

Installation and operation manual

WATEX CMB-10/12/13/14 IRON REMOVAL WATER FILTER



Watch CMB filter first
start-up video:



More info: <https://watex.eu/en/iron-removal-filters/iron-removal-filters-watex-cmb>

Read the instructions carefully before use!

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INTRODUCTION

We hope that the water filter that we offer will provide clean water comfort, save money and reduce the problems caused by dirty water.

WATEX CMB Series filter combines the latest technological solutions.

In addition, the filter is easy to operate, because does not require a special control. Filter will perform its functions automatically provided that there is compliance with the requirements presented in this technical manual.

TECHNICAL DESCRIPTION

CMB series filter is intended for removal of iron, turbidity and odors from water without chemical agents.

The filter consists of tank and an automatic control valve. The tank contains filtration media: quartz sand of different fractions and the AquaMandix catalytic filtering media.

Automatic control valve CLACK WS CI (USA) provides filter regeneration, rinsing the filtering media, discharge of accumulated sediment and air suction. The filter can be set for rinsing by both the time and consumption.

The electronic control valve retains all the information, even in the case of a power failure. The control valve has a number of different parameters that can be adjusted according to your needs, such as rinsing time, frequency, etc.

Prerequisites for normal work of the filter:

- Connection to drainage
- Connection to power 220 V
- Water pressure above 2.5 bar.
- The room temperature over 0° C
- Water temperatures up to 25° C
- Proper system connection

ESSENTIAL FILTER SPECIFICATIONS

SPECIFICATIONS	FILTER MODEL			
	CMB-10	CMB-12	CMB-13	CMB-14
Capacity nominal (m ³ /h)	0,6	0,9	1,0	1,2
Capacity max (m ³ /h)	3,0	4,0	5,0	5,0
Dimensions of the filter tank (cm)	25 x 157	30 x 157	33 x 158	35 x 182
Tank capacity (liters)	50	79	105	145
Filter media quantity (liters)	30	50	70	90
Quartz sand 3x5 mm (liters)	5	7	8	
Quartz sand 1x3 mm (liters)	5	7	8	
Quartz sand 0.7x1.25 mm (liters)	7	9	12	
Quartz sand 0.4 x 0.8 mm (liters)	12	17	20	
AquaMandix (liters)	10	12.5	15	
Rinsing intensity m ³ /h	1.2	1.8	2.1	2.4
One volume of flush water (liters)	~160	~220	~270	~320
Drain flow control gaskets	053	065	075	090
Injector	Blue	Yellow	Green	Orange
Regeneration cycle– backwash (min)	8	8	8	8
Regeneration cycle– brine (min)	27	30	35	40
Water mains connection dimensions (inches)	1"			
Drainage connection (inches)	¾"			
Working pressure (bar)	2.5 - 6			
Power consumption	10 W			

1. RELOCATION

Please note that the water filter is heavy and fragile; the glass fiber tank cannot stand mechanical shocks.

Any mechanical shock can affect the operation of the filter.

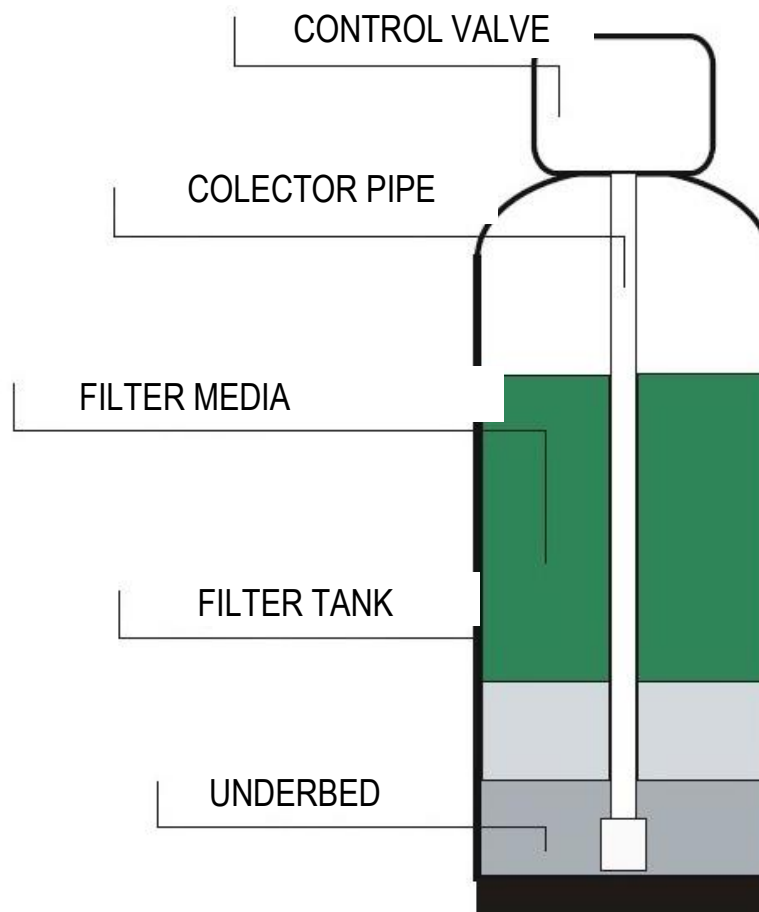
It is not recommended to lift, roll, or turn the filter upside down, because the filter layers inside can become entangled with each other and as a result parts of the filtering media may flow to consumers and the filter will not function in normal mode as well.

Use a wheeled platform to move the filter. Where it is not possible, move it together with another person using your hands.

Moving by hand, it is recommended to grab the top behind the control valve housing (the place where the control valve connects to the tank) and the bottom behind the blue fiberglass tank. Do not take the filter behind the bottom black plate, because it is not secured to the tank and filter can fall out of your hands!

2. SYSTEM OPERATION

2.1. *System basic components*



The filter has three main basic components: filtering media tank, the filtration element, and the control valve.

The Filtering tank is made of polyethylene and externally reinforced with glass fiber windings to hold the pressure up to 10 atm. Tank contains different size fractions of gravel as a underbed. In the bottom part is the special filtering gravel with a grain size of 3 x 5 mm, followed by gravel with grain size 1 x 3 mm. These layers serve primarily as a support for filtering media to prevent it from getting into the water system after the filter. During backwash time, it works to distribute the water flow evenly to loosen the filter media all over the filter area.

For removal of iron, the filter media used in the filter is the fine quartz sand 0.7x1.25 mm and 0.4x0.8 mm and the Aqua Mandix. This filter media is coated with a thin layer of MnO serving

as an oxidizer of iron, manganese, and hydrogen sulfide present in the water. In turn, odors are removed due to an air cushion, which is the upper part of the tank.

In addition, in the tank is the collector pipe, which has a bottom sieve with a specific mesh size in order to prevent the filter media from getting into the water supply system. Through the collector pipe the purified water is fed from the bottom to the top to the control valve and then to consumers.

2.2. *Control valve*



On the filtering tank of the filter is installed the CLACK WSCI 1 control valve, which controls automatic regeneration of the filter. The control valve housing is made of plastic alloy. The control panel is located in front of the filter, and the water supply and sewerage connections are in the rear.

The control valve is operated by voltage of 220 V. The control valve has the motherboard, which stores and regulates all the rinse process parameters. To rinse the filter the voltage is fed from the motherboard to the built-in motor that moves a cylindrical detail built-in the unit into a certain position.

On the left part of the control valve housing at the outlet manifold is a built-in meter that counts the quantity of water consumed.

The rinse algorithm is based on the volume of water consumed, which is counted by the built-in meter.

2.3. **SYSTEM OPERATION**

Filter operation has two main basic cycles: the service cycle and the regeneration (rinse) cycle.

Service cycle

During the Service cycle water through the unpurified water inlet pipe is fed to the control valve, then from the top it flows into the filter tank and then it flows through the filter media, where the water is purified and then it flows through the collector manifold back to the control valve and then through the treated water outlet it flows to consumers.

If a consumer uses the water during the service cycle, on the CMB series model display appears the message "FILTERING". During the service cycle, it is possible to follow the instantaneous water flow and the remainder of the volume of purified water.

Service cycle time depends on the incoming water quality and the amount of the filter media. The WATEX CMB series control valve has a built-in meter that lists the quantities of water consumed. The electronic display of the filter makes it possible to adjust the water volume (m³) after which consumption follows the regeneration. Once the meter has counted the preset volume of water, (the factory setting is 2:00 AM), the regeneration cycle is launched.

The beginning of the regeneration cycle can be adjusted using the electronic display.

2.4. **Rinsing cycle types**

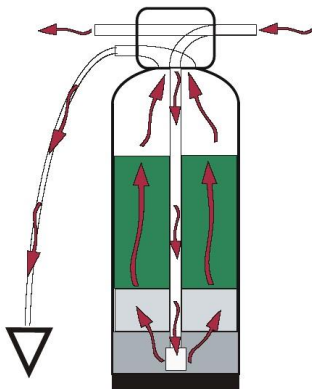
The filter needs the rinse cycle to remove substances accumulated in the filter media (iron, manganese, grout, sand, clay particles, etc.) and restore the media's filtering capacity. The filtration media capacity is determined in m³, thus the built-in meter of the WATEX CMB model measures the consumed water and after a certain volume of consumption, the system switches on the rinse cycle.

The rinse cycle lasts about 35-48 minutes and consists of several modes.

It is possible to change the mode sequence on the control valve; however, we recommend the use of the factory-set mode sequence.

The filter has two main modes: backwash rinsing, sucking-in air.

In order to ensure uninterrupted water supply during the rinse cycle the unpurified water is fed to the consumer. Because of this, it is recommended that the rinse cycle occurs when water the consumption is the lowest, e.g. at night.



2.4.1. **Backwash mode;**

During the backwash mode, the flow direction in the filter tank is changed. The water in the filter tank flows from the bottom up and then out to the drainage.

This mode is necessary to rinse the filter of accumulated substances. If the filter is not adequately rinsed, the filter does not achieve the determined capacity. Furthermore, the pressure loss increases in the filter.

This mode takes about 8 minutes. The flow is regulated by sewer connection bend loaded rinsing disc.

2.4.2. Air suction mode;

In the air- suction mode through a special opening, the ambient air is drawn in the control valve, to create a new air bag, which serves for oxidation of iron and separation of odors from the water. If in this cycle the air is not sucked in the filter will not ensure the normal operation! Consequently, this cycle is the most important throughout the rinsing cycle. This mode lasts for approximately 27-40 minutes.

Air injection
check valve



3. INSTALLATION

3.1. General conditions

The filter must be placed on the flat, leveled surface.

It is recommended to install the filter in the technical room with soundproofing, because during the rinsing time (usually at night), the flow of water to the sewers can be heard.

The control valve and connection fittings are not intended for supporting the weight of the water supply system.

All sanitary-technical works to be executed in accordance with legislation.

Filter must be provided with a continuous supply of water, which does not differ in quality within 30% and has the pressure range of 2.0 to 3.5 bar.

To ensure the temperature above +40 ° C does not get into the filter.

The room temperature must not be lower than + 5 ° C and not higher than 45 ° C.

Do not use for the filter connections petroleum jelly, oils, hydrocarbon lubricants or spray silicone. Silicon grease can be used on black o-type sealing rings, but it is not necessary.

Nuts and bolts have been designed so they can be unscrewed or tightened by hand or special plastic key. If you need to unscrew the tightened nuts or couplings, you can use pliers. However, take care not to damage the plastic parts. Do not use wrenches or socket wrenches to tighten or loosen.

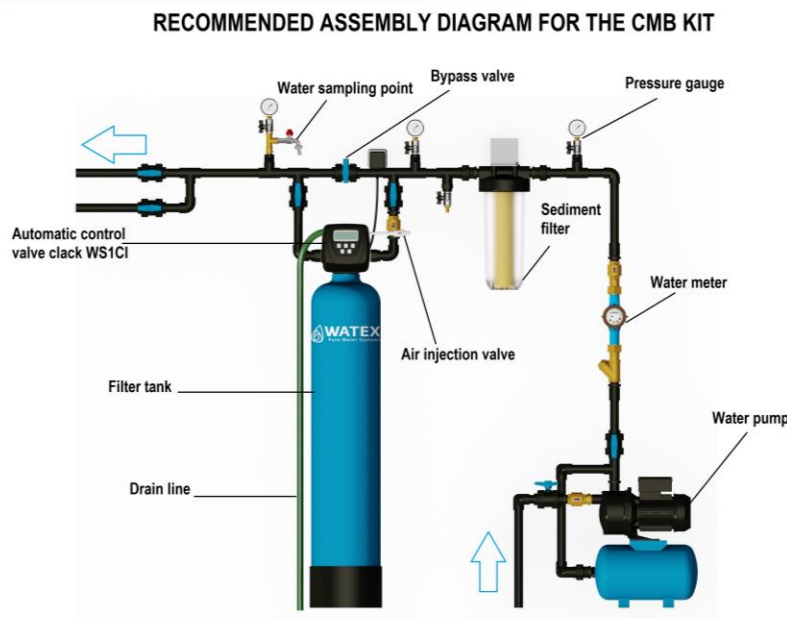
Do not place the screwdriver into sleeve/cap openings and do not strike with a hammer!

Teflon tape is not necessary for sewer and reagent connection fittings.

Place the water filter so that the distance between the drainage outlet and the filter is minimized.

Perform a general preventive maintenance at least once a year.

Typical installation example



3.2. Water supply connection

In the rear of the water filter is the water supply connection. Each connection has the inflow and outflow indicating arrows. If you look at the filter from the front, on the right side is the inflow and on the left side is discharge. The filter's connection to the mains outer thread size 1 " (inch), of both input and output. Plastic threaded fitting is of a screw type and it can freely rotate the ring, keeping the density. Therefore, there is no need for very powerful (sufficient hand strength) tightening of the bolts on the control valve housing.

Use of Teflon tape on the plastic threads is a must.

The media of the piping, which connects to the filter, does not make significant difference.

Most important is that the filter does not bear the weight of the water supply system.

Filter can be connected with the cast iron, glued, PVC screw-fastening pipes. It is also possible with flexible metal pipes, soldered brass pipes.

***Note:** soldering of pipes must be carried out before connection to the control valve plastic fittings failing to follow this rule can result in internal damage of the plastic fittings and they will not provide consistency of connection.*

Soldering fittings must be cooled down. Avoid soldering grease contact with any connecting fitting parts.

For the water filter, it is recommended to install a bypass valve, as shown in the figure, and sample valves before inflow and outflow as well.

During the normal operation, bypass valve is closed, but the input and an output valves are open.

During the preventive maintenance works on the installation or filter repair, the not purified water can be supplied to the consumers.

It is recommended to install the sampling valve before and after the filter to compare /determine the quality of raw water and the just- purified water. It is also advisable to install pressure gauges before and after the filter to control the pressure loss in the installation.

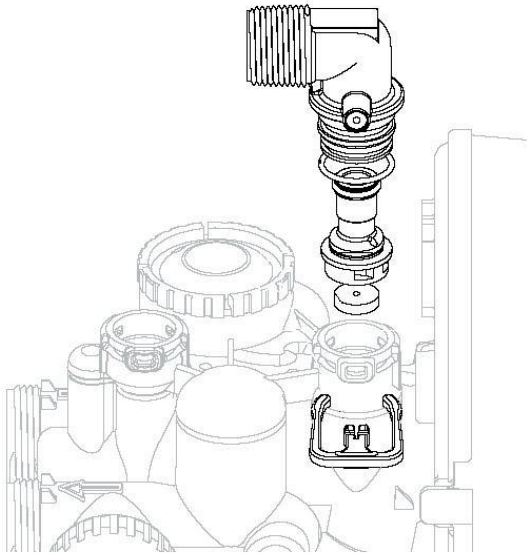
In order to enhance the durability of the filter first it is recommended to install a mechanical filter that prevents sand particles, which can be lifted out of the hole and to lead to clogging the parts of the filter.

3.3. Drainage connection

The filter requires to be connected to the sewer in order to ensure regular rinsing. During the rinsing time, the air bag of the filter is removed along with the accumulated dirt (mud, iron, sand, clay, etc.).

Drainage connection points are located at the top of the control valve. We recommend using a garden hose for drainage of rinsing water from the filter to the common sewage system.

Note: the bend of the sewer connection has the sealing ring; it is possible to turn it in the desirable direction. Turning angle is 270°.



Important: Ensure that the drainage pipe during rinsing is not dropping out. Secure it!

Important: Make sure the garden hose is not folded, because it will reduce rinsing water flow and the filter is likely to have incomplete rinsing, which can lead to poor water supply

Drainage pipe can be placed in the common sewer around 0.5 meters above the control valve, but during the first rinses watch if the full rinsing of the filter is really going on.

If there is no complete rinsing, consult with "WATEX" technical center.

Important: Gravity Drainage pipe shall be not less than D40.

Important: Never drive the drain hose directly into drains or the receiver. Always allow air access between the drain hose and the tank to avoid

backflow.

Important: To prevent the sewer smell come into the filter and cause bacteriological contamination of the filter before entering the sewage system it is recommended to create hydro seal or siphon.

3.4. Electrical connections

Filter is supplied with electricity transformer (AC adapter), which operates at 220 V. Power supply to the filter must be continuous. Metal pipes are to be earthed. The transformer is designed for dry places only.

Note: All electrical connections must comply with local regulations.

To ensure a continuous supply of electricity from the source located not farther than 2 meters from the water filtering filter.

Transformer's wire tip has a rectangular socket, which must be connected inside the control valve at motherboard. To do this:

1. Remove the front cover of the control valve.
2. At the top of release the middle mounting tab that keeps the motherboard frame to the control valve.
3. On the right side of the plastic wall of the control valve there is a hole through which to pull the transformer's (adapter's) tip.
4. The tip to be connected to the contact terminals at the right lower part of the motherboard.
5. The rest of the cable should be placed along side the frame of the motherboard behind the specially designed clamps.

6. Push back the motherboard-mounting frame to fastening tab and secure it in the original position.
7. Install the front button cover.

4. START UP

Watch the video for CMB filter first start-up

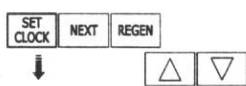


Usually all key operating parameters of the WATEX CMB series filter have already been set at the service center. The only thing that is planned to set for the first run is the time setting.

4.1. Time settings

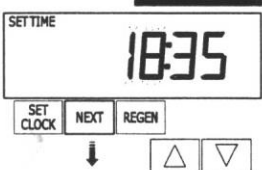
User can set the correct time. It would be required to set time the first time the filter is connected to power, after a prolonged power failure, or where there is the time transition to the winter or summer time. In the event of prolonged power outage, the time will flash to indicate that it needs to re-set.

STEP 1U



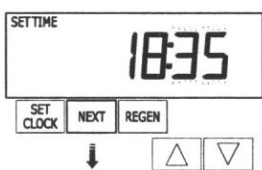
STEP 1U – Press SET CLOCK.

STEP 2U



STEP 2U – blinking the current time (hours): set hours using buttons ▼ and ▲. Press NEXT, to step 3U.

STEP 3U

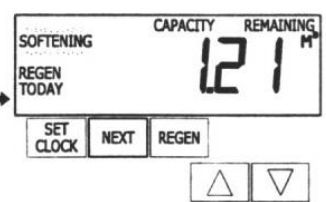


STEP 3U – blinking the current time (minutes): set minutes, using buttons ▼ and ▲. Press NEXT to exit time settings.

4.2. Manual rinsing

Sometimes you need to make regeneration earlier before the system determines that it is necessary; it is usually referred to as manual regeneration. It is possible that there was a

REGEN TODAY will blink if regeneration will be tonight.



period when the water has been used more than usual, for example, where there have been more visitors or more linen have been washed.

To initiate a manual regeneration in the set deferred regeneration time press and release REGEN. Then the display will flash the words "REGEN TODAY", indicating that the system will initiate regeneration before the pre-set regeneration. If you have pressed the "REGEN" button by mistake, re-pressing the button will cancel the request.

To immediately start the manual regeneration, press and hold the "REGEN" button for 3 seconds. The system will immediately begin regeneration. This command cannot be canceled. When the system starts regeneration, the display will change showing information on the recovery process steps and the remaining time up to the end of the regeneration step. The system will automatically pass through recovery steps and when the regeneration is complete, set itself in the water treatment mode.

4.3. Rinsing mode duration and volume settings

In some circumstances, there is a need to change the rinse mode duration. To do this, do the following:

Press and hold simultaneously the button NEXT and the arrow down ∇ for 3 seconds.

- 1) In the upper left corner flashes the word "filtering".
- 2) Press NEXT and there will appear the first rinsing mode "backwash" and duration of the mode in minutes. Duration of the mode can be changed by arrows ∇ and Δ .
- 3) Press NEXT and there will appear the second rinsing mode "brine" (agent suction in) and duration of the mode in minutes. Duration of the mode can be changed by arrows ∇ and Δ . Press NEXT.

Thus, the setting mode is closed and all the settings are saved.

4.4. Rinsing day and time settings

Usually the system regeneration is set to the time when the water is little used. As an example of small water consumption, may be mentioned the time when the house occupants are asleep. If at the time for the system regeneration it is required to use water, the not purified water will be fed.

Press and hold simultaneously the button NEXT and the up arrow Δ , hold for it 3 seconds until:

- 1) In the lower right corner starts blinking the number "14", it indicates that the rinse cycle must be carried out every 14 days. Using the keys "UP" Δ and "DOWN" ∇ , set the desired rinse -day interval (the number of days between the rinsing). Press "NEXT".
- 2) in the lower left corner starts flashing arrow and digit "2". It indicates the start of the rinsing cycle at 2.00 A.M. Using the keys "UP" Δ and "DOWN" ∇ , set the desired

- hour of regeneration. Press “NEXT” and using the keys “UP” Δ and “DOWN” ∇ , set the desired minute.
- 3) Press “NEXT” to complete the settings mode and return to normal operating mode. The display shows the current time.

4.5. Operational control

During operation of the system, there can appear one of the three display readings. Pressing Next, you can shift between the display readings. One of the display readings is always time. The second display reading shows: number of days remaining, or remaining volume (m^3). The remaining number of days is the number of days remaining until the system enters the regeneration cycle. The remaining volume capacity is the number of cubic meters to be cleaned before the machine starts to undergo regeneration cycle. the third display reading shows the current flow rate of treated water that flows through the system. The user can go through all the display readings and return to the time. If the system is to be before the pre-set time, the display will show the words REGEN TODAY (regeneration today).

5. PROBLEMS AND SOLUTIONS

Problem	Possible cause	Solution
1. The timer does not display time	a. transformer not connected	a. reconnect
	b. No voltage in electrical outlet	b. Repair the outlet or use a working outlet
	c. transformer failure	c. Replace transformer
	d. Electronic plate damaged	d. Replace electronic plate
2. The timer does not display the correct time	a. Connection jack disconnected	a. Try another jack
	b. power failure	b. Re-set time
	c. Electronic plate damaged	c. Replace electronic plate
3. It does not display "filtering", when the water is flowing	a. Water flows through the bypass and not through the filter	a. switch the bypass
	b. meter disconnected	b. reconnect the meter to the electronic board
	c. Meter turbine jammed / stopped	c. Remove the meter and check if there is some foreign media
	d. meter damaged	d. Replace meter
	e. Electronic plate damaged	e. Replace electronic board
4. Control valve starts regeneration at wrong time	a. There has been a power outage	a. set the correct time in the control valve.
	b. the time set not correctly	b. set the time correctly
	c. wrong regeneration time	c. re set regeneration time
	d. Control valve set for immediate regeneration	d. Check the control valve setting of recovery time options.
5. An error with the code number 1001 or E1 – It is not possible to identify the start of regeneration 1002 or E2 – unexpected stop 1003 or E3 – Motor runs too long, out of adjustment trying to reach the next regeneration cycle position 1004 – Motor runs too long, out of adjustment, trying to reach the starting position If some other code shows up, contact the manufacturer.	a. Control valve has just been served	a. for 3 seconds Press NEXT and REGEN or pull-out wire (black) from the power supply and reinsert to set the control valve
	b. control valve jammed	b. Check piston and spacer block if they are not stuck
	c. High drive forces on the piston	c. Replace piston and spacer block components
	d. control valve plunger is not in <i>home</i> position	d. for 3 seconds Press NEXT and REGEN or pull-out wire (black) from the power supply and reinsert to set the control valve
	e. motor is not fully inserted in order to achieve the drive gears, motor wires damaged or disconnected, motor failure	e. Check motor and wires. Replace motor if necessary
	f. The drive label damaged or dirty, the mechanism is missing or damaged	f. Replace or clean the drive mechanism.
	g. The drive base inserted into plate incorrectly	g. Thoroughly check the drive bracket
	h. Electronic plate is damaged or defective	h. Replace electronic plate
	i. Electronic plate is incorrectly connected to the base of the drive	i. Make sure that the electronic circuit board is properly connected to the drive bracket.

6. Control valve stopped during regeneration	a. Motor does not run	a. Replace motor
	b. No voltage in the socket	b. repair the socket or use working socket
	c. adapter (transformer) damaged	c. Replace transformer
	d. electronic plate damaged	d. Replace electronic plate
	e. Faulty actuator or drive cover part	e. Replace actuator or drive cover part
	f. damaged piston holder	f. Replace piston holder
	g. Defective main piston or recovery piston	g. Replace main piston or recovery piston
7. Control valve does not make recovery automatically when the REGEN button is pressed and held	a. transformer is unplugged from contact	a. reconnect transformer
	b. No voltage in the socket	b. repair the socket or use working socket
	c. Faulty actuator or drive cover part	c. Replace actuator or drive cover part
	d. Electronic plate damaged	d. Replace electronic plate
8. Control valve does not make recovery automatically, but it does so when REGEN button is pressed	a. Water flowing through the bypass	a. Close the bypass.
	b. the meter is disconnected	b. Connect the meter to the electronic board
	c. Meter turbine jammed / stopped	c. Remove the meter and check if there is some foreign material
	d. meter damaged	d. Replace meter
	e. Electronic plate damaged	e. Replace electronic plate
	f. error in settings	f. check control valve settings
9. Time flashes: appears and disappears	Electricity supply break has been longer than 2 hours, the transformer has been unplugged from the outlet and then plugged in again, the transformer plug has been taken out and then re-connected to the plate or the NEXT and REGEN buttons have been pressed to re-reset control valve.	a. Re-set the time