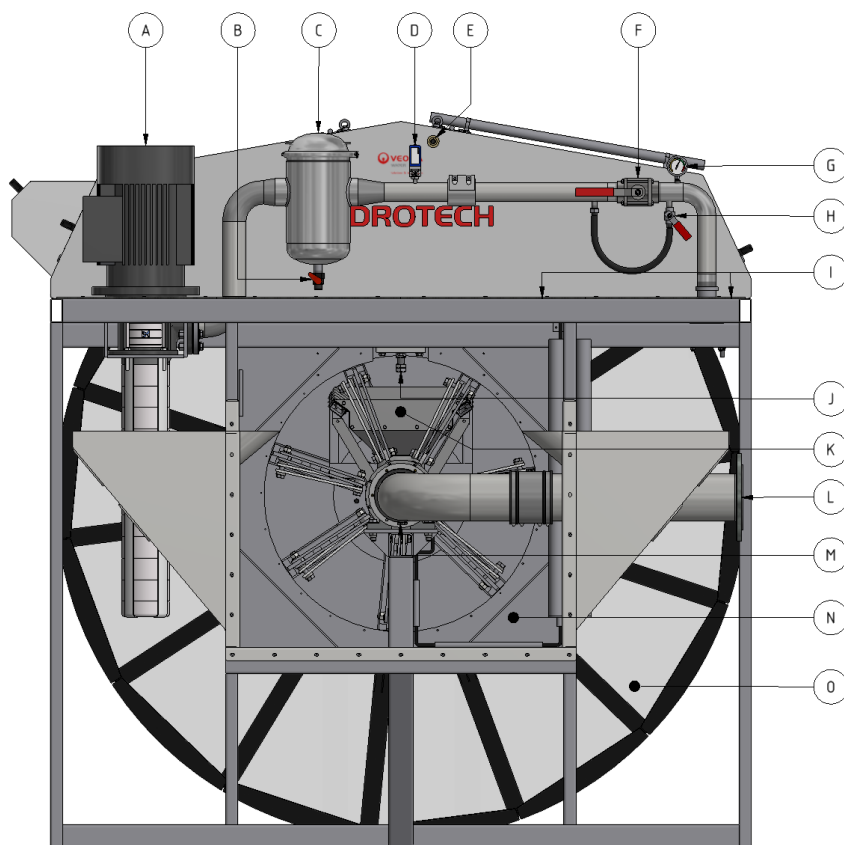


Figure 3.5 Hydrotech Disc filter in the HSF2200 series type 2 (inlet side).

- A. Backwash pump (optional)
- B. Drain valve
- C. Wash water filter
- D. Pressure switch (protects pump from running dry) (optional)
- E. Connection, chemical cleaning
- F. Shut off valve for wash pipe
- G. Manometer
- H. By-pass valve for nozzle check
- I. Lubrication point
- J. Drum lifter
- K. Sludge trough
- L. Sludge outlet
- M. Drum bearing, inlet side
- N. Inlet
- O. Filter panel

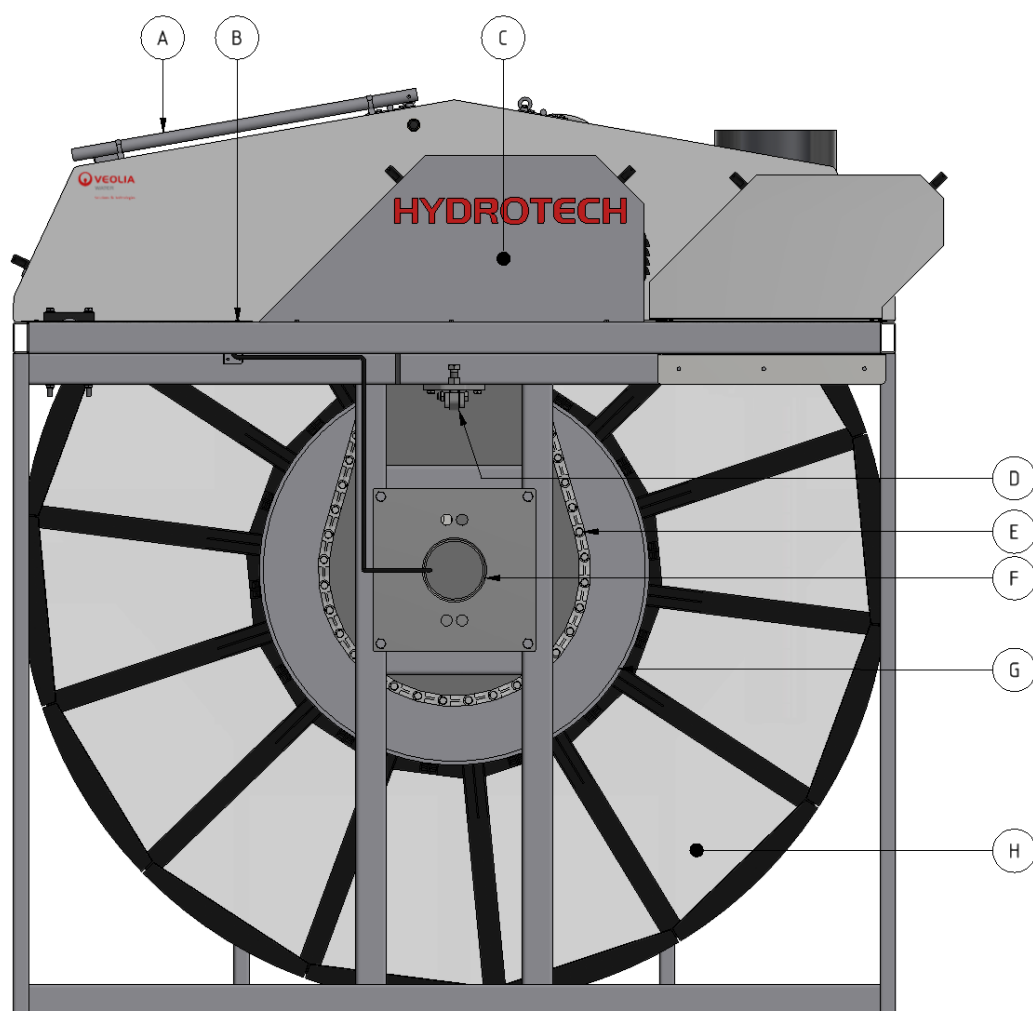


Figure 3.6 Hydrotech Disc filter in the HSF2200 series type 2 (outlet side).

A. Wash ramp lever	E. Drive chain
B. Lubrication point	F. Drum bearing, outlet side
C. Drive unit	G. Drum
D. Drum lifter	H. Filter panel

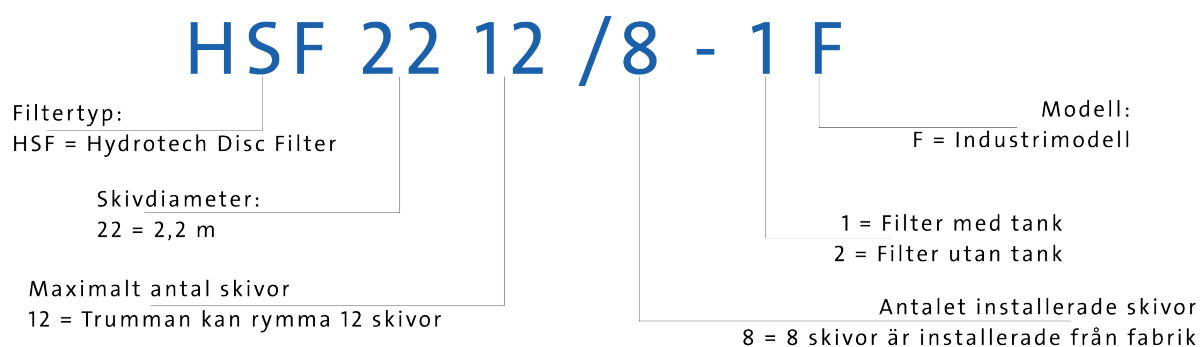
3.4 Identifying the filter

Filter type, serial number and year of manufacture are stated on the marking plate. The filter type and serial number are also stated on the front of this manual.



Figure 3.7 Filter marking plate.


Definition of filter type:



4. GENERAL INSTALLATION INSTRUCTIONS

4.1 Lifting the equipment

- ▶ A forklift truck with long forks must be used when lifting filters in wooden crates.
- ▶ Filters with a tank can be lifted using a crane or overhead crane by using the filter's lifting lugs, or with a forklift truck.

 **WARNING!** *The work area must be fenced off before unloading, in accordance with local regulations, to prevent unauthorised access.*

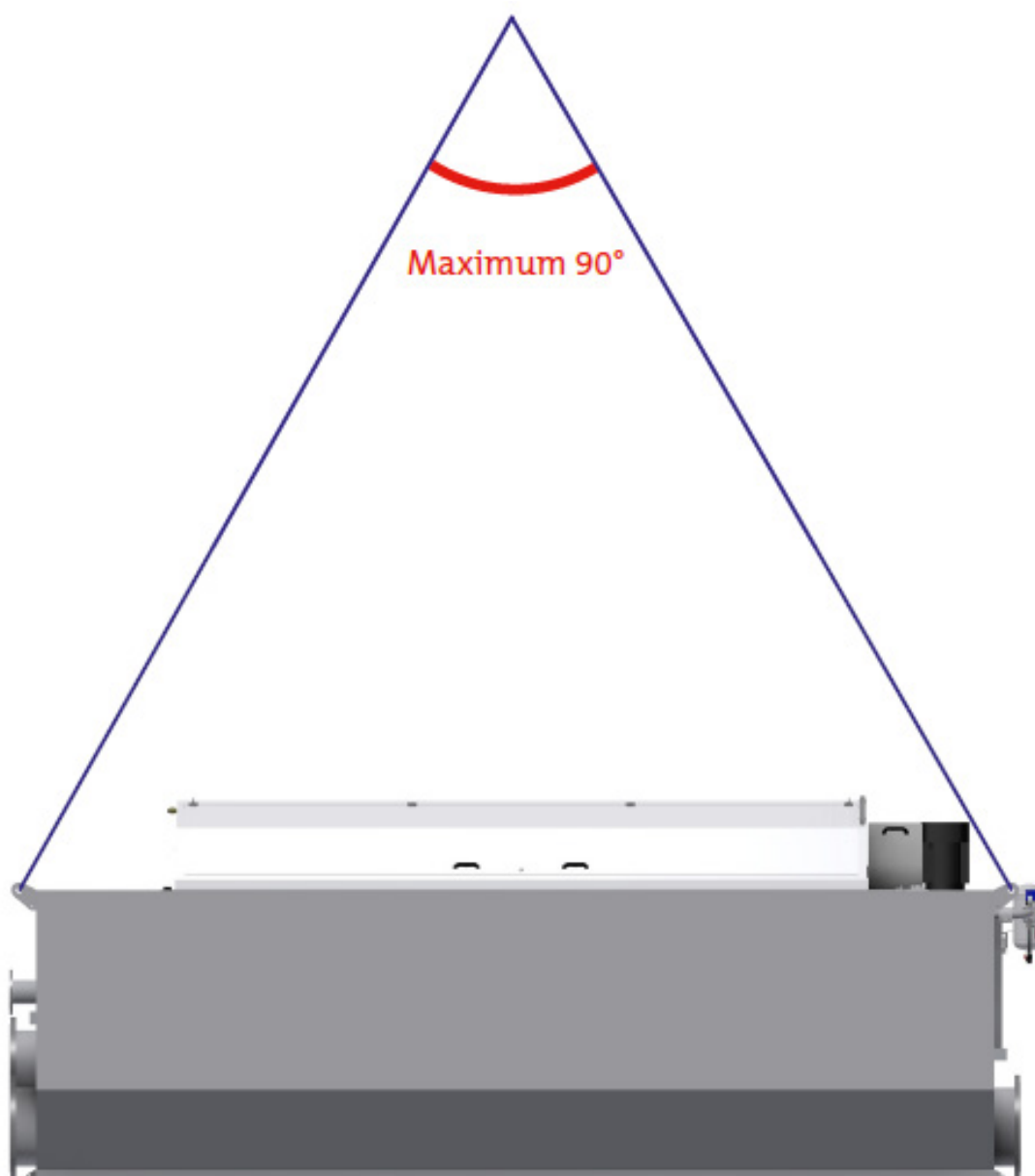


Figure 4.1 Lifting Hydrotech Disc filter in the HSF2200 series type 1 (with tank).

- Filters without a tank can be lifted using a crane or overhead crane by using the filter's lifting lugs.

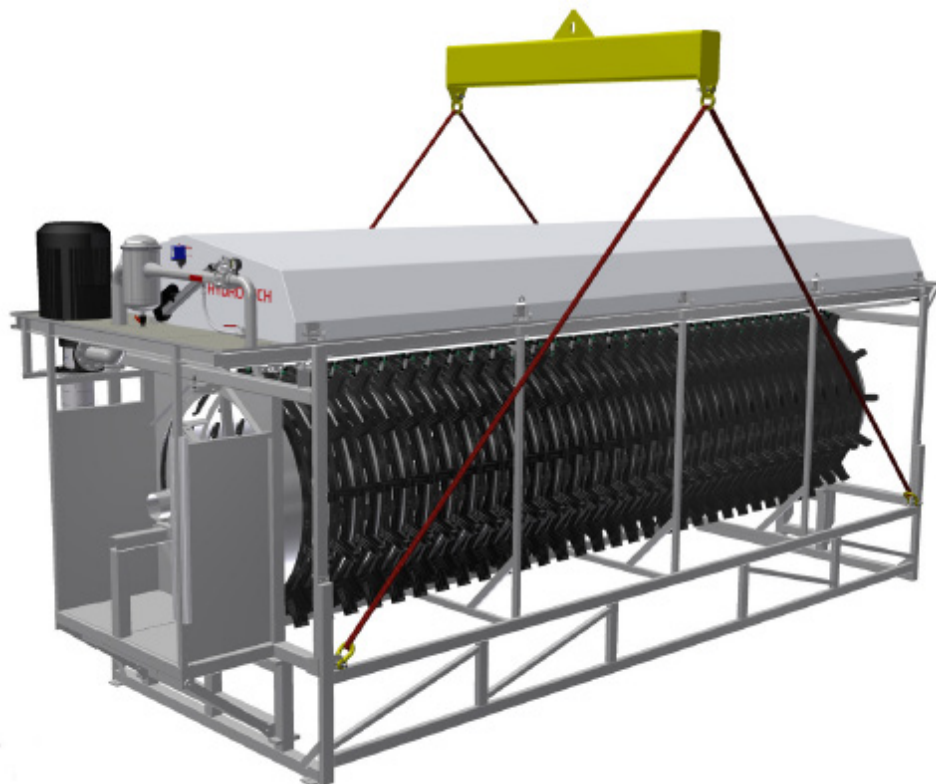


Figure 4.2 Shows how lifting devices are attached (filter without tank).

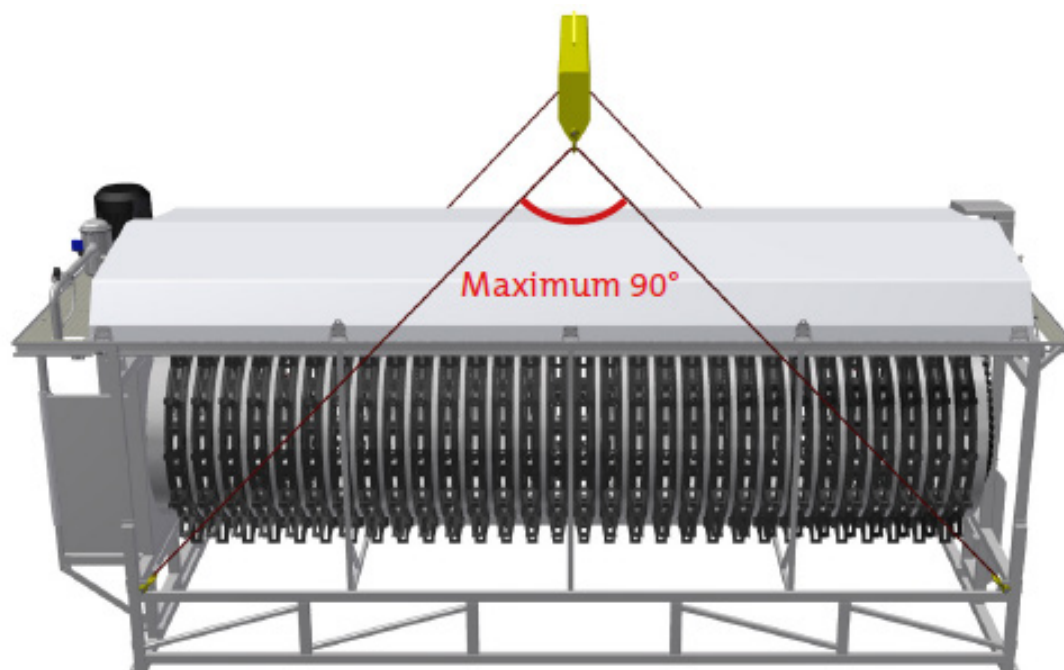


Figure 4.3 Lifting Hydrotech Disc filter in the HSF2200 series type 2 (without tank).

4.2 Installation site

4.2.1 Outdoor installation

In the event of outdoor installation it is important to protect the filter panels against direct sunlight, as heat and UV radiation otherwise can cause damage to the filter panels.

The equipment must be protected against temperatures below freezing point. At water temperatures above +5 °C and air temperatures above -10 °C the filter cover provides sufficient protection. At lower water and air temperatures, filter installation should be indoors.

4.2.2 Foundations

- ▶ The filter must be installed on a flat surface that offers sufficient load bearing capacity.
- ▶ The filter is to be bolted to the foundation.
- ▶ The filter must be level in both directions (see figure 4.4).
- ▶ 600 mm wide aisles should be laid out around the filter to permit easy access to the filter during service work.
- ▶ The gap between the filter and the concrete structure must be sealed for safety reasons and to keep out foreign objects that can cause blockages in the wash water system.

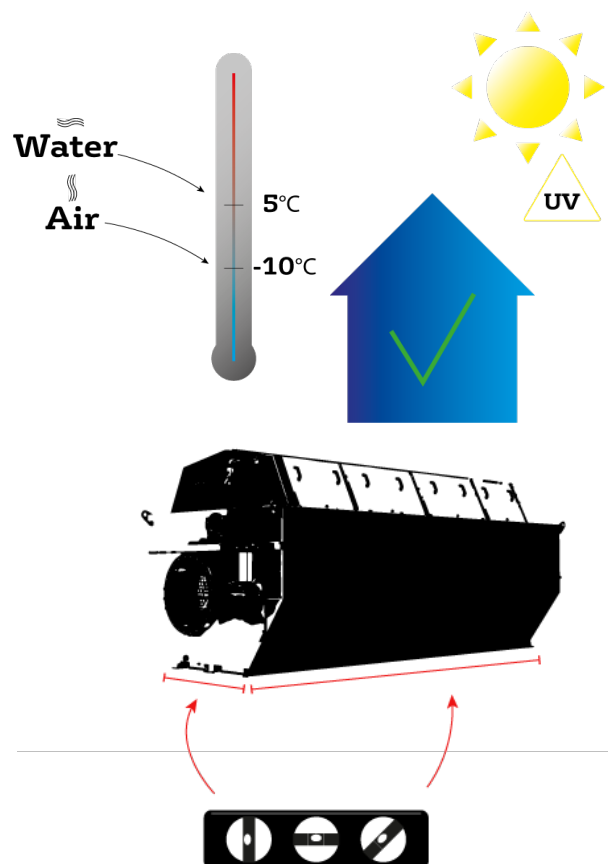


Figure 4.4 Filter installation



All electrical work must be carried out by suitably qualified personnel.

Electrical installations must be properly connected in accordance with local codes and standards. Check that the settings on the motor protection correspond with the motor data.



Section 4.5 must be read before starting the filter's drum rotation.

4.4 Equipotential bonding

The Hydrotech Disc filter and related equipment should be protected with a suitable system for equipotential bonding. This is very important to prevent galvanic corrosion. Ideally use a cable with a cross section of 10-16 mm². The cable should be connected to the same electrical potential as the drive system.

4.5 Checking drum rotation

Start drum rotation and check that the drum rotates in the same direction as the rotation arrow on the drive unit cover.

4.6 Pipe connections

Piping for reject should have a minimum inclination of 1%.

5. START UP AND OPERATION

5.1 Check procedures during start-up

1. Check that the drive unit cover is installed correctly.
2. Turn the pump switch to the OFF (0) position (see F in Figure 5.1).
3. Set the main power switch to the ON (1) position (see J in Figure 5.1).
4. Set the operating mode switch to the HAND position (see E in Figure 5.1).
5. Open the water supply partially so that water slowly flows into the filter drum. Make sure that the difference in water level between the inside and outside of the filter drum does not exceed 450 mm (see section 5.2.1).

If the filter cloth becomes clogged, it may be necessary to fill the filter tank/chamber with water from an external source or to remove a filter panel and fill the filter tank/chamber with unfiltered water.



WARNING! *A difference in water level between the inside and outside of the filter drum greater than 450 mm will damage the filter.*

6. When the water level inside the filter tank/chamber reaches the pump suction pipe (or the pump if a CRK or MTR pump is installed), the pump switch must be set to 1 (ON) position. NB Also read section 2.7.



WARNING! *The backwash pump must not be started until the water level has reached the suction pipe (or pump if a CRK or MTR pump is installed), otherwise the pump will run dry and fail.*

7. When the water level inside the filter tank/chamber reaches the overflow wall, the operating mode switch should be turned to AUTO mode.
8. Open the water supply fully.

The filter is now run in the mode for automatic level control. It may be necessary to adjust the level sensor so that the filter can be run optimally (see section 5.2.4).

5.2 Automatic settings

The control system for the HSF2200 series must be equipped with a frequency converter on the drive unit. This is factory calibrated if delivered from Hydrotech. The setting on the frequency converter must be set for a minimum of 5 seconds “ramp up” and a minimum of 3 seconds “ramp down” to give soft start on the drive motor. The filter works with 50 Hz as standard.

If the filter is equipped with a Hydrotech control system, the filter has two operation modes:

1. Continuous rotation (HAND mode)
2. Automatic level control (AUTO mode).

Turn the operating mode switch to select the operating mode (see E in Figure 5.1).

A. DRUM DRIVE TRIPPED. LED that indicates when the frequency converter has tripped.

B. PUMP TRIPPED. LED that indicates when the wash water pump’s motor protection device has tripped.

C. DRY RUNNING. LED that indicates when the dry running protection device for the wash water pump has tripped.

D. RESET DRY RUNNING. Resetting the dry running protection for the wash water pump.

E. OPERATION MODE. Operating mode switch.

F. PUMP. Pump switch.

G. CLEANING START. Chemical wash switch, key operated.

H. CLEANING. LED that indicates when the chemical wash is in progress.

I. CLEANING SEQUENCE. Selector for the number of sequences, chemical cleaning.

J. Main power switch.

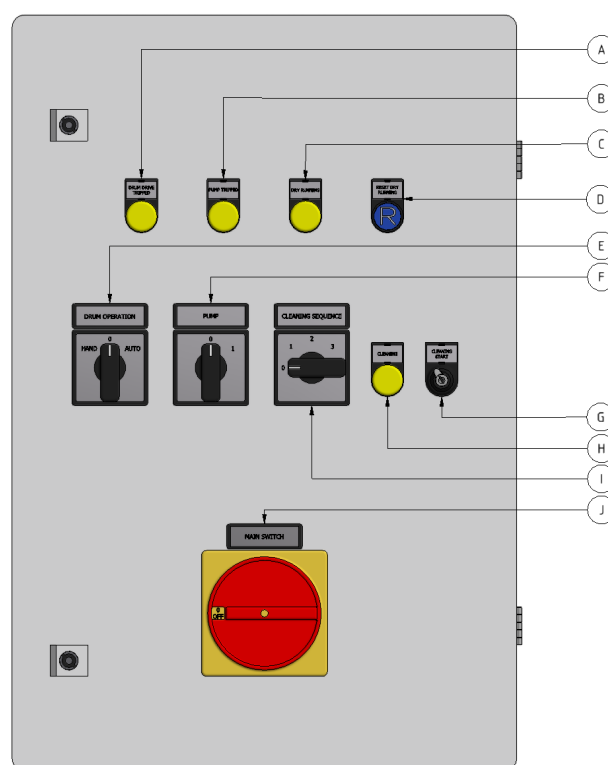


Figure 5.1 Front of the control cabinet.

Inside of the control cabinet:

A. Motor protection switch, pump.

B. Motor protection switch, drive unit.

C. Fuse.

D. Fuse.

E. Transformer.

F. Contactor.

G. Relays.

H. Logic module.

I. Level relay.

J. Soft start.

K. Frequency convertor.

L. Terminal block.

M. Main power switch.

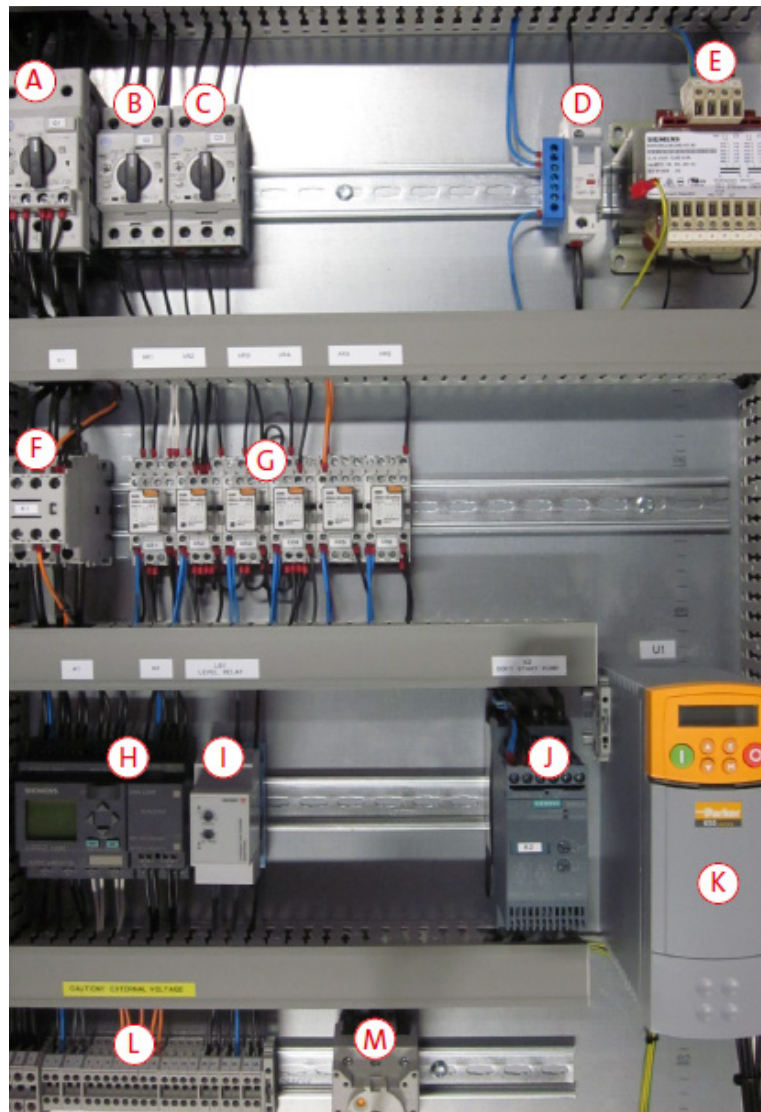


Figure 5.2 Component parts of the Hydrotech control cabinet.

5.2.1 Level differences

The maximum permitted difference between the water levels inside and outside the drum is 250 mm during normal operation (see Figure 5.3). The recommended level difference is 100-200 mm.

If an even flow after the filter is required, the filter must be run with a small level difference.



The filter must be installed so that the level difference in the event of operating disturbances under no circumstances exceeds 450 mm.



The filter must be run so that the level difference during normal operation does not exceed 250 mm.



Prolonged operation with a greater level difference will significantly shorten the life of the filter panels and other vital parts.

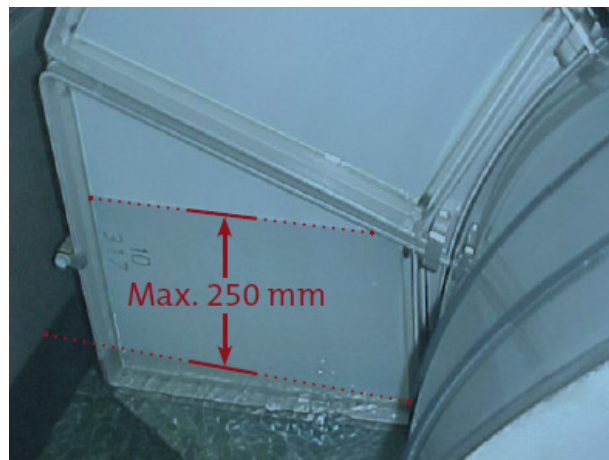


Figure 5.3 Maximum permitted level difference during operation.

5.2.2 Operating mode HAND – Continuous rotation/backwash

Operation with continuous drum rotation and backwash. In this mode, the water level inside the drum is kept virtually constant.

The level sensor and the automatic level control are disabled when

HAND operating mode has been selected.

5.2.3 Operating mode AUTO – Automatic level control

With level control enabled, drum rotation and the backwash pump are activated when the water level inside the drum reaches the level sensor. If an external wash water supply is used, the level sensor can control a solenoid valve instead of a pump.

The water level inside the drum will vary when AUTO mode has been selected. The water level is at its lowest immediately after a backwash cycle and then rises until it reaches the level sensor.

5.2.4 Adjusting the level sensor

NB Prior to servicing, read section 2.7.

Place the level sensor 50–100 mm below the overflow wall. The optimal placement depends on the turbulence of the water surface (see Figure 5.4)



Figur 5.4 Justering av nivågivare.

5.2.5 Setting of level relay

NB Prior to servicing, read section 2.7.

The sensitivity of the level sensor can be set from MIN to MAX on the level relay's upper adjusting screw.

The lower adjusting screw must always point to the side marked EMPTY, on this side there are three different sensitivity ranges, H, S and L. If appropriate sensitivity cannot be set using the selected sensitivity range, another sensitivity range can be chosen.

5.3 Backwash system

NB Prior to a service, read section 2.7.

The system pressure for backwashing must be set to 7-9 bar.

Newly connected pipe systems for external wash water should be flushed before they are connected to the filter. Check that the nozzles are not blocked, see section 7.1

6. FUNCTION

6.1 Intended use

The filter is designed and manufactured to remove solid particles in unpressurised water flow systems. The filter is not a pressure vessel.

6.2 Non-intended use

Unless approved in writing by Hydrotech, the filter must not be used to filter liquids other than water. The filter must not be installed in an environment with an explosive atmosphere or another risk of explosion, such as high concentrations of dust.

6.3 Filtration and backwash process

A brief description of the process is given below.

1. The water to be filtered flows with gravity from the inside of the filter drum out to the filter segments.
2. Solid particles are separated from the water with the help of filter media attached to both sides of the filter segments, while the clean water passes through the filter media to the outside of the filter segments.

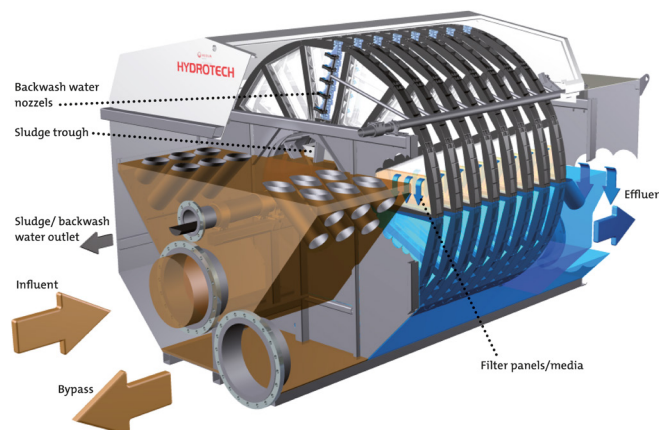


Figure 6.1 Disc filter function.

3. Operating mode AUTO – The solid particles that accumulate on the inside of the filter media gradually reduce the water flow through the filter panel. The water level on the inside of the drum begins to rise. When the water reaches the level sensor, drum rotation and backwash start.

Operating mode HAND – Drum rotation and backwash are started manually.

4. The backwash nozzles spray wash water on the exterior of the filter panels. The solid particles that accumulate are washed from the filter panels to the sludge channel, at the same time as the drum rotates.

5. The removed particles and backwash water flow with gravity out of the filter.

7. MAINTENANCE/SERVICE

7.1 Backwash system

The most common cause of operating disruptions in the backwash system is clogged nozzles. Clogging is caused by particles in the wash water and/or by biological growth in the pipe system.

There are also nozzles that are self-cleaning and less sensitive to blocking than the conventional nozzles, see section 7.1.2

7.1.1 Servicing conventional nozzles

1. Turn the operating mode switch to 0 (OFF).
2. Open the cover/remove the covers on the side where the backwash pipe is located.
3. Open the bypass valve (see Figure 7.1).

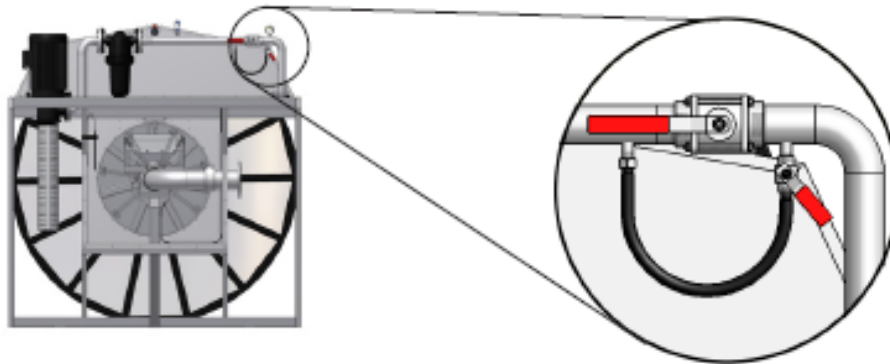
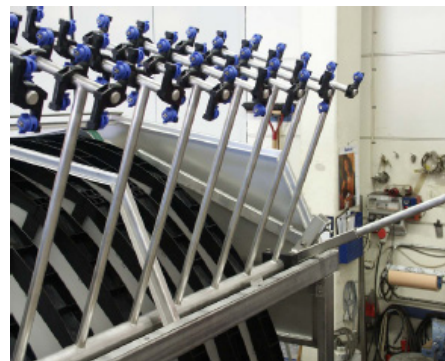


Figure 7.1 Main valve and bypass valve for checking the nozzles.

4. Start the backwash pump and drum operation by turning the operating mode switch to position HAND.
5. Close the main valve and adjust the water flow with the bypass valve so that it flows a little yet with a constant flow through the nozzles. This makes it easy to determine which nozzles need to be cleaned.
6. Fold out the backwash ramp with the loose lever (see Figure 7.2).



Figure 7.2 a) Place the loose lever in the bracket.



7.2 b) Fold out the wash ramp.

7. Check whether any of the nozzles are clogged by checking whether water runs through them. Clogged nozzles are cleaned as follows:

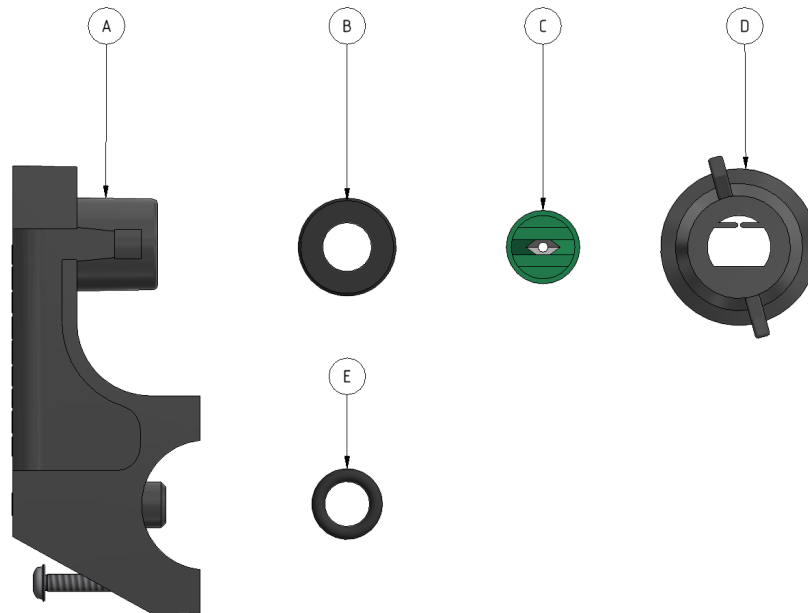


Figure 7.3 Nozzle components.

- A. Nozzle attachment
- B. Rubber seal
- C. Nozzle tip
- D. Nozzle nut
- E. O-ring

8. Remove the nozzle nut by turning it a $\frac{1}{4}$ turn anticlockwise. Exercise care not to lose the rubber seal.

9. Clean the tip of the nozzle with compressed air or a plastic brush. Never use a wire brush, metal pins or similar as these can damage the nozzle.

10. Assemble the parts in the reverse order. Make sure the nozzle nut reaches the stop position when turned a $\frac{1}{4}$ turn, clockwise.

11. Turn the operating mode switch to 0 (OFF).

12. Open the main valve to the wash water.

13. Place the wash ramp in its original position with the help of the lever.

14. Close the cover/covers and lock them.

15. Start operation again by turning the operating mode switch to position AUTO.



WARNING! It is important that the nozzle nuts (see Figure 7.3) are refitted correctly after the nozzles have been cleaned. If a nozzle nut becomes loose, the nozzle tip will fall out and the water jet created will then destroy the filter media.

7.1.2 Self-cleaning nozzle

Figure 7.4 below shows a self-cleaning nozzle.

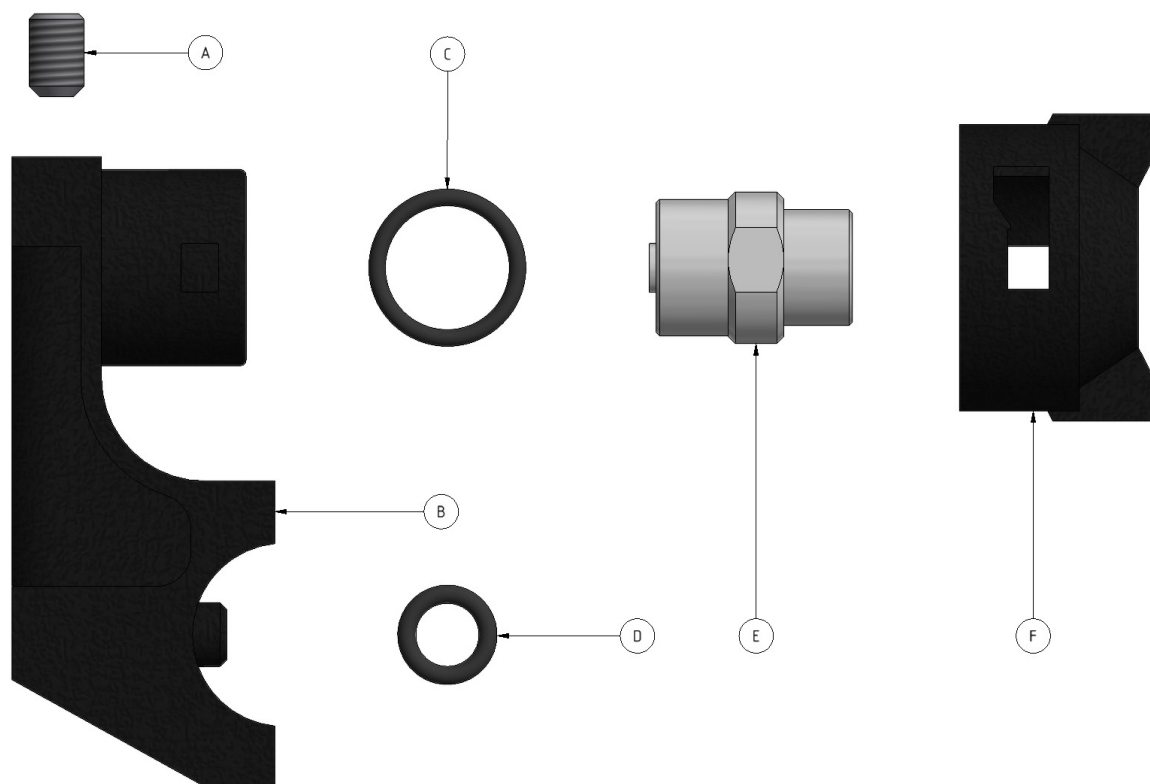


Figure 7.4 Nozzle components, self-cleaning nozzle.

- A. Stop screw*
- B. Nozzle attachment*
- C. O-ring*
- D. O-ring*
- E. Nozzle tip*
- F. Nozzle nut*

7.2 Cleaning the Hydrotech wash water filter

NB Prior to servicing, read section 2.7.

If the pressure gauge indicates a pressure that is more than 0.5 bar below normal pressure, it is time to clean the wash water filter.

1. Turn the main power switch to the OFF (0) position and lock with a padlock.
2. Drain the wash water filter by opening the valve (A), see Figure 7.5.
3. Loosen the wing nut (C) and remove the clamp ring (B).
4. Lift off the wash water filter cover (D).
5. Remove and clean the filter insert.
6. Secure the filter insert in the cover.
7. Refit the cover/filter insert and the clamp ring.
8. Close the drain valve.
9. Start operation as described in section 5.1.



Figure 7.5 Hydrotech wash water filter.

- A. Cover
- B. Wing nut
- C. Drain valve

7.3 Bearings

NB Prior to servicing, read section 2.7.

Stickers indicating the lubrication points are attached to the filter, see Figure 7.6.



Figure 7.6

7.3.1 Lubrication of swivel

The swivel makes up the bearing between the wash pipe and the connecting pipe for the wash water (see Figure 7.7).

The swivel's lubrication points are shown in Figure 3.3 and Figure 3.5.



Figure 7.7 Swivel

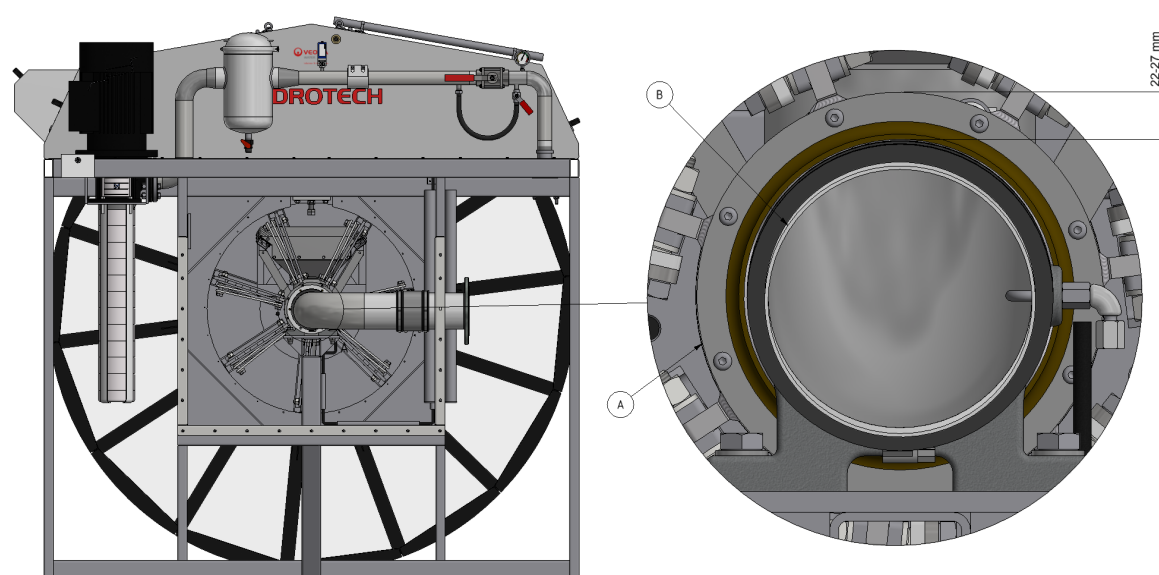
7.3.2 Lubricating drum bearings

The bearings' lubrication nipples are fitted on the outside of the filter. The drum must rotate when the bearings are lubricated.

Lubricate the drum bearings according to the recommendations in chapter 8. The lubrication points are shown in Figure 3.2, Figure 3.3, Figure 3.5 and Figure 3.6.

7.3.3 Checking drum bearing wear

1. Turn the main power switch to the OFF (0) position and lock with a padlock.
2. Drain filter basin/filter tank.
3. Check the drum bearings with respect to wear. If the distance between the bearing housing (A) and the shaft (B) is less than 22 mm (see Figure 7.8), the drum bearing must be replaced.
4. Contact your supplier if the drum bearings need to be replaced.
5. Restart operation as described in section 5.1.



*Figure 7.8 Drum bearing housing on inlet side.
A. Inlet side bearing housing
B. Shaft*

7.4 Filter panels

NB Prior to servicing, read section 2.7.

7.4.1 High pressure cleaning (HPC)

It may be necessary to clean the filter panels manually. If the automatic backwashing starts more frequently, this is a clear indication that manual cleaning is required. Manual cleaning can be performed using HPC.



When using HPC, a wash pressure of max. 80 bar may be used. Maximum allowed water temperature is 60 °C. Never hold the cleaning nozzle directly against the filter media.

If the filter is fitted with integrated HPC, an HPC programme can be started as described in section 7.4.1.1.

7.4.1.1 Cleaning with integrated HPC (optional)

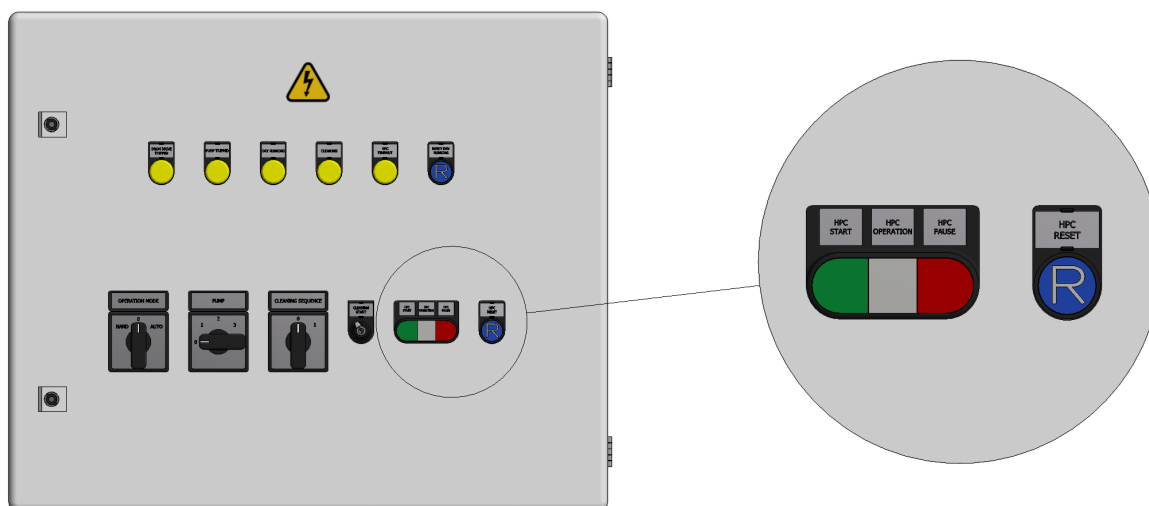


Figure 7.9 Control cabinet, filter with integrated HPC.

- A. HPC START. Starts the HPC programme.*
- B. HPC OPERATION. Light indicates that the HPC programme is running.*
- C. HPC PAUSE. Pauses the HPC programme.*
- D. HPC RESET. Resets the HPC to its home position.*

1. Turn the operating mode switch to AUTO mode (see figure 5.1)
2. Start the HPC programme with HPC START (see figure 7.9). Indicator light HPC OPERATION indicates that the HPC programme is running.
3. When the cleaning programme has ended, the filter returns to normal operation in AUTO mode.

During the cleaning cycle, the machine continues to continuously filter with the pump in automatic mode.

7.4.2 Chemical cleaning of filter panels

Long-term clogging of the filter media can be caused by iron, calcium, organic growth or other particulate matter. This clogging can normally be removed through chemical cleaning. Three products that have been proven not to affect the life of the filter medium are diluted hydrochloric acid (HCl), diluted sodium hypochlorite (NaClO) and diluted sodium hydroxide (NaOH).



Use of other types of cleaning agents can cause damage to the equipment.



The cleaning products must not be mixed. If, for example, HCl and NaClO are mixed this produces toxic chlorine gas. HCl and NaOH are highly corrosive. For safety advice, see applicable local regulations.

For more detailed instructions, please contact your supplier.

The standard version of the Hydrotech Disc filter in the HSF2200 series is fitted with a chemical ramp to enable removal of long-term clogging of the filter media.

The Hydrotech chemical trolley HCT (optional) is connected to the chemical ramp connection (see Figure 3.2 and Figure 3.5). The control system is prepared and programmed for connection of a dosage system. After completing electrical and mechanical connection, chemical cleaning is started as follows:

1. Turn the operating mode switch to AUTO mode (see Figure 5.1).
2. Set the number of cleaning sequences with the CLEANING SEQUENCE selector (see Figure 5.1).
3. Start chemical cleaning with the CLEANING START switch (see Figure 5.1).

Once cleaning is completed the filter automatically returns to normal operation in AUTO mode.

If necessary clean the chemical ramp's nozzles as set out below:

1. Remove the nozzle by turning it ¼ turn anticlockwise (see Figure 7.10).
2. Clean the nozzle with compressed air or a plastic brush. Never use a wire brush, metal rods or similar as these can damage the nozzle.
3. Refit the nozzle.

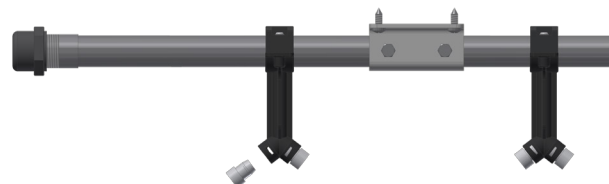


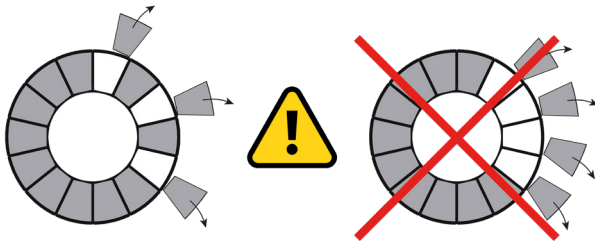
Figure 7.10 Nozzles on chemical ramp.

7.4.3 Changing filter panels

It is important to maintain the balance of the drum when changing the filter panels. Remove/refit every other filter panel. This prevents unintentional rotation of the drum and reduces the load on the drive chain and gearbox.



NEVER remove or refit all the filter panels on just ONE side of the disc (see Figure 7.11).



1. Turn the main power switch to OFF (0) and lock with a padlock.

Figure 7.11 Correct way of changing filter panels.

2. Undo the filter segment cover screws and remove the cover, see Figure 7.12).

3. Pull out the filter panel (see Figure 7.13).



Figure 7.12 The filter segment cover is removed.

Figure 7.13 The filter panel is pulled out.

4. Insert a new filter panel and slide it in until it bottoms.

NB Filter panels with steel frames must be positioned with the filter cloth facing inwards (see Figure 7.14).



Incorrect installation of the filter panels can cause damage to the filter segments.

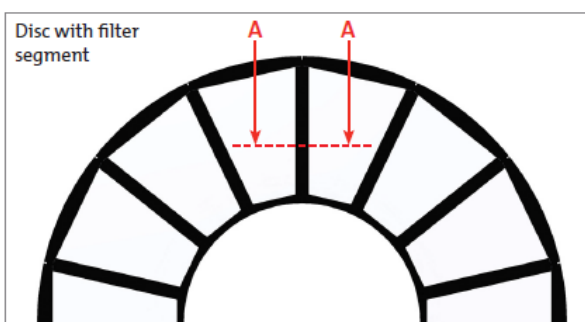
5. Replace the filter segment cover and tighten the screws.



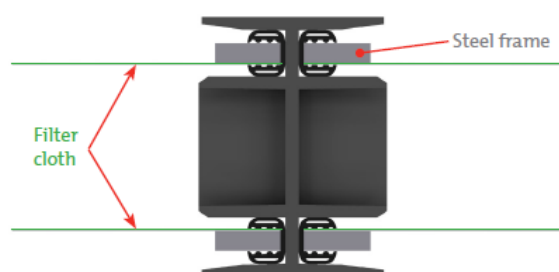
Maximum tightening torque of 3 Nm.

6. Fit the remaining filter panels and covers in the same manner.

7. Restart operation as described in section 5.1.



Cross section A-A: Placement of the filter panel with steel frame



Cross section A-A: Placement of the filter panel with plastic frame

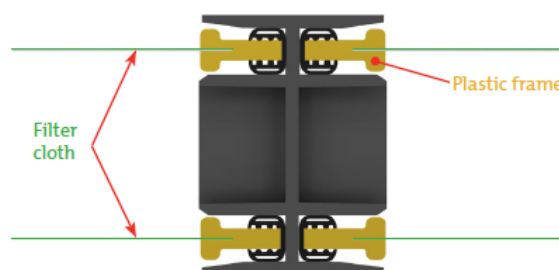


Figure 7.14 Location of filter panel with steel or plastic frame.

7.5 Drive chain

NB Prior to a service, read section 2.7.

The filter is equipped with a chain drive. See Appendix A and Appendix F for technical data.

7.5.1 Checking the drive chain

1. Turn the main power switch to OFF (0) and lock with a padlock.
2. Dismantle the motor cover to access the chain.
3. Stretch the chain by turning the drum by hand (in either direction).
4. Check the tension of the chain's return section; it must be possible to move it between 25-50 mm, see Figure 7.15.
5. If necessary, adjust the chain setting as described in section 7.5.2.

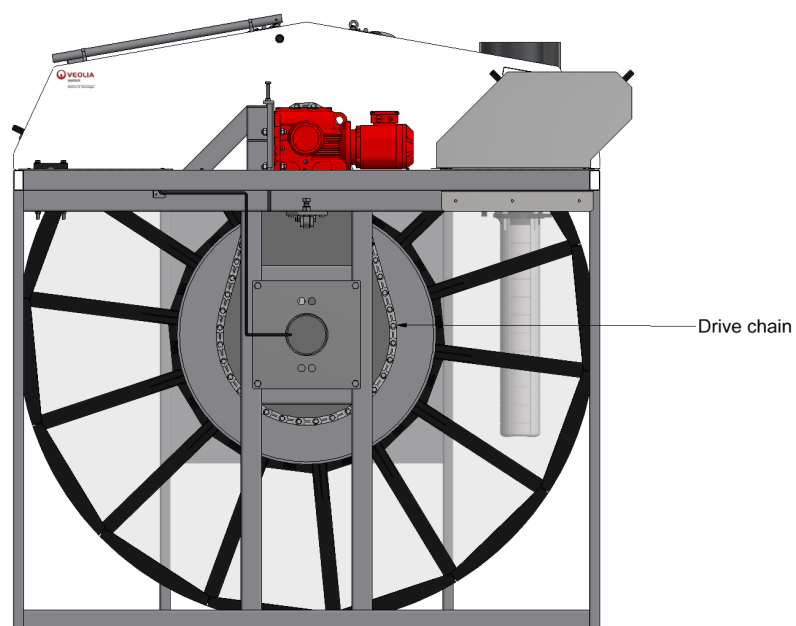


Figure 7.15 Checking chain adjustment.

6. Restart operation as described in section 5.1.

7.5.2 Adjusting drive chain tension

Adjust the drive chain tension as follows:

1. Turn the main power switch to OFF (0) and lock with a padlock.
2. Loosen the four nuts (A) (see Figure 7.16).
3. Loosen the nut (B).
4. Adjust the tension of the chain using the screw (C).
5. Secure the screw (C) using the nut (B).
6. Tighten the four nuts (A).
7. Restart operation as described in section 5.1.

When the drive chain cannot be adjusted any further, the chain is worn out and must be replaced (see section 7.5.3).

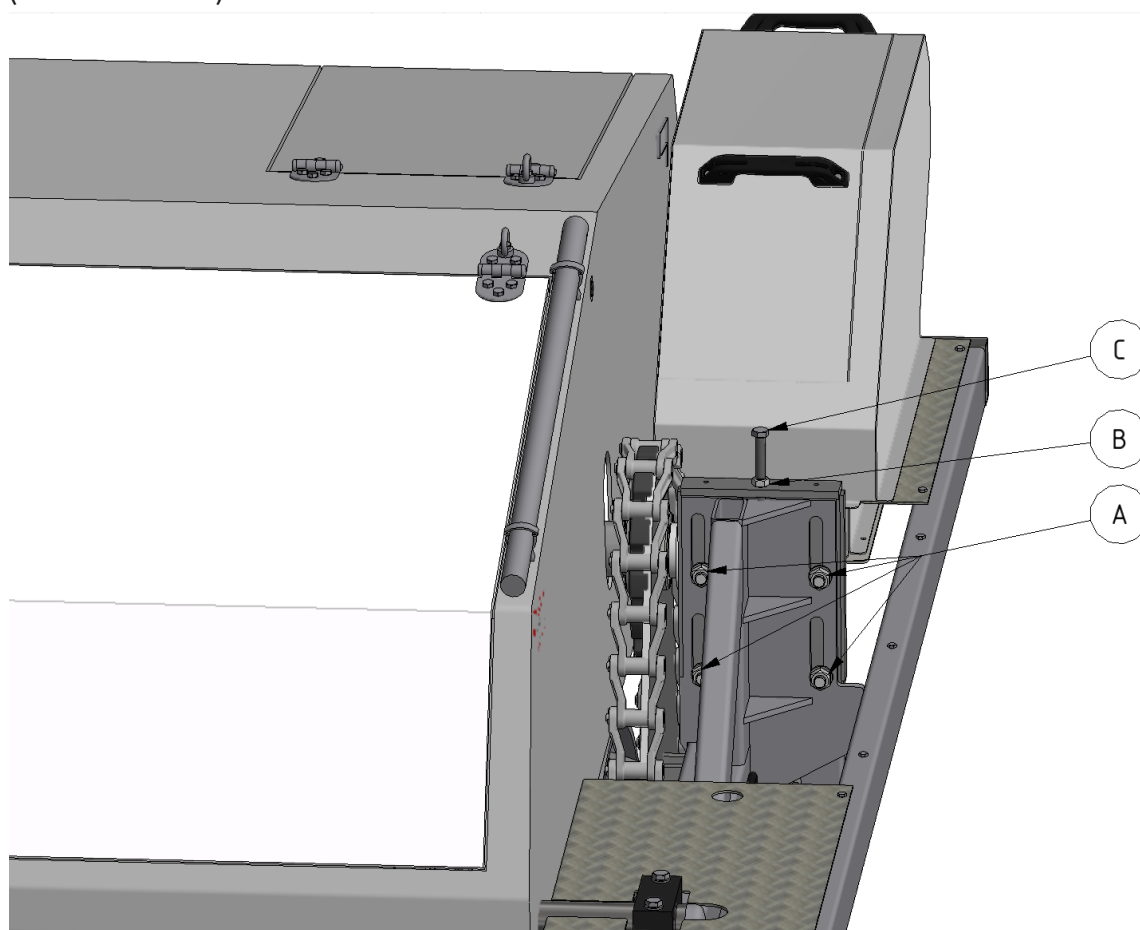


Figure 7.16 Adjusting drive chain tension.

7.5.3 Replacing the drive chain

1. Turn the main power switch to the OFF position and lock with a padlock.
2. Lower the drive unit to its lowest position, see section 7.5.2.
3. Split and remove the drive chain.
4. Fit the new drive chain.
5. Adjust drive chain tension as described in section 7.5.2.
6. Restart operation as described in section 5.1.

7.6 Drive unit

NB Prior to servicing, read section 2.7

For information about the drive unit, see Appendix F.

7.7 Inlet gasket

NB Prior to servicing, read section 2.7.

7.7.1 Checking the inlet gasket

1. Turn the main power switch to OFF (0) and lock with a padlock.
2. Lower the water level in the filter until the whole inlet gasket is accessible.
3. Make sure the inlet gasket rests against the inside of the drum.
4. Inspect the inlet gasket for damage and wear (see Figure 7.17).
5. If necessary, replace the inlet gasket as described in section 7.7.2.
6. Restart operation as described in section 5.1.




Figure 7.17 Inlet gasket.

7.7.2 Replacing the inlet gasket

1. Turn the main power switch to OFF (0) and lock with a padlock.
2. Lower the water level in the filter until the whole inlet gasket is accessible.
3. Note how the inlet gasket is fitted before it is dismantled.
4. Loosen the screws and nuts holding the inlet gasket in position.
5. Remove the inlet gasket.
6. Fit a new inlet gasket.
7. Restart operation as described in section 5.1.

8. MAINTENANCE SCHEDULE

Check/action	Maintenance interval
Check whether the wash water filter is clogged. See section 7.2.	The interval is based on experience of the application. (When the wash water pressure has dropped to 0.5 bar below the normal value).
Check the filter panels for clogging and damage. See section 7.4.	Once a week, or at another interval based on experience from actual application.
<p>Inspect the inside of the filter: Make sure no large objects that can get caught in the drum, filter segments or sludge trough have entered the filter. Also check that the reject does not accumulate (sediment) in the sludge trough.</p> <p>NB Prior to servicing, read section 2.7. Remove large objects and rinse the sludge trough.</p> <p> WARNING! Turn the main power switch to the OFF position and lock with a padlock.</p>	Once a week or another interval based on experience of the application.
Rinse the metal surfaces of the filter structure with clean water. Clean (uncontaminated) metal surfaces minimise corrosion, particularly in salt water applications.	Twice a month or another interval based on experience of the application.
Check the nozzles for clogging. See section 7.1.	Twice a month or another interval based on experience of the application.
Lubricate the swivel to the backwash pipe using grease of the type NLGI:2 (e.g. Molykote Multilub, Rembrandt EP or equivalent grease). See section 7.3.1.	Twice a month with continuous drum rotation. Once a month with intermittent drum operation.
Lubricate the drum bearings (on the inlet and drive side) using grease of the type NLGI:2 (e.g. Molykote Multilub, Rembrandt EP or equivalent grease). See section 7.3.2.	Twice a month with continuous drum rotation. Once a month with intermittent drum operation.
Check drive chain tension and condition. See section 7.5.1.	Four times a year with continuous drum rotation. Twice a year with intermittent drum rotation.
Check the oil level in the drive unit See section 7.6.	Twice a year.
Check the wear on the drum bearing. See section 7.3.3.	Once a year.
Check the inlet gasket. See section 7.7.	Once a year.
Change the gearbox oil. Oil type: ISO viscosity VG 680 (e.g. Omala oil 680 (Shell) or equivalent gearbox oil). Also see appendix F.	See appendix F.

Symbols used on Hydrotech filters



Symbol is displaying equipotential earth bonding points on the filter.



Symbol shown at lubrication points on the filter. Read the manual for further information about lubrication.



Symbol displaying moving parts. Negligence to comply with safety regulations may lead to injury.



This symbol is placed where certain attention is needed when handling the filter. Read the manual for further information.



Warning for high voltage. Always assume all electrical equipment to be live and



Used as a warning where corrosive fluids is used. Always use appropriate safety equipment when handling corrosive products.

Manuals & technical information

For further information regarding Hydrotech filters or any other product used together with Hydrotech filters, please visit www.hydrotech.se. Click on "Manuals & technical information".

Locate the desired product manual and select manual by clicking on one of the language options. The manual will open in a new browser tab where the option to save the manual also can be found.

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