

Installation and operating manual

WATEX RCMB 14 / 16 x2 WATER FILTRATION SYSTEM



Read the instructions carefully before use!

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INTRODUCTION

We hope our water filtration technology brings you the comfort of clean water, saves you money and reduces problems caused by dirty water.

The WATEX RCMBx2 series incorporates the latest technological solutions.

The system is also easy to operate because it does not require special supervision. It performs its functions automatically provided the requirements in this technical manual are followed.

TECHNICAL DESCRIPTION

RCMBx2 series systems are designed to remove iron, turbidity and odours from water without chemical reagents.

The system consists of 3 columns: 1 reactor and 2 filter columns with automatic control units. The filter columns contain filter media: quartz sand of different grain sizes and AquaMandix catalytic filter media.

The automatic CLACK WS1.25 CI (USA) control unit regenerates the system, rinses the filter media, removes accumulated deposits and measures water consumption. Rinsing can be controlled by either time or water consumption.

All information is retained in the electronic control units during a power failure. The control units have many parameters that can be adjusted to your needs, such as rinse time and frequency.

Requirements for normal operation:

- Drain connection
- 220 V power supply
- Water pressure above 2,5 bar, but no higher than 3,5 bar.
- Room temperature above 0° C
- Water temperature up to 25° C
- Correct system connections

MOVING THE SYSTEM

The water filtration system is heavy and fragile: the fibreglass tank cannot withstand mechanical impacts.

Any mechanical impact may affect operation of the system.

Rocking or shaking the system is not recommended, as this can mix the filter-media layers and allow some of the media to flow to the users.

Move the system with a hand truck! If this is not possible, two people must move it by hand.

When moving the system by hand, it is recommended to hold the upper part by the control-unit housing where it joins the tank, and the lower part by the blue fibreglass tank. Do not lift the filter by the black base underneath: it is not attached to the tank and the filter may fall out of your hands!

1. Main technical specifications

Model:	WATEX RCMB14x2	WATEX RCMB16x2
Nominal flow Q _{nom} , m ³ /h	3.0	3.6
Rinse water volume, m ³	0.20	0.24
Minimum rinse flow, m ³ /h	3.0	4.0
Control	Electronic, automatic control by flow and time	
Control unit	Clack WS1.25 CI	
Treatment	Iron, manganese, turbidity, odour, colour	
Length (L)	1.37	1.53
Width (W)	0.36	0.41
Height (H)	1.85	1.87
Regeneration cycle – backwash (min)	8	
Regeneration cycle – rinse (min)	4	
Filter media:	AquaMandix, quartz sand 0.4 x 0.8 mm, 0.7 x 1.25 mm, 1 x 3 mm, 3 x 5 mm	
Water connection diameter (inlet/outlet)	1 1/4" female/male thread	
Drain connection	1"	
Minimum/maximum operating pressure	2.0 - 3.5 bar.	
Min./max. operating temperature	5°C - 30°C	
Power consumption	10 W	

2. General warning

The control unit and connection fittings are not designed to support the weight of the water supply system. Do not use petroleum jelly, oils, hydrocarbon greases or silicone spray anywhere on the system. Silicone grease may be used on the black O-rings, but it is not necessary.

Avoid using grease, including silicone grease, on red seals.

The nuts and sleeves are designed to be loosened or tightened by hand or with a special plastic wrench. If necessary, pliers may be used to loosen the nuts or sleeves. Do not use a pipe wrench to tighten or loosen the nuts or sleeves. Do not insert a screwdriver into the sleeve openings or strike them with a hammer.

Do not use pipe joint compound or other sealing compounds on the threads. Teflon tape must be used on the threads. Teflon tape is not required for the drain and reagent connections.

All plumbing work must comply with the applicable local requirements. The drain pipe downstream of the hose must be at least D50.

Solder the pipework before connecting it to the control unit's plastic fittings. Failure to do so may cause internal damage to the plastic fittings.

Allow the soldered fittings to cool before connection. Keep soldering flux away from every part of the connection fittings.

Connect the system to the power supply. Note: All electrical connections must comply with local legislation. Ensure that the power supply is uninterrupted.

Provide earthing on the metal pipes.

Observe the following during operation:

1. The tanks must stand on a flat, level surface;
2. Provide an uninterrupted power supply no more than 3 metres from the water filter.
3. The transformer is intended for dry locations only.
4. Position the water filter as close as possible to the drain outlet.
5. Do not install the water filter less than 3 metres from the water heater inlet.
6. Provide an uninterrupted water supply with quality variations within 30% and pressure between 2,5 and 3,5 bar.
7. Carry out general preventive maintenance at least once a year.
8. Ensure that water entering the system is neither above +30°C nor below +5°C.

3. System operation

3.1. *Main system components*



Filter tank

The water treatment system has four main components: 1 reactor, 2 filter tanks, Clack WS1.25 CI control units and a Paslode PROLINE 215 1.5kW/2.0HP oil-free compressor.

The reactor and filter tanks are made of polyethylene and reinforced on the outside with wound fibreglass to withstand pressures up to 10 atm.

Control unit

A CLACK WS1.25 CI control unit is screwed onto the filter tank and controls automatic regeneration of the system.

The control unit is made of a plastic blend. The control panel is at the front, and the water and drain connections are at the rear.

The control unit is powered from a 220 V socket. Its circuit board stores and controls all rinse-process parameters. When the system needs to rinse, the circuit board supplies power to the built-in motor, which moves the unit's internal cylindrical mechanism to the required position. A built-in meter on the left side of the control-unit housing, near the outlet, measures the amount of water consumed.

The system's rinse algorithm is based on the water volume measured by the built-in meter.

Compressor

The Paslode PROLINE 215 oil-free air compressor is connected to the water supply system and feeds atmospheric air upstream of the reactor to oxidise iron, manganese and gaseous substances in the water. The compressor operates according to water consumption and is connected to the control unit by contact wires. Compressor operating duration and frequency can be adjusted in the control unit.

The air compressor pressure must always be higher than the water pressure; otherwise, air will not enter the water.

Reactor

Like the filter tank, the reactor tank is made of polyethylene and reinforced on the outside with wound fibreglass to withstand pressures up to 10 atm.

In the reactor tank, incoming water is mixed with air supplied by the compressor, providing contact time for oxidation of iron and manganese. The oxidised iron is easily filtered out in the filter tank. The reactor has an air-release system to remove excess air and odours from the water.

3.2. System cycles

The system has two main operating cycles: service and regeneration (rinsing).

Service cycle

During the service cycle, untreated water enters the reactor, where air is also introduced. Water and air mix in the reactor tank to oxidise iron and manganese. The water then passes through the control unit into the top of the filter tank and flows through the filter media, where it is treated. It returns through the collector pipe to the control unit and then flows through the treated-water outlet to the users. When a user draws water during the service cycle, the RCMB display shows “FILTERING”. The instantaneous flow and the remaining volume of water to be treated can be monitored during this cycle.

The service-cycle duration depends on incoming water quality and the quantity of filter media. The WATEX RCMBx2 control unit contains a meter that measures water consumption. The electronic display can be used to set the water volume (m³) after which regeneration is required. Once the meter has measured that volume, the system starts regeneration at 2.00 that night (factory setting).

The regeneration start time can be changed using the electronic display.

3.3. Rinse-cycle diagrams

The system requires a rinse cycle to remove accumulated substances (iron, manganese, silt, sand, clay particles, etc.) from the filter and restore the filter media's capacity. Filter-media capacity is expressed in m^3 . The meter built into the WATEX RCMBx2 model therefore measures water consumption, and the system switches to the rinse cycle after a set volume in m^3 has been used.

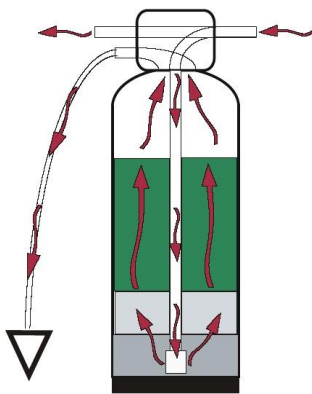
The rinse cycle lasts approximately 12 minutes and consists of two stages.

The order of the stages can be changed in the control unit, but we recommend using the factory-set sequence.

The system has 2 main stages: backwash and downflow rinse.

To maintain an uninterrupted water supply, untreated water is supplied to users during the rinse cycle. For this reason, rinsing is recommended at night, when water consumption is lowest.

3.3.1. Backwash mode (Backwash);

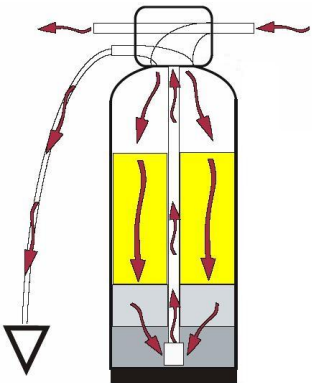


In backwash mode, the flow direction in the filter tank is reversed. Water flows upwards through the tank and is discharged to the drain. This stage removes accumulated substances from the filter.

If the system is not rinsed sufficiently, it will not achieve the specified capacity. Pressure loss across the filter will also increase.

This stage lasts approximately 8 minutes. The flow is regulated by the rinse-flow washer fitted in the drain connection elbow.

3.3.2. Downflow rinse mode (Rinse);



Downflow rinsing removes the remaining deposits from the filter tank and returns the filter-media layers to their proper positions. Water flows down through the tank, then up through the collector pipe and out to the drain. The flow is regulated by the rinse-flow washer (DLFC) fitted in the drain connection elbow.

This stage lasts 4 minutes.

Typical installation diagram



3.4. Water supply connection

The water connections are at the rear of the filtration system. Arrows identify the inlet and outlet. Viewed from the front, the inlet is on the right and the outlet on the left. Both connections have 1 1/4" external threads. The plastic threaded fitting is a union that can rotate freely while remaining watertight. Therefore, the unions do not need to be tightened firmly against the control-unit housing; hand tightening is sufficient. Teflon tape must be used on plastic threads.

The material of the pipework connected to the system is not critical. The main requirement is that the system must not support the weight of the water supply pipework.

The system can be connected using heat-fused, glued or threaded plastic pipes, flexible metal pipes or soldered brass pipes.

Note: Solder the pipework before connecting it to the control unit's plastic fittings. Otherwise, the plastic fittings may be damaged internally and fail to seal.

Allow the soldered fittings to cool before connection. Keep soldering flux away from every part of the connection fittings.

A bypass valve is recommended, as shown in the diagram, together with valves before the inlet and outlet.

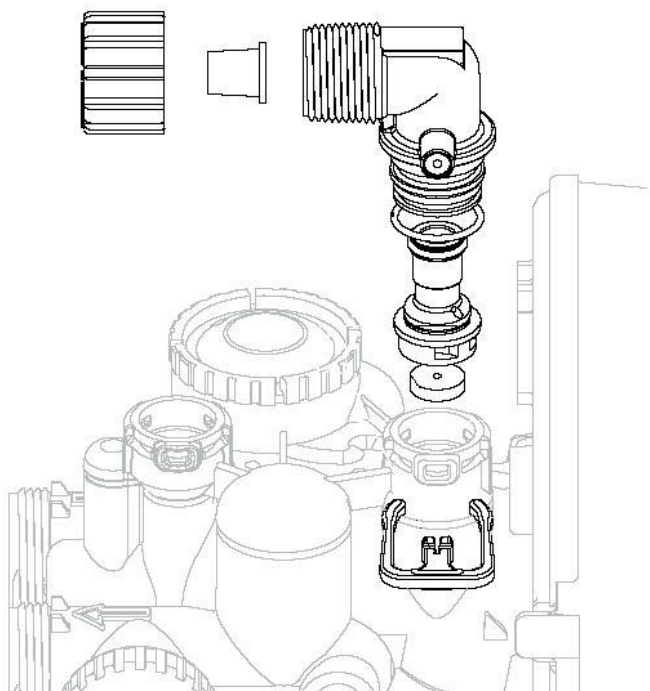
During normal operation, the bypass valve is closed and the inlet and outlet valves are open.

During preventive maintenance or repairs, untreated water can be supplied directly to the users.

Sampling taps before and after the system are also recommended to check the quality of untreated and freshly treated water. Pressure gauges before and after the system are recommended to monitor its pressure loss.

To prolong filter life, a mechanical prefilter is recommended upstream to trap sand particles that may be drawn from the borehole and cause clogging.

3.5. Drain connection



The system requires a drain connection for regular rinsing. Rinsing removes accumulated impurities (silt, iron, sand, clay, etc.) and the reagent used to restore the filter media's ability to oxidise iron, manganese and hydrogen sulphide. The drain connection is on top of the control unit. A 3/4" garden hose supplied with the system carries rinse water to the main drainage system.

Connect as follows:

1. Pull out the retaining clip and remove the drain connection elbow.
2. Pass the garden hose through the nut.
3. Insert the cylindrical insert into the end of the hose.
4. Insert the hose end into the elbow opening and tighten the nut by hand.
5. Refit the drain connection elbow and return the clip to its original position.
6. Connect the other end of the garden hose to the main drainage system.

Note: The sealing ring in the drain connection elbow allows it to be turned in the desired direction. The rotation angle is 270°.

Important: Secure the garden hose so it cannot come loose during rinsing. Do not allow the hose to twist or kink: this reduces rinse-water flow and may cause incomplete rinsing and poor water quality. The gravity drain pipe must be at least D50. Never insert the discharge pipe directly into the sewer or a receptacle. Always leave an air gap between the discharge pipe and the receiving container to prevent backflow.

3.6. *Electrical connection*

The system is supplied with a transformer rated for 220 V. The power supply must be uninterrupted. Provide earthing on the metal pipes.

The transformer is intended for dry locations only.

Note: *All electrical connections must comply with local legislation.*

Provide an uninterrupted power supply no more than 2 metres from the water filter.

The rectangular connector at the end of the transformer lead must be connected to the circuit board inside the control unit. Proceed as follows:

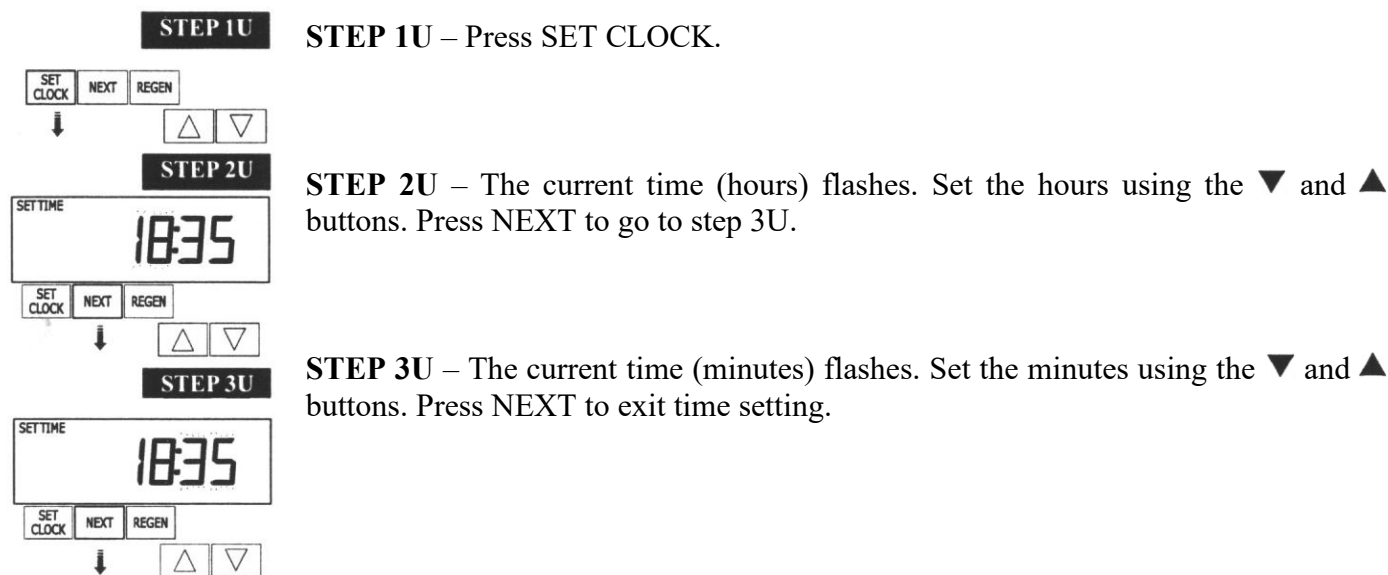
1. Remove the front button panel from the control unit.
2. Release the upper central retaining tab that holds the circuit-board frame in the control unit.
3. Pass the transformer connector through the opening on the right side of the control unit's plastic wall.
4. Connect the lead to the terminals at the bottom right of the circuit board.
5. Route the rest of the lead along the side of the circuit-board frame behind the clips provided for it.
6. Slide the circuit-board frame back to the retaining tab and secure it in its original position.
7. Refit the front button panel.

4. INITIAL STARTUP

Normally, all main operating parameters of WATEX RCMB18x2 series systems have already been set at the service centre. The only action required at first startup is setting the time.

4.1. *Setting the time*

The user can set the correct time. Set it at initial connection, after a prolonged power failure, or when changing between summer and winter time. After a prolonged power failure, the time display flashes to indicate that it must be reset.



4.2. *Setting rinse durations and capacity*

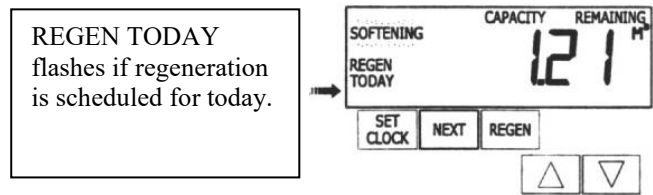
The water filter is programmed and all parameters are set before delivery to the customer. To check the settings and change parameters if required, proceed as follows:

- Step 1. With the current time displayed, press NEXT and DOWN simultaneously and hold them for 5 seconds.
- Step 2. SET FILTERING flashes on the display.
- Step 3. Press NEXT. The first rinse stage, SET BACKWASH, appears with a set duration of 8 minutes.
- Step 4. Press NEXT. The second rinse stage, SET RINSE, appears with a set duration of 4 minutes.
- Step 5. Press NEXT. REGEN and a capacity of 8,00 m³ appear. The filter will be rinsed after every 8 m³.
- Step 6. Press NEXT. REGEN NORMAL appears. The filter will be rinsed in normal mode at the preset time, i.e. 2:00.
- Step 7. Press NEXT. SET rLY 1 appears, showing the state of relay output No.1. It must be FILTERING ON L.
- Step 8. Press NEXT. FILTERING 10 L appears. After every 10 litres, relay No.1 will open.
- Step 9. Press NEXT. SET TIME REMAINING and 0:10 min appear. This means the relay will open and the compressor will run for 10 seconds.
- Step 10. Press NEXT. SET rLY 2 appears. Relay output No. 2 must be OFF.
- Step 11. Press NEXT. The programming screen returns to its initial state and displays the current time.

All the parameters above can be changed using the UP and DOWN arrow buttons. Consultation with WATEX specialists is recommended before making changes.

4.3. *Manual rinsing*

Sometimes regeneration is needed earlier than the system would normally request it. This is generally called manual regeneration. For example, water use may have been higher than usual because of guests or extra laundry.



To schedule manual regeneration for the preset delayed regeneration time, press and release REGEN. REGEN TODAY will flash, indicating that regeneration will start at the preset time. If REGEN was pressed by mistake, press it again to cancel the request.

To start manual regeneration immediately, press and hold REGEN for 3 seconds. The system will start regeneration at once. This request cannot be cancelled.

When regeneration starts, the display shows the regeneration steps and the time remaining in each step. The system completes the steps automatically and returns to water-treatment mode when regeneration is finished.

4.4. *Monitoring operation*

During operation, one of three screens can be displayed. Press NEXT to move between them. One screen always shows the time. The second shows the days remaining or the remaining volume (m³). Days remaining means the number of days until regeneration. Remaining volume means the cubic metres that can be treated before regeneration begins. The third screen shows the current flow of treated water through the system.

The user can cycle through all screens and return to the time display. If regeneration is scheduled for the preset time, REGEN TODAY appears on the display.

5. TROUBLESHOOTING

Problem	Possible cause	Solution
1. Compressor does not run	a. Compressor unplugged or ON/OFF switch off	Switch on and check the compressor power supply.
	b. Relay wires not connected to the control unit	Connect and check. Both contacts can be connected to check whether the compressor starts. If it does not, replace the compressor.
2. Poor water quality	a. Air is not entering the water supply system	Check compressor air supply pressure. It must be higher than the water pressure.
	b. Insufficient rinsing of the filter media	Check water pressure during rinsing. Replace the filter media.
	c. Incoming water quality has deteriorated	Check water quality. Test the water.
3. “filtering” is not displayed while water flows	a. Water flows through the bypass, not the filter	a. Change the bypass setting
	b. Meter disconnected	b. Connect the meter to the electronic board
	c. Meter turbine movement restricted or stopped	c. Remove the meter and check for trapped material
	d. Meter faulty	d. Replace the meter
	e. Electronic board faulty	e. Replace the electronic board
4. Control unit regenerates at the wrong time	a. Power interruptions	a. Set the correct time in the control unit
	b. Time incorrectly set	b. Set the correct time
	c. Incorrect regeneration time	c. Reset the regeneration time
	d. Control unit set to immediate regeneration	d. Check the regeneration-time option in the control-unit setup procedure
5. Error code	a. Control unit has just been serviced	a. Press NEXT and REGEN for 3 seconds, or disconnect and reconnect the black power lead to reset the control unit
1001 or E1 – Unable to detect the start of regeneration		
1002 or E2 – Unexpected stop	b. Something is jammed in the control unit	b. Check the piston and spacer assembly for obstructions
1003 or E3 – Motor runs too long and is out of adjustment while trying to reach the next regeneration-cycle position	c. High drive force presses on the piston	c. Replace piston and spacer-assembly components
1004 – Motor runs too long and is out of adjustment while trying to reach the starting position	d. Control-unit piston is not in the <i>home</i> position	d. Press NEXT and REGEN for 3 seconds, or disconnect and reconnect the black power lead to reset the control unit
If any other code appears, contact the manufacturer.	e. Motor not fully inserted to engage the drive gear; motor wires damaged or disconnected; motor faulty	e. Check the motor and wiring. Replace the motor if necessary
	f. The drive mechanism's label is damaged or dirty, or the mechanism is missing or defective	f. Replace or clean the drive mechanism.
	g. The drive base is incorrectly fitted into the board	g. Carefully check the drive bracket

	h. The electronic board is damaged or defective	h. Replace the electronic board
	i. The electronic board is incorrectly connected to the drive base	i. Make sure the electronic board is properly connected to the drive bracket.
6. The control unit has stopped during regeneration	a. The motor does not work	a. Replace the motor
	b. No power at the socket	b. Repair the socket or use a working socket
	c. Defective transformer	c. Replace the transformer
	d. Defective electronic board	d. Replace the electronic board
	e. The drive mechanism or a drive-cover component is defective	e. Replace the drive mechanism or drive-cover component
	f. Defective piston holder	f. Replace the piston holder
	g. The main piston or regeneration piston is defective	g. Replace the main piston or regeneration piston
7. The control unit does not regenerate automatically when the REGEN button is pressed and held	a. The transformer is unplugged from the socket	a. Plug the transformer into the socket
	b. No power at the socket	b. Repair the socket or use a working socket
	c. The drive mechanism or a drive-cover component is defective	c. Replace the drive mechanism or drive-cover component
	d. Defective electronic board	d. Replace the electronic board
8. The control unit does not regenerate automatically, but does regenerate when the REGEN button is pressed	a. Water is flowing through the bypass	a. Close the bypass line.
	b. The meter is disconnected	b. Connect the meter to the electronic board
	c. The meter turbine's movement is restricted or it has stopped	c. Remove the meter and check whether anything has entered it
	d. The meter is defective	d. Replace the meter
	e. The electronic board is defective	e. Replace the electronic board
	f. Setup error	f. Check the control-unit setup
9. The time flashes on and off	a. A power outage has lasted longer than 2 hours; the transformer has been unplugged from the socket and plugged back in; the transformer plug has been disconnected from and reconnected to the board; or the NEXT and REGEN buttons have been pressed to reset the control unit	a. Set the time again

For questions and advice, contact Watex Estonia OÜ specialists.

6. MAINTENANCE SCOPE AND COSTS

The iron-removal system requires maintenance during operation.

System maintenance is a paid service both during and after the warranty period.

The standard maintenance interval is once a year. It may vary depending on water quality, the volume of water treated, replenishment of reagents, etc. (6–24 months).

The table lists approximate labour and transport costs.

Scope and costs of a single maintenance visit for the iron-removal system

No.	Description of work and expenses	Unit	Quantity	Unit cost, EUR	Total, EUR
1	Iron-removal system maintenance	set	1	80.00	80.00
	1.1. Iron-removal pressure filter				
	1.1.1. Checking and adjusting rinse-cycle operation				
	1.1.2. Checking the operation and tightness of control valves				
	1.1.3. Checking the tightness of pipework and fitting connections and repairing leaks if necessary				
	1.1.4. Cleaning and lubricating the control-unit mechanism				
	1.1.5. Cleaning the control-unit cylinder and piston with special iron-removal chemicals and lubricating them				
	1.1.6. Topping up the filter media if necessary				
	1.1.7. Checking treated-water quality by on-site measurements (iron testing) and, if necessary, testing other parameters				
	1.1.8. For the technological process				
	Transport costs (example)				
2					
		km		0.33	

For questions and advice, contact Watex Estonia OÜ specialists:

Reti tee 11, Peetri, 75312 Harju maakond, Estonia. Tel.: +372 58862212, e-mail: info@veefiltrid.ee

WARRANTY CONDITIONS

The manufacturer's warranty period for the purchased system is 24 (twenty-four) months.

The system must be serviced regularly, at least once a year.

Warranty obligations are provided in accordance with the manufacturer's warranty obligations stated in the product's technical manual and the supplier's terms set out below.

The supplier provides a technical manual with each product in the original language, unless otherwise requested. The purchaser is responsible for complying with the product's technical parameters and using the product correctly.

Warranty obligations are fulfilled only if the product has defects attributable to the manufacturer and the user has operated the product in accordance with the requirements stated in the technical manual. In such cases, the defects are remedied at the supplier's, i.e. Watex Estonia OÜ's, expense.

Warranty obligations do not apply if:

1. the product is mechanically damaged or the manufacturer's labels are damaged;
2. the product is kept or used in unsuitable conditions;
3. the product has been dismantled or repaired without authorisation;
4. the product is damaged as a result of force majeure, meaning circumstances beyond the purchaser's and supplier's control which they could not foresee and could not prevent by reasonable measures (including fire, flood, earthquake, war, currency reform, etc.);
5. if the supplier did not install the product, the purchaser must deliver the defective product to the Watex Estonia OÜ office during the warranty period; if the product was supplied, installed, adjusted and commissioned by an authorised Watex Estonia OÜ representative, warranty service is provided at the purchaser's site.

For warranty matters, contact the responsible representatives of Watex Estonia OÜ.