MANUAL

HYDRO series

for users and installation technicians

Version: 2019-04

89900010

Manual

HYDRO series

for users and installation technicians

This manual is intended for users and installation technicians;
it contains information about the HYDRO belt filter series 50.50 - 150.150
for water filtration.

The systems described in this manual:

- ☐ HYDRO 50.50
- ☐ HYDRO 50.100
- ☐ HYDRO 75.100
- ☐ HYDRO 75.150
- ☐ HYDRO 100.150
- ☐ HYDRO 150.150

Contents

1 INTRODUCTION

This manual contains all the information required to install the HYDRO belt filter and use it for the first time. Users and installation technicians are urgently requested to read this manual carefully and to comply with the instructions. The manual should be kept in an accessible place near the belt filter.

The belt filter is available in a number of different variants. A distinction is made between:

- The HYDRO top section;
- The HYDRO top section with stainless steel (or other material) reservoir;
- The HYDRO top section with stainless steel frame and polyester reservoir.

The contents of this manual can be changed without written notification, on the basis of new developments and improvements that are made for newly manufactured systems.

2 LIST OF COMPONENTS

Figure 1 shows a photograph of the HYDRO belt filter. The names of all the components to which reference is made are given in Table 1.

Table 1: list of components

No.	Description
1	Dirty filter fabric
2	Tension spring
3	Level sensor
4	Water distribution box
5	Drive motor
6	Filter roll
7	End-of-roll sensor

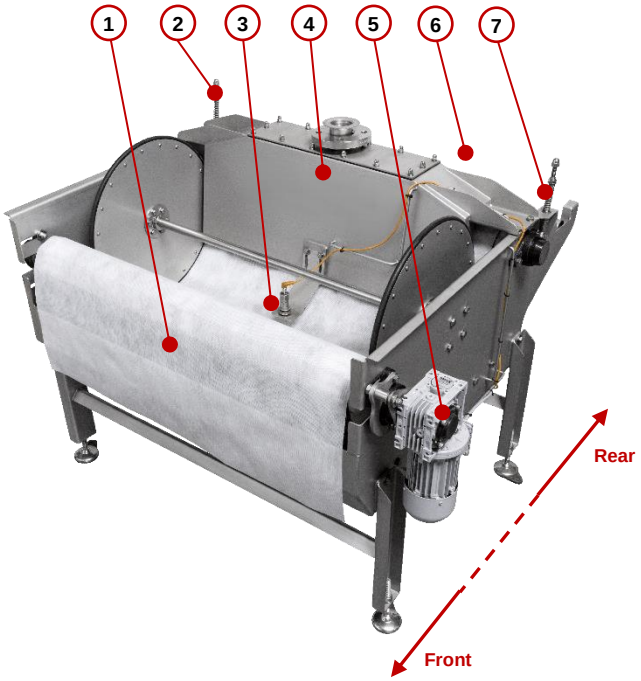


Figure 1: Components of the HYDRO belt filter

3 FUNCTIONALITY

The filtration process makes use of a filter fabric on a roll. The dirty water is conveyed through the water distribution box (1) and spread across the width of the filter fabric. The water flow is higher at the side of the belt filter than in the center. Dirt that is larger than the pores of the filter fabric stays on the filter fabric, causing the water permeability of the filter fabric to decrease and the water level to rise. The water level is measured by means of a level sensor (2). When the water level reaches a certain height, which can be adjusted, the level sensor activates the motor, which causes the mesh mat (3) to move, providing the belt filter with new filter fabric. The dirty filter paper runs freely out of the belt filter and is received in a dirt tray. The filtered water is then – depending on the variant – received in a stainless steel (or other material) reservoir or polyester reservoir.

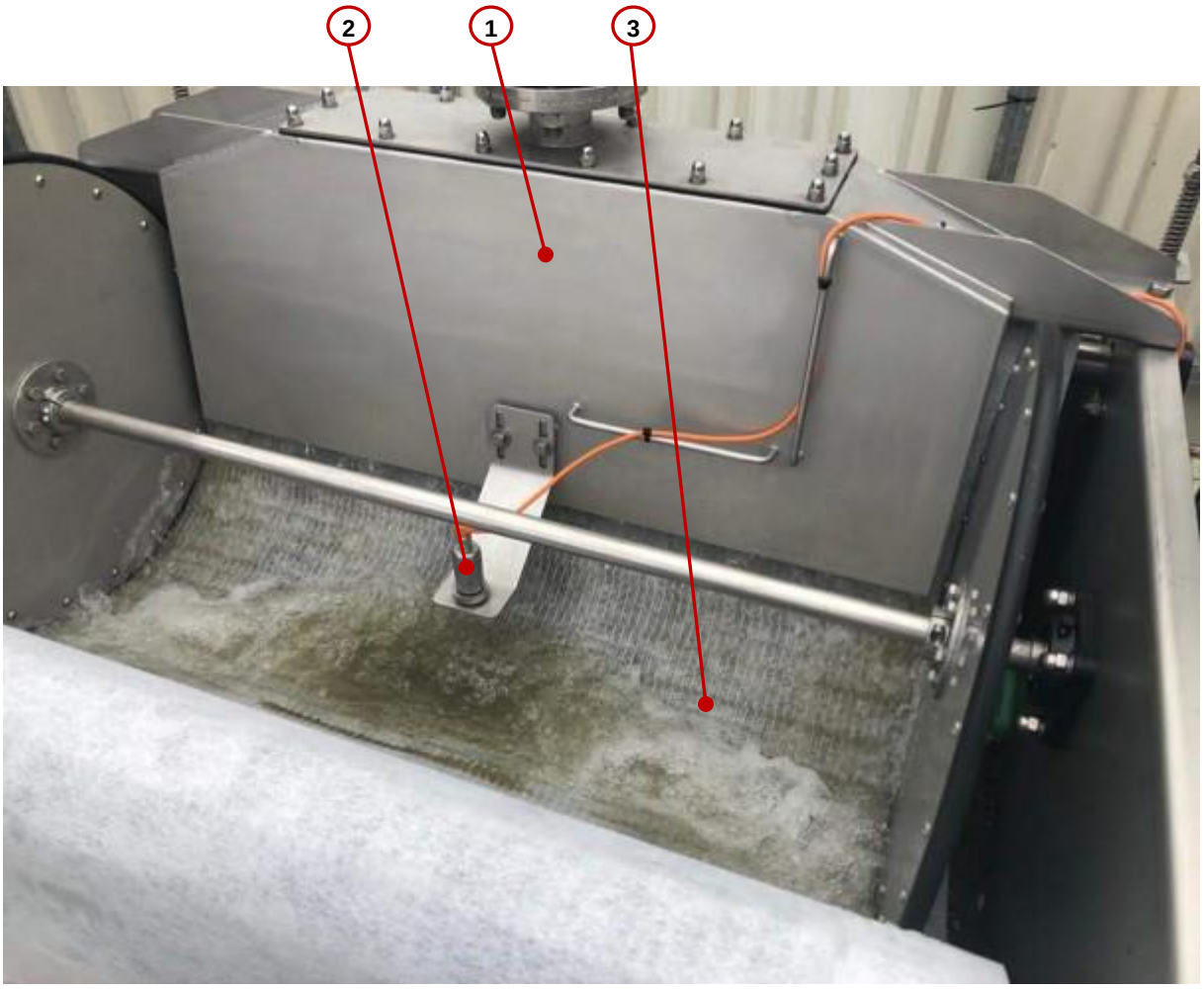


Figure 2: Functionality of the belt filter

4 INSTALLATION

This chapter contains the information for transporting and connecting the belt filter. The belt filter must only be installed by personnel who are authorized and trained to do this.

4.1 Transport

For transporting the belt filter, a distinction is made between the different variants.

4.1.1 The top section

For transporting the top section of the belt filter, the eye bolts that are fitted on the corners of the system must be used.

4.1.2 The HYDRO top section with stainless steel (or other material) reservoir

If the HYDRO top section is provided with a reservoir, the space underneath the reservoir must be used for transporting it. This reservoir can be transported using a pallet jack or fork-lift truck.

If the belt filter has a reservoir, it must **never** be hoisted using the eye bolts on the top section.

4.1.3 The HYDRO top section with stainless steel frame and polyester reservoir

If the HYDRO top section is mounted on a stainless steel frame with a polyester reservoir, these must be transported separately. The stainless steel frame must be picked up underneath the HYDRO belt filter using a fork-lift truck or other hoisting equipment.

After the belt filter has been put in position, the polyester reservoir can be pushed underneath the stainless steel frame.

If the belt filter is mounted on a stainless steel frame, then it must **never** be hoisted using the eye bolts on the top section. Hoisting equipment must be attached to the stainless steel frame itself.

When the belt filter is delivered, various electrical components are connected to the control box. **Before** the belt filter is put in position / transported, the electrical components that are located in the polyester reservoir must be disconnected from the control box.

The weight of the belt filter is stated in the technical specifications. It must only be hoisted using appropriate equipment.

Transporting the belt filter and attaching the hoisting equipment must only be carried out by adequately trained personnel.

4.2 Positioning the belt filter

- Check in advance that the floor (or other base surface) on which the system will be positioned is level.
- Reserve enough space around the belt filter for replacement of the filter roll (section 5.7 Fitting a new filter roll) and performing maintenance (chapter 7 Periodic maintenance).
- Only hoist the system using the components designated for this (section 4.1 Transport).

4.3 Water connection

The belt filter must be connected to a water intake pipe and water discharge pipe. The water intake is connected to the water distribution box to ensure that the water is spread evenly across the width of the filter fabric.

Every size of belt filter is designed for a specific maximum flow. The intake flow must not exceed this flow. If the intake is higher than the maximum flow, there is a risk that the water flowing out of the water distribution box will become turbulent, which will make the water splash and the filter fabric unable to build up a layer of dirt.

Figure 5:
Water distribution box

The pipe of the intake flow must not be supported by the water distribution box.

If the intake pump is not operated by the control box of the belt filter, then the intake pump must always be switched off if an alarm is generated in the belt filter.
Note: An alarm is generated by e.g. the end-of-roll sensor.

If the water intake pipe comes from a height of more than one meter, it is advisable to first allow the intake pipe to run horizontal before connecting it to the water distribution box. If the water intake comes from a great height, there is a risk that the water will splash.

If the discharge from the reservoir is provided by the end user or a third party, it is essential to ascertain that the discharge always has a capacity of **at least** the **maximum flow** of the belt filter.

5 USER INFORMATION

This chapter contains information for users and installation technicians when the belt filter is started-up for the first time.

5.1 Actions to take in advance

Switch off the main switch of the belt filter (OFF) and put the filter roll in place. Make sure that the filter paper unrolls from the top. Guide the first piece of filter paper over the mesh mat under the water distribution box. Make sure that the filter paper is inserted so far on the mesh mat that it goes up to the wheels of the belt filter. Switch on the main switch of the belt filter (ON) and manually switch on the motor, so that the filter paper is pulled through, over the mesh mat and under the wheels. The motor can be switched on by operating the push button “Manual fabric” (Hand fleece) on the control box.

Note! Make sure that the filter fabric can be freely pulled through.

Note! When the filter paper is being pulled through, there is a risk of the operator becoming trapped. Make sure that the belt filter is switched off when you insert the filter paper.

5.2 Checking the rotation direction of the motor

When the belt filter is started-up for the first time, the rotation direction of the motors must be checked. Carry out the following steps.

1. Switch the main switch to “OFF”.
2. Open the control box and ensure that all circuit breakers (if present) are switched to “I’’.
3. Close the control box.
4. Switch the main switch to “ON”
5. Check whether the rotation direction of the motors is the same as the direction that is shown by the arrows on the motors (Figure 6).

Figure 6: Rotation direction of motors

If the motor(s) do(es) not rotate in the direction of the arrow:

1. Switch the main switch to “OFF”.
2. Change round any two of the three phases of the relevant motor.
3. Close the control box.
4. Switch the main switch to “ON”.
5. Check whether the rotation direction of the motors is the same as the direction that is shown by the arrows on the motors.

5.3 Starting-up the belt filter

Starting-up the belt filter must be done in accordance with the following steps.

1. Switch the main switch to “ON”.
2. Check that the filter fabric is being pulled through correctly.
3. Check the operation of the discharge / intake pump **[if present]** by allowing the float in the reservoir to be activated.
4. Check whether the belt filter generates an alarm at the end of the filter fabric roll, and whether the intake pump **[if present]** is stopped.

5.4 Stopping the belt filter

Stopping the belt filter must be done in accordance with the following step(s).

1. Switch the main switch on the control box to “OFF”.

5.5 Stopping the system for a longer period of time

If the belt filter is to be stopped for a long time, it is advisable to completely empty the water storage tank and to clean it. If the tank is not cleaned, bacteria can become deposited on the system and cause damage. It is also advisable to remove the filter fabric from the system.

5.6 Fitting a new filter roll

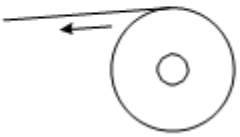
When all of the filter roll has been used, a new one will have to fitted and the dirty filter fabric removed.

1. Switch the main switch to “OFF’’.
2. Remove any covers that have been fitted to the system.
3. Remove the packaging material from the filter roll.
4. Put the new filter roll in place. The filter paper must unroll from the top.
5. Attach the new filter paper to the last piece of filter paper on the old roll, using e.g. tape or a stapling machine.
6. Switch the main switch to “ON’’.
7. Wind the filter paper through manually. The new filter paper must be pulled completely across the belt filter. For winding the filter paper through, the push button “Manual fabric” (Hand vlies) on the control box must be pushed.
8. Detach the old filter paper.
9. Remove the old filter paper from the dirt tray.

Before starting the system, check whether the filter fabric can be freely pulled through.

Check whether the filter paper is spread evenly over the width of the mesh mat.

The filter fabric must unroll from the top of the filter roll in order for the end-of-roll sensor to function properly.



Note! When the filter paper is being pulled through, there is a risk of the operator becoming trapped. Make sure that the belt filter is switched off when you are fitting the new filter roll.

6 LIMITATIONS IN USE

Every HYDRO belt filter is designed for filtering liquids with a maximum viscosity of 30 cSt at 40 ˚C.

The filter systems are **not** designed for filtering liquids containing corrosive (acid or base) substances.

The filter systems are **not** designed for use in a potentially explosive environment.

7 MAINTENANCE AND PERIODIC INSPECTION

Never perform maintenance while the system is operating and when it is under electrical voltage (“live”). Care must be taken to ensure that it is not possible for the system to start-up during maintenance and inspection.

Do not use any flammable liquids when cleaning the system.

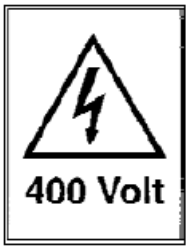
The planned periodic maintenance activities must only be performed by personnel who are authorized and qualified to do this, and they must have knowledge of the procedures and precautionary measures that must be observed.

The following list describes the activities to be performed during periodic maintenance.

1. Perform a visual inspection of the float and remove any dirt deposits.
2. Check that the filter fabric is not torn.
3. Check that the float will cause the inductive sensor switch to activate and that the winding motor of the fabric spool will be activated.
4. After a long period of inactivity, **before the system is started-up again**, it is essential to check that the filter fabric has not become stuck to the system.
5. Ensure that the cooling fins of the electric motors are clean and can move freely. The air inlet and outlet of the cooling fins must be kept clear at all times, to avoid a negative influence on the cooling effect.
6. The belt filters are provided with motors that do not require any special maintenance. However, if it happens that the motor has been operating while the water level was too low, the motor will have to be checked.

8 SYMBOLS AND WARNINGS

The following symbols, together with relevant texts, indicate possible risks.



Symbol showing that components are connected to 400 volts.

Symbol showing the location of the anchor points where the belt filter can be hoisted.

Symbol showing the correct rotation direction of the motors.

9 APPENDICES

9.1 Technical specifications of the motors

Type		Type of motor	Power	Voltage/frequency	Torque
HYDRO	**50.50**	Lenze	0.18 kW	400V/50 Hz	1/100
HYDRO	**50.100**	Lenze	0.18 kW	400V/50 Hz	1/100
HYDRO	**75.100**	Lenze	0.37 kW	400V/50 Hz	1/100
HYDRO	**75.150**	Lenze	0.37 kW	400V/50 Hz	1/100
HYDRO	**100.150**	Lenze	0.37 kW	400V/50 Hz	1/100
HYDRO	**150.150**	Lenze	0.37 kW	400V/50 Hz	1/100

9.2 Maximum flow of belt filters

Type		Width of flow filter paper	Maximum
HYDRO	**50.50**	0.5 meter	15 m^3/h
HYDRO	**50.100**	0.5 meter	30 m^3/h
HYDRO	**75.100**	1.0 meter	50 m^3/h
HYDRO	**75.150**	1.0 meter	80 m^3/h
HYDRO	**100.150**	1.5 meters	100 m^3/h
HYDRO	**150.150**	1.5 meters	150 m^3/h

** The maximum flow is determined for a filtration of 70 micron nominal. For a fine filtration and/or heavy contamination, the maximum flow of the belt filter will decrease by about 30%.*

Type		Weight of belt filter
HYDRO	**50.50**	≈140 kg
HYDRO	**50.100**	≈200 kg
HYDRO	**75.100**	≈260 kg
HYDRO	**75.150**	≈320 kg
HYDRO	**100.150**	≈390 kg
HYDRO	**150.150**	≈470 kg

Aartsdijkweg 23, 2676 LE Maasdijk, the Netherlands
+31 174 51 50 50 · info@vanderendegroup.com · www.vanderendegroup.com