Kotowo 42, 60-009 Poznan
www.happet.eu Poland

EN

DRUMI 35 Drum filter

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Technical data

Maximum flow	**35.000 l/h**
Diameter of the dirty water inlet port	**Ø 110mm**
Diameter of the filtered water outlet port	**Ø 110mm**
Diameter of the contaminated water outlet channel	**Ø 110mm**
Micro screen	**70-micrometer acid-proof mesh**
Weight in kg	**41**
External dimensions mm (LxSxH)	**800mm x 570mm x 580mm**
Maximum sound pressure level [dB (A)]	**Less than 80**
Power supply	**230 V/50 Hz**
Operation range	**+5°C to +45°C**

Declaration of Conformity

Declaration of Conformity EC

In accordance with the Machinery Directive 2006/42/EC, Annex II B,
We hereby declare that
Drumi-type Drum filter
was designed and constructed in compliance with the basic health and safety regulations set out in EC directive on machinery.
EC - Machinery Directive 06/42/EC
EC - Low Voltage Directive 2014/35/EU
EC - Electromagnetic Compatibility Directive 2004/108/EC
In the event of structural changes to the machine not agreed with us, this declaration expires.

Machine designation: Drum filter
Machine type: Drumi
Machine no .: .....

Applied harmonized standards

PN-EN ISO 12100: 2012 Safety of machinery -- General principles for design -- Risk assessment and risk reduction
PN-EN 349 + A1: 2010 Safety of machinery - Minimum gaps to avoid crushing of parts of the human body
PN-EN 614-1 + A1: 2009 Safety of machinery - Ergonomic design principles - Part 1
PN-EN 614-2 + A1: 2010 Safety of machinery - Ergonomic design principles - Part 2
PN-EN 894-1 + A1: 2010 Safety of machinery - Ergonomics requirements for the design of displays and control actuators

The entity responsible for the documentation:
Manufacturer
Happet sp. z o.o.
Kotowo 42
60-009 Poznań

Place / Date: Kotowo 42 .....

Signature of the owner or authorized person:

Introduction

Dear customer,
Thank you for purchasing our device. Please read carefully this manual and safety instructions before installing the filter. The manufacturer provides separate instructions and warranty for devices and additional equipment such as water pumps or solenoid valves. This manual does not contain detailed rules applicable in a given country or standards concerning devices or installations which the filter will be connected to. A person or entity is responsible for installing and starting the filter in accordance with the applicable legal provisions. The manufacturer is not responsible for the damage resulting from failure to observe the instructions contained in this manual.

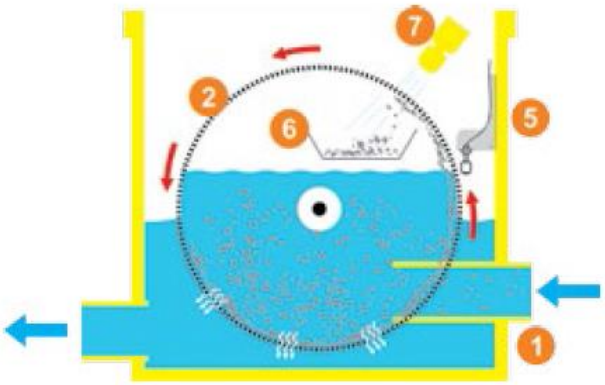


Figure 1: Drumi filter operation scheme

General description of the device

Drumi-type drum filter is a mechanical pre-filter, which can be installed in a gravity or pump version. The filter is configured as a "gravity" filter as a standard.
Water flows into the filter by gravity or mechanically via the pump through the inlets (1) to the dirty water chamber. Here, it passes through the micro screen (2) to the pure water chamber, leaving all of the contaminants on the internal side of the drum. When the micro screen is heavily contaminated, the flow to the clean water chamber is decreased (3). This lowers the water level in this part of the filter in the gravity version or increases the water level in the dirty water chamber (4) in the pump version. The water level sensor (5) is activated and, as a result, the rotation of the drum is induced, the washer pump is turned on or the solenoid valve is opened. Pressurized water flushes out the contaminants from the internal part of the micro screen to the waste removal channel (6). Water with contaminants is irreversibly drained to the sewage system. After one rotation of the drum, the micro screen is cleaned, the drum stops rotating and the operation of the washers is stopped (7) until the contaminants are deposited on the internal side of the micro screen, and then the cycle is repeated. The above description shows the process of removing solid contaminants such as droppings, leftovers, algae and any suspended matter, which do not overload the biological filter, which is mounted as the second stage of filtration of the water reservoir. A recommended biological filter is a "floating bed" - Kaldnes with aeration.

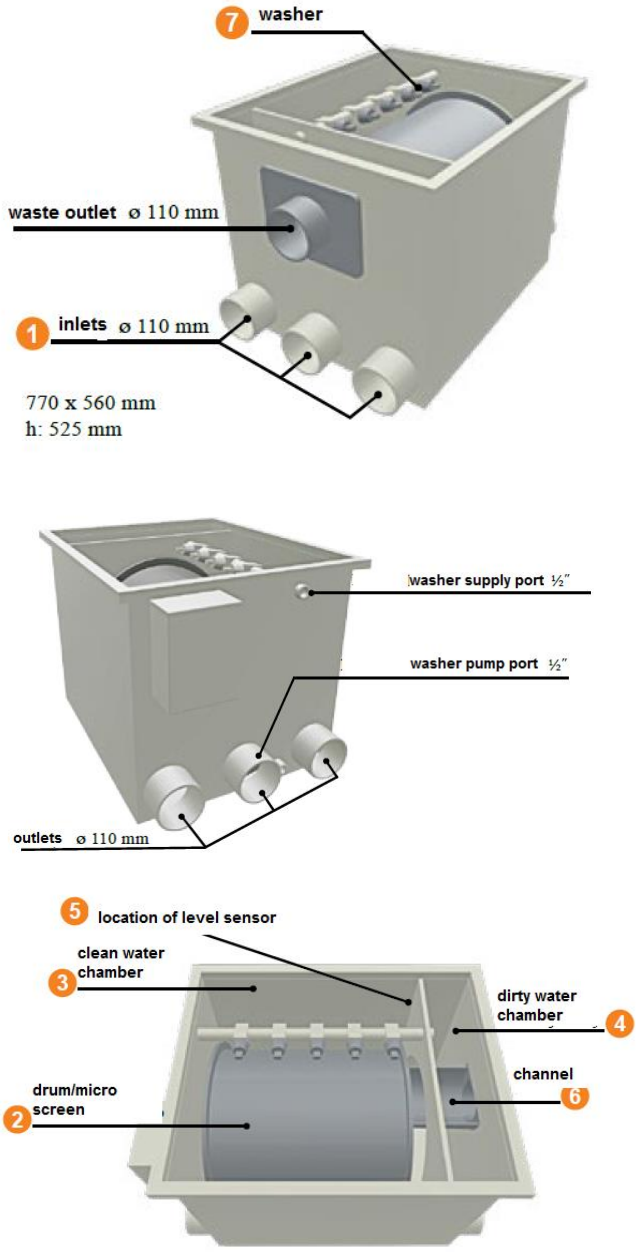


Figure 2: Filter construction
Construction and components

Operation in a gravity version

The water level in the pond and the dirty water chamber of the filter is identical. The filter should be connected directly to the pond with at least two pipes with a diameter of 110 mm. It is best to connect these pipes to the left and right input. The central input can be used for connecting a skimmer or can be capped. The valves which can be used to control water flow and cut off water supply for the purposes of filter maintenance and cleaning must be installed in front of the filter. The filter should be mounted so that its base is located 34 cm (+/- 4 cm) below the set water level in the pond. Gravity supply requires constant water level in the pond, which should be provided using an automatic water filling system and an overflow system.
Water from the filter passes by gravity to the biological filter from which the pump flows water back to the pond. In the gravity version, the sensor is located in the clean water chamber and is mounted in such a way that lowering of the water level induces short-circuit of the contacts and start-up of the cleaning cycle. The delivered filter has a factory-set gravity operation mode.

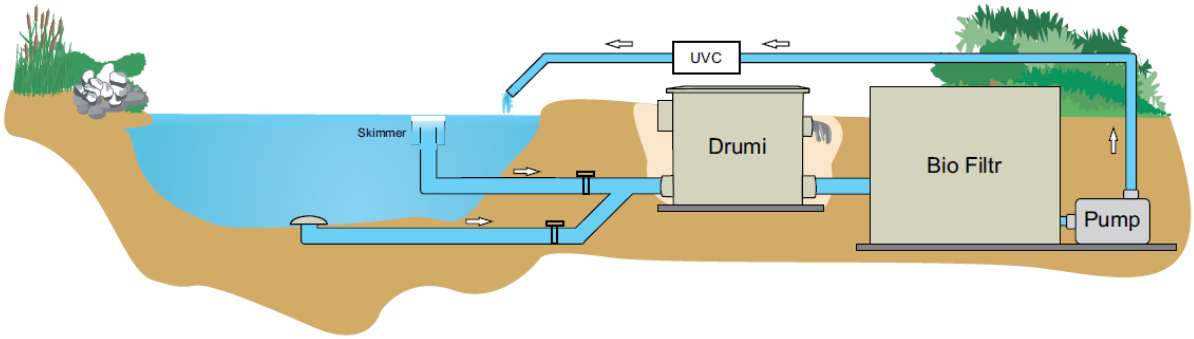
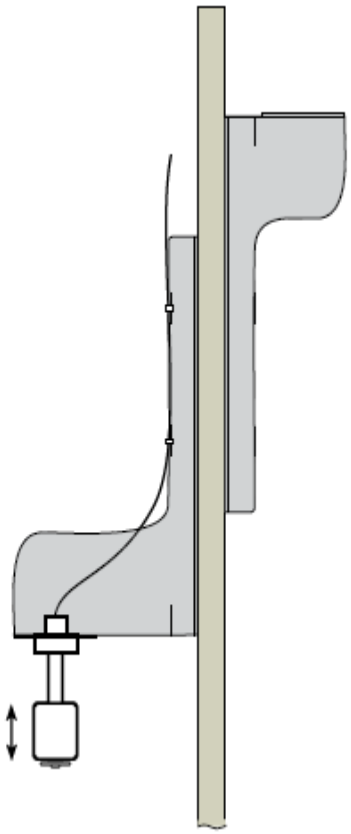


Figure 3: Connection of the filter in a gravity version

Location of the sensor in a gravity version

In a gravity version, the level sensor support is mounted on the bulkhead by means of two screws. The shape of the support allows top-down adjustment to meet the user's requirements. In this configuration, a float sensor should be mounted in the clean water chamber as shown in the picture. Upon mounting the sensor, the hanging cable should be fastened with a band to the fixing points.



Clean water chamber Dirty water chamber

Figure 4: Location of the sensor in a gravity version

Operation in a pump version

This way of connecting the filter enables water level fluctuations in the pond. The filter should be mounted in such a way that its base is always above the water level of the pond. The circulating pump is placed in a pond or pump chamber connected to the pond. The stream of water flowing into the dirty water chamber of the filer should be slowed down by using a pipe section with a diameter of 110 mm. Preferably, the inflow of water should take place with the use of two outermost inlets. The third inlet should be capped.
In this mode of operation, the sensor is located in the dirty water chamber and is mounted in such a way that exceeding the set water level induces short-circuit of the contacts and start-up of the cleaning cycle. Water flows by gravity from the clean water chamber to the biological filter and then to the pond.

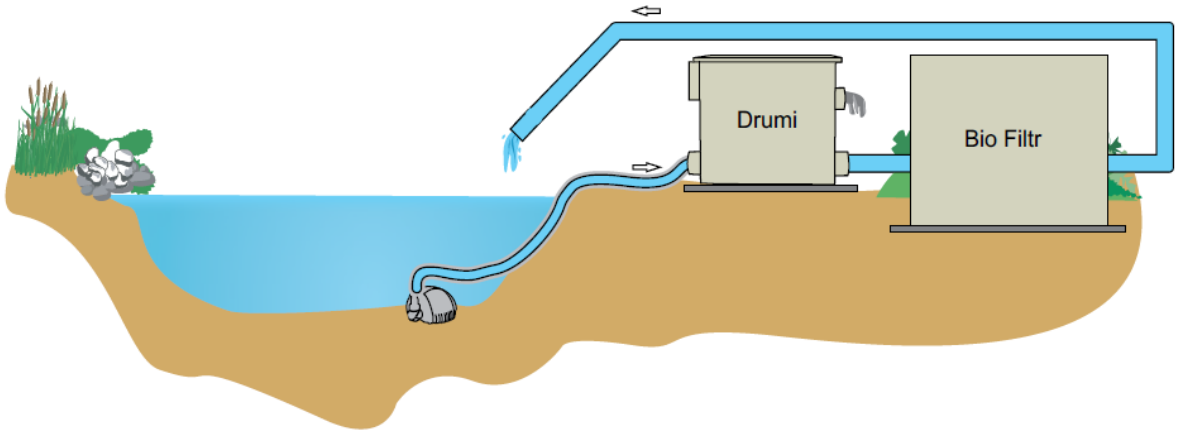


Figure 5: Location of the sensor in a pump version

Location of the sensor in a pump version

In the gravity mode of operation, the level sensor support is mounted on the bulkhead by means of two screws. The shape of the support allows top-down adjustment to meet the user's requirements. In this configuration, a float sensor should be mounted in the dirty water chamber as shown in the picture. Upon mounting the sensor, the hanging cable should be fastened with a band to the fixing points.

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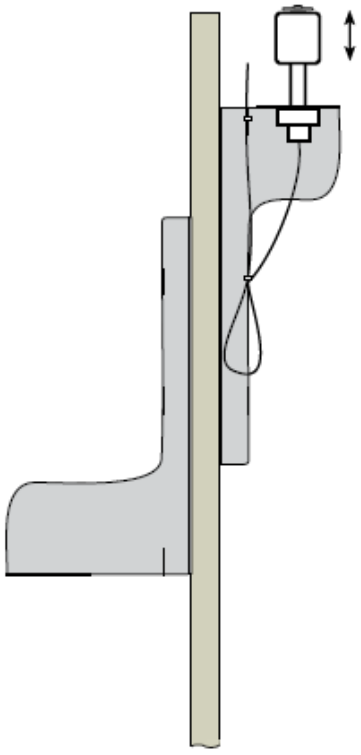


Clean water chamber Dirty water chamber

Figure 6: Location of the sensor in a pump version

Transport and installation

The device should be discharged and installed by a person with the necessary experience and qualifications. When discharging the machine with a forklift, the forks should be inserted between the pallet legs, determining the centre of gravity. When discharging the filter manually, the permissible standards included in the regulations on manual handling should not be exceeded. The Drumi filter should be mounted on a level and stable surface. The connections should be made using special rubber connectors or possibly PVC installation pipes.

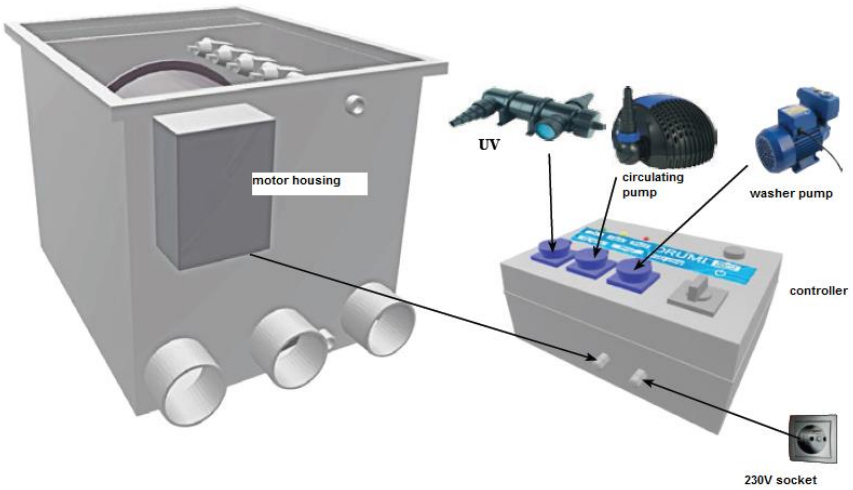
NOTE: The ports in the filter are not suitable for PVC gluing.

Before installation, it is necessary to choose the mode of operation of the filter. The filter design allows easy adaptation to two modes of operation.

The "Sprinkler" socket is used to connect the washer pump or solenoid valve if you want to connect the washer to the water supply system with a pressure of 2 - 4 bar.

NOTE: Electrical connections can be made by a qualified person with experience.

Mount the controller on a wall protected against the sun and rain. To do so, open the housing and screw it to the ground with the use of appropriate screws. Connect the motor housing to the controller with a cable, and then connect the power cable from the controller to the 230V 16A grounded socket. After installing the filter and checking the whole construction, turn on the device by turning the "Power" switch clockwise.



Controller support

Upon installation and connection, the controller does not require any additional settings. It is ready to operate immediately.

Controller operation modes:
After connecting and starting, the controller turns on the circulating pump and the UV lamp.
- a green light is on.

When the float sensor is activated, a cleaning cycle is started. The cleaning cycle comprises the process of starting up of the washer pump or solenoid valve and the rotation of the drum. The cycle time can be changed in accordance with Table 1. The switch is located on the control board (see the picture).

The manufacturer recommends the time of 25 to 35 seconds.
- a yellow light is on

If the float switch is not deactivated after the end of the cycle, the controller goes into an emergency cycle. The delay time can be changed in accordance with Table 2. The switch is located on the control board (see the picture).

The emergency operation time is three times the time set based on Table 1 plus the delay time based on Table 2.
- a yellow light is on and the red one blinks.

If the sensor is not deactivated until the end of the emergency cycle, the controller goes into the alarm state. It turns off drum rotation, sprayer, circulating pump and UV lamp.
- a red light is on.

The alarm state can be deactivated by pressing the Restart/Manual button on the controller housing for a minimum of 3s or turning off the power supply by a switch .
The Restart/Manual button is used to manually start the working cycle if the cycle was not triggered by a float switch before or the controller is not in an alarm state.
You can do it using the following two methods:
A short press (<1s) activates a single cycle consistent with the settings from Table 1.
- a yellow light is on.
Holding the button (>1s) starts the cycle as long as it is pressed.

The cover is equipped with a magnetic sensor for safety reasons. Disconnection of the magnetic sensor stops the working cycle (washer pump, drum rotation, circulation pump and UV lamp are turned off). The green and red lamps are on.

Drum filter controller

(Table 1) Screen cleaning cycle time settings

Switch section			Working time
1	2	3	
off	off	off	15 s
off	off	on	20 s
off	on	off	25 s
off	on	on	30 s
on	off	off	35 s
on	off	on	40 s
on	on	off	45 s
on	on	on	50 s

(Table 2) Additional delay time settings

Switch section		Working time
4	5	
off	off	0 s
off	on	10 s
on	off	15 s
on	on	20 s

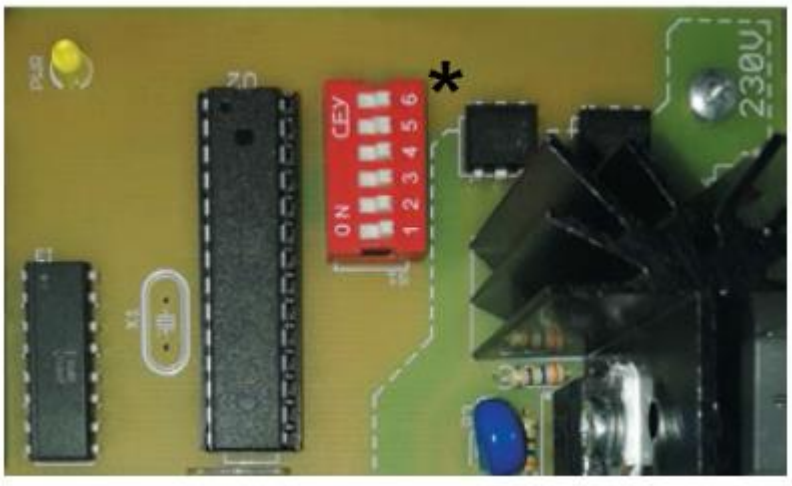


*Figure 7: Location of the switch**

PWM value settings for the controller of the motor driving the drum:
Switch 6
Off – PWM = 50%
On – PWM = 100%
This option is set by the manufacturer and should not be changed.

Safety rules

A dangerous mains voltage is present inside the controller's housing. Before opening the housing, disconnect the power supply by disconnecting the socket plug.

NOTE: Before installation or maintenance, you must disconnect the power supply of the filter !!!

All the necessary cables and sockets can be found outside. The motor driving the drum is supplied with a 12V power supply. Opening the cover during the operation of the filter switches off the motor driving the drum. This protects the machine against accidental injuries and accidents due to rotating toothed wheels. The machine may only be used by a mature person who has read and understood the operating instructions.

NOTE: Failure to comply with national and international safety regulations and instructions contained in this manual may result in serious injuries!

MAINTENANCE

Note: Before repair or maintenance works please disconnect the power supply !!!

The Drumi filter requires minimum maintenance. Movable components are made of durable plastics and stainless steel, which provides sufficient lubrication when working in water. If needed, the drum axis should be lubricated with vaseline using a long brush. During installation and operation it is necessary to protect the filter against larger particles such as branches and other debris. A larger number of leaves flowing with the current of water into the filter can cause a lot of problems. In this case, the contaminants should be removed manually. In order to protect against it, it is worth using an appropriate system of suction of water from the pond, for example, a system of suction of water from the body of water.

It is a very dangerous situation when long elements (strings, shreds of fabrics, etc.) flow into the filter. Such a situation can lead to work difficulties and even complete blocking and damage to the filter.

NOTE !!! Remove all such contaminants !!!

At least once a year, a person with appropriate qualifications should inspect the filter, paying special attention to scuffed or damaged electrical wiring, leaks, etc.

No	Description of the actions performed	Date	Signature
1			
2			
3			
4			
5			

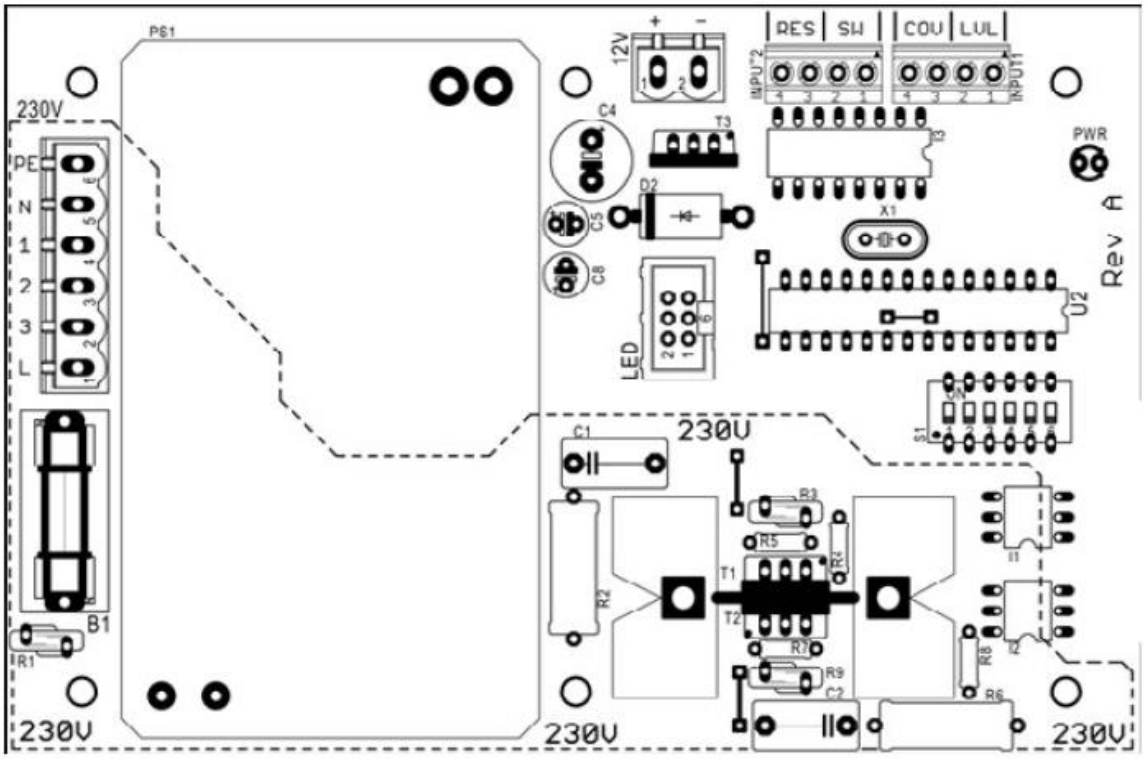
Recommended spare parts

Description	Quantity
Filtering panel	1

Troubleshooting

Faults		
Problem	**Cause**	**Diagnosis**
Filter does not filter water	Filter blocked with contaminants	Disconnect power and clean filter
After connection the filter does not work and the green indicator light is off	No power supply	Check voltage. If it does not work, please contact the dealer or manufacturer.
Filter does not start a cleaning cycle	Damaged wiring Damaged level sensor	The device must be inspected by a qualified person or please contact the dealer or manufacturer

Electrical scheme



230V Connector:
• PE – protective conductor terminal of the mains - for safety reasons, it must be performed before connecting the mains
• N – neutral cable terminal of the mains (N)
• 1 - phase terminal (L) for the first socket controlled by the T1 triac
• 2 - phase terminal (L) for the second socket controlled by the T1 triac
• 3 – phase terminal (L) for the third socket controlled by the T2 triac
• L – phase cable terminal of the mains (L)

12V Connector
• + positive voltage of the DC motor
• - negative voltage of the DC motor with PWM modulation

INPUT 1 Connector:
• LVL - terminals of a reed switch level sensor (short-circuited when the level is reached)
• COV - terminals of a reed switch cover sensor (short-circuited when the cover is closed)

INPUT2 Connector:
• SW – button terminal on the panel (short-circuited when the button is pressed)
• RES - reserve input of a reed switch button/sensor

LED connector – a connector of control LEDs placed on the panel

Warranty

The manufacturer grants a 24-month warranty on the purchased device from the date of its sale. The warranty is valid in the European Union and is valid only with the proof of purchase and filled in warranty card. The warranty does not include components subject to natural wear and tear and damage resulting from improper use. The guarantee does not exclude, limit and suspend the rights of the buyer arising from the non-compliance of the goods with the contract.