

Installation and operating manual

WATEX CMS 8/9/10/12/13/14 TWIN CONTINUOUS OPERATION WATER SOFTENING FILTERS



CMS filter first start up
video:



More info: <https://watex.eu/en/softeners/cms-twin>

Before use, please read the manual carefully!

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GENERAL INFORMATION

We offer water purification technology that will give you the comfort of clean water, save money and reduce the problems caused by dirty water.

WATEX CMS Twin series (continuous operation) combines the latest technological solutions and is an effective solution for reducing water hardness, ammonia, iron and turbidity. In addition, the machine is easy to use, as no special controls are required. The machine will perform its functions if the requirements given in this technical manual are met.

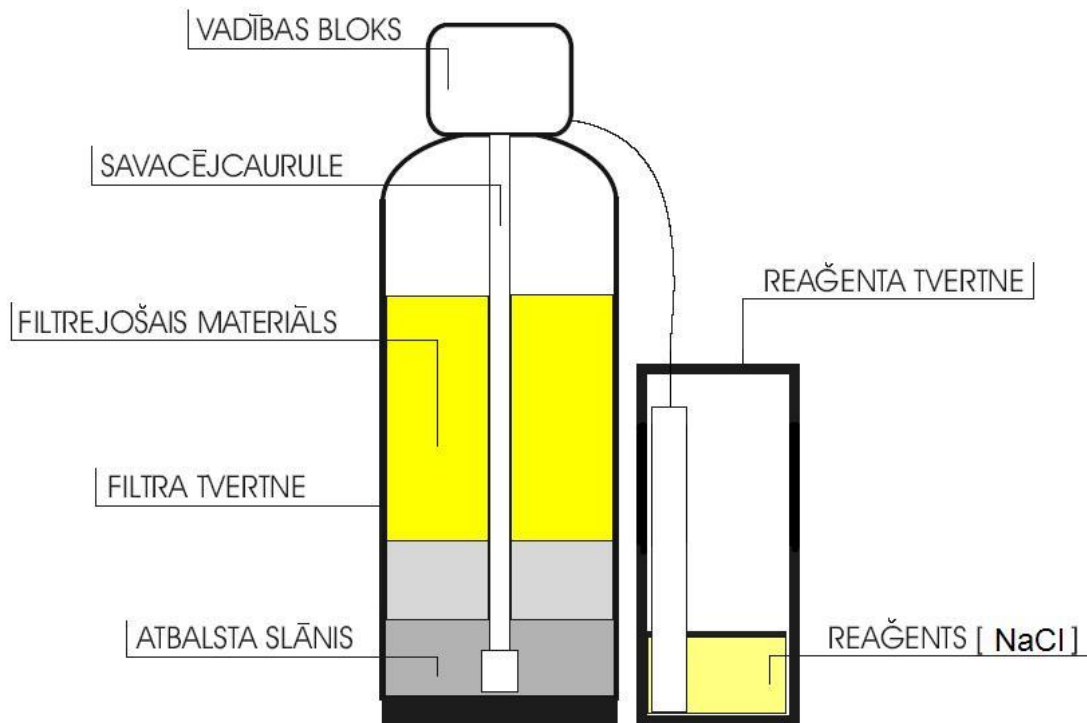
1. RELOCATION

Please note that the water treatment equipment is heavy and fragile, as the fiberglass tank cannot withstand mechanical shocks. The same applies to the control unit, which has a built-in electronic board. Any mechanical shock can affect the operation of the machine. It is not recommended to rock or shake the appliance, as this may cause the layers of filter material inside to mix with each other.

Move the equipment carefully and as vertically as possible!!! If possible, move the equipment on a cart! If this is not possible, move it with 2 persons. When moving by hand, it is recommended to hold it at the top behind the control unit housing (where the control unit connects to the tank) and at the bottom behind the blue fiberglass tank. Do not hold the filter by the lower black tray, as it is not attached to the tank and may fall out of your hands!

2. SYSTEM COMPONENTS AND OPERATION

2.1. System components



The water filter system has three main components: filter material tank, control valve, and a reagent tank. The filter tank is made of polyethylene and reinforced on the outside with a glass fiber winding to maintain a pressure of up to 10 atm. Gravel fractions of different sizes are poured into the tank as a support layer to prevent the filter material from entering the water supply system after the filter. The lower part is specially designed gravel with a fraction size of 3 x 5 mm, followed by gravel with a fraction size of 1 x 3 mm. During backwash, it serves to distribute the water stream evenly to spread the filter material over the entire filter area. Ion exchange resin (cation exchange resin) is used as the filter material for the softening plant.

There is also a collecting pipe in the tank, the bottom of which has a sieve with certain gaps to prevent the filter material from entering the water supply system. The purified water is fed from the bottom up to the control unit and then to the consumers.

2.1.1. Control valve

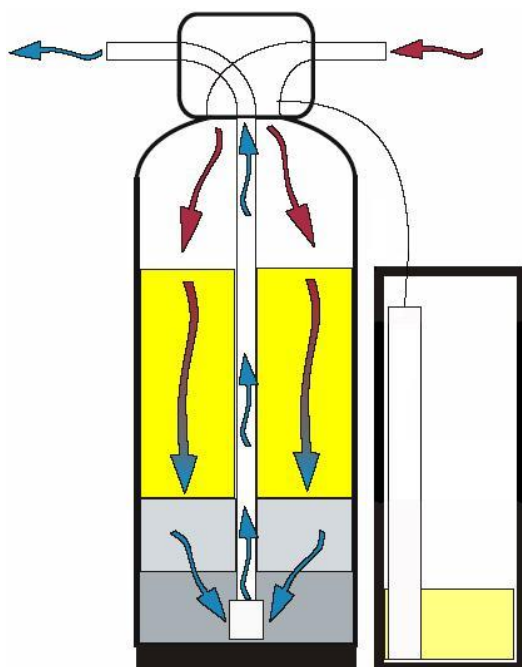
The equipment has a control valve screwed onto the filter tank, which controls the automatic regeneration of the unit. The control unit is made of plastic alloy. The control panel is located at the front and the connection points for the water supply, sewerage and reagent tank at the rear. The operation of the control unit is ensured by the electrical voltage from the 220 V socket. The control valve has a motherboard in which all parameters of the rinsing process are stored and regulated. When the unit needs to be flushed, voltage is applied from the motherboard to the built-in motor, which moves the cylindrical structure built into the unit to a certain position. The rinsing algorithm of the device is based on the calendar principle, which is set by the user depending on the forecast

water consumption. The equipment control valve has a daily or weekly calendar (Monday to Sunday) and you can program which of these days the machine should rinse.

2.1.2. Brine tank

The brine tank is designed to store Sodium Chloride NaCl (Salt Tablets). Inside there are several components: a float inserted in a cylindrical tube and an overflow outlet. The float regulates the amount of water in the reagent tank to be used during the regeneration cycle. The float level can be adjusted, but it is not necessary to do so in normal operation. Normally the water level should be about 1/3 of the height of the salt container. This is sufficient to dissolve part of the NaCl for the regeneration cycle.

2.2. System operation



The operation of the equipment has two main basic cycles - the service and regeneration (rinsing) cycle.

Service cycle

In the service cycle, water is fed to the control valve via the raw water inlet, then flows into the filter tank from above and flows through the filter material to purify the water, and then flows back through the collector pipe to the control valve and then to the consumers. During this time, the reagent tank should contain water approximately 1/3 of the height of the brine tank to dissolve the Salt (NaCl) used to recover the filter media. The duration of the service cycle depends on the quality of the incoming water, the amount of filter material and the amount of water consumed. If one of the consumers uses water during the service cycle, "SOFTENING" appears on the display of the CMS series models. The WATEX CMS series has a built-in meter that counts the amount of water consumed. With the help of the electronic display, it is possible to set the volume of

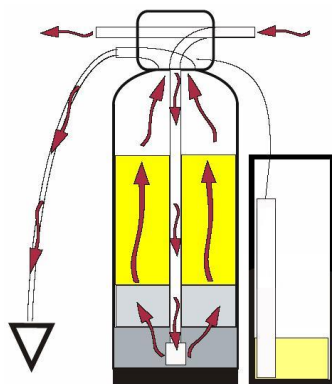
water (m3) after which has been consumed the control valve starts regenerations. As soon as the meter has counted the specified volume of water, the equipment will start at the regeneration the same night. At 2.00 o'clock (factory setting) the regeneration cycle is started. The start of the regeneration cycle can be changed via the electronic display.

2.3. Regeneration cycle schemes

The equipment requires a rinsing cycle to remove accumulated material from the filter and restore the capacity of the filter media. The capacity of the filter material is expressed in m3, so the meter built into the WATEX CMS model counts the amount of water consumed and after a certain consumption of m3 the unit switches to the rinsing cycle. The rinsing cycle lasts approximately 1.5 hours and consists of several modes. The machine has 4 main modes: countercurrent rinsing, reagent suction, to the consumers flow rinsing and filling the reagent tank. The order of the modes can be changed on the control valve, but we recommend using the order of the modes already set at the factory. To ensure a continuous supply of water to the consumers during the rinsing cycle, untreated

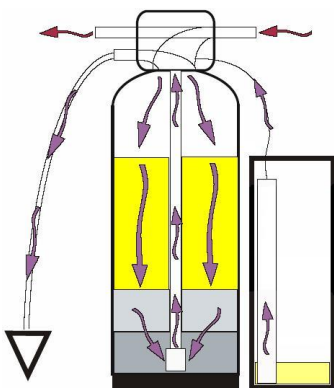
water is supplied. For this reason, it is recommended to perform the rinsing cycle at night when water consumption is lowest.

2.3.1. Backflush cycle



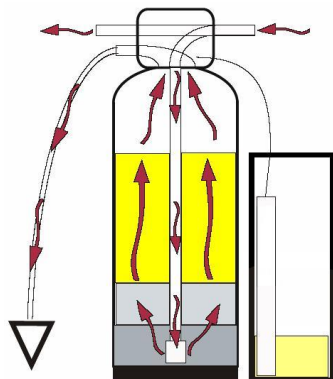
In backwash mode, the flow direction in the filter tank changes. The water in the filter tank flows from the bottom up and out into the sewer. This mode is required to flush out the accumulated material from the filter. If the appliance is not sufficiently flushed, the appliance will not reach the specified capacity and the pressure drop in the filter will increase. This mode lasts about 6-8 minutes. The flow rate is regulated by a flushing seal (DLFC) inserted in the drain connection bend.

2.3.2. Brine cycle



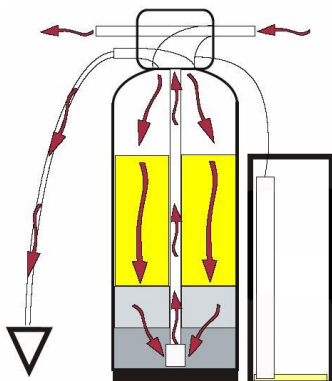
In the brine cycle, a brine solution is sucked out of the reagent tank by injection, which flows from top to bottom through the filter bed and restores the capacity of the ion exchange resin. This mode lasts for about 60 minutes.

2.3.3. Second backwash cycle



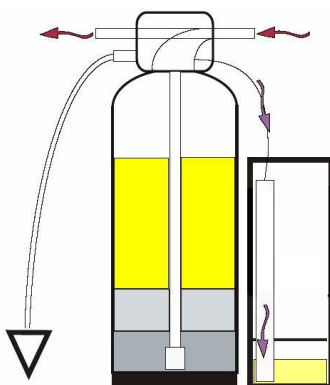
In second backwash mode, the flow direction in the filter tank changes. The water in the filter tank flows from the bottom up. This mode is required to flush out the sediments separated and accumulated from the filter media as well as the reagent residue. The mode lasts 1-4 minutes.

2.3.4. Rinse cycle



To the consumers rinsing is required to remove excess reagent from the filter tank to the sewer. In the filter tank, water flows from the top to the bottom and then through the collector pipe up and away to the sewer. The flow rate is regulated by the flushing seal (DLFC) inserted in the sewer connection bend. The mode lasts for 4 minutes (factory setting).

2.3.5. Fill cycle



In this cycle, the reagent tank is filled with treated water to dissolve the Salt for the next recovery of filter material. The cycle lasts about 6-10 minutes. Filling of the reagent tank is stopped as soon as the specified time has elapsed or when the float in the reagent tank closes because the specified water level is reached. The filling time can be changed.

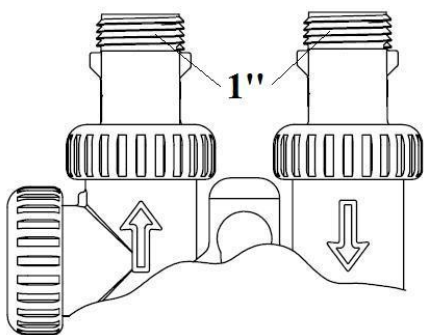
3. INSTALLATION

3.1. General conditions

Pressure tanks must be on a flat, level surface; It is recommended to install the equipment in a soundproofed technical room, as the water flow into the sewer during regenerations may be heard (default at night). The control valve and connection fittings are not designed to support the weight of the water supply system. All sanitary works must be performed in accordance with Latvian legislation or the countries legislation where the equipment is installed. The equipment must be provided with continuous water supply and a pressure in the range of 2.0 to 3.5 bar. Ensure that the temperature does not exceed + 30oC. The room temperature must not be lower than +5 oC and higher than 45 oC. It is recommended to install a mechanical filter before the equipment. Do not use Vaseline, oil, hydrocarbon grease, or aerosol silicone on the control valve connections. Silicone grease can be used on black o-ring seals, but it is not required.

Nuts and fittings are designed to be unscrewed or tightened by hand or with a special plastic key. Pliers can be used if it is necessary to loosen tightened nuts or fittings. Handle with care, do not damage plastic parts. Do not use a wheel wrench to tighten or unscrew nuts or fittings. Do not insert a screwdriver into the holes in the sleeves and do not strike with a hammer! Teflon tape is not required for sewer and reagent addition fittings. Position the water filter so that the distance between the drain and the filter is as small as possible. Perform general preventive maintenance of the equipment at least once a year.

3.2. Connecting to water supply



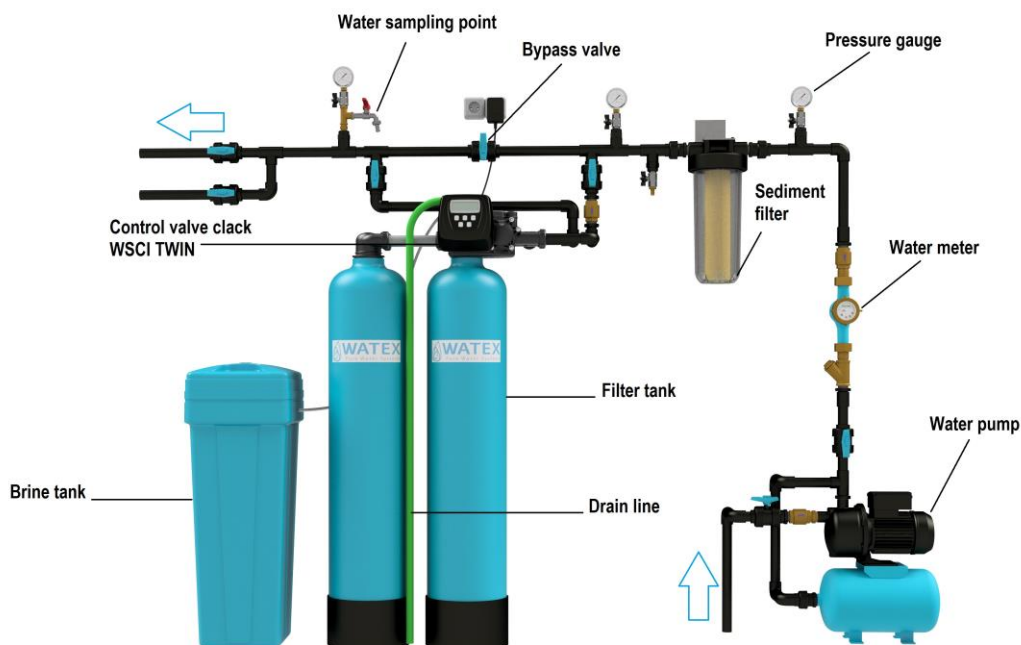
There are incoming and outgoing water connection ports at the rear of the CLACK control valve. Inlet and outlet are indicated by arrows for each connection. If you look at the equipment from the front, there is an inlet on the right and an outlet on the left. The size of the external thread of the water supply connection to the unit is 1 " (inch) for both inlet and outlet. The plastic threaded fitting is screw type and can rotate freely on the ring while maintaining tightness. Therefore, it is not necessary to tighten the screw on the control unit housing very strongly (enough force by hand). Teflon tape must be used on

the plastic threads. There is no significant difference in the material of the pipes that connect to the equipment. The main thing is that the appliance does not have to carry the weight of the water supply system. The device can be connected with fusible, glued, screwed plastic pipes. It can also be made with flexible metal pipes or brass solder.

Note: Soldered pipes must be soldered before attaching them to the plastic fittings on the control valve. Failure to do so may result in internal damage to the plastic fittings and failure to provide a seal. Solder fittings must first be cooled. Avoid getting solder grease on any part of the connection fitting.

The water softening equipment must be installed behind the water pump, hydrophore and pressure switch, and it is recommended to install a bypass valve as shown in the scheme and valves for incoming and outgoing water!!!

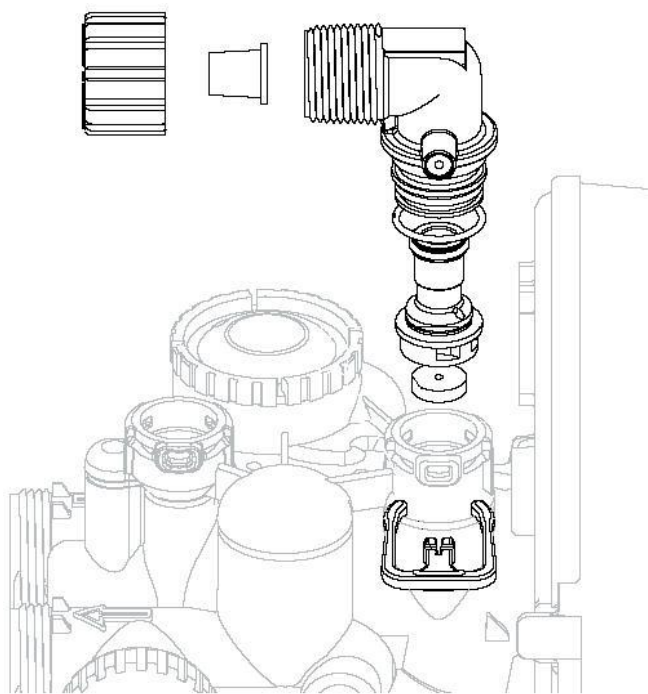
RECOMMENDED ASSEMBLY DIAGRAM FOR THE CMS TWIN KIT



In normal operation, the bypass valve is closed and the inlet and outlet taps are open. If the equipment is undergoing preventive maintenance or needs to be repaired, it is possible to supply the water directly to the consumers untreated. It is also recommended to install a sampling tap before and after the equipment to determine the water quality of the untreated and freshly treated water. It is also recommended to install manometers before and after the equipment to monitor the pressure drop in the machine as well as the incoming water pressure.

3.3. Connecting to drain

The equipment requires a connection to the sewer to ensure regular flushing of the filtration media. During flushing, the accumulated dirt is removed from the equipment as well as the reagent, with the help of which the ability of the filter material to soften the water is restored. The sewer connection point is located at the top of the control unit. A garden hose, which is included in the unit's set, is used to drain the rinsing water from the unit to the common sewer system.



The connection to the drain is done as follows:

1. Pull out the red clamp and remove the drain connection elbow.
2. Pull the garden hose through the nut.
3. Insert the cylindrical insert at the end of the hose.
4. Insert the end of the hose into the drain elbow and tighten with a nut. Tighten by hand.
5. Put the drain elbow into its port and put the clamp in its position.

Note: As the drain connection elbow has a sealing ring, it can be turned in the direction you want. The turning angle is 270 degrees.

6. Connect the other end of the garden hose to the common opening of the drainage system and install a syphon so that odour from the drain does not enter the filter.

Important: Make sure that the garden hose does not fall out during rinsing. Secure it!

Important: Make sure that the garden hose does not twist, as this will reduce the flow of rinsing water and may cause the unit to rinse incompletely, which can lead to poor water quality. The sewer hose can also be connected to the sewer system above the control unit (max. 1 m), but then the first rinsing must be followed or a full rinsing of the unit takes place.

If full rinsing does not take place, consult the employees of SIA "WATEX".

Important: The drainage pipe must not be smaller than D40.

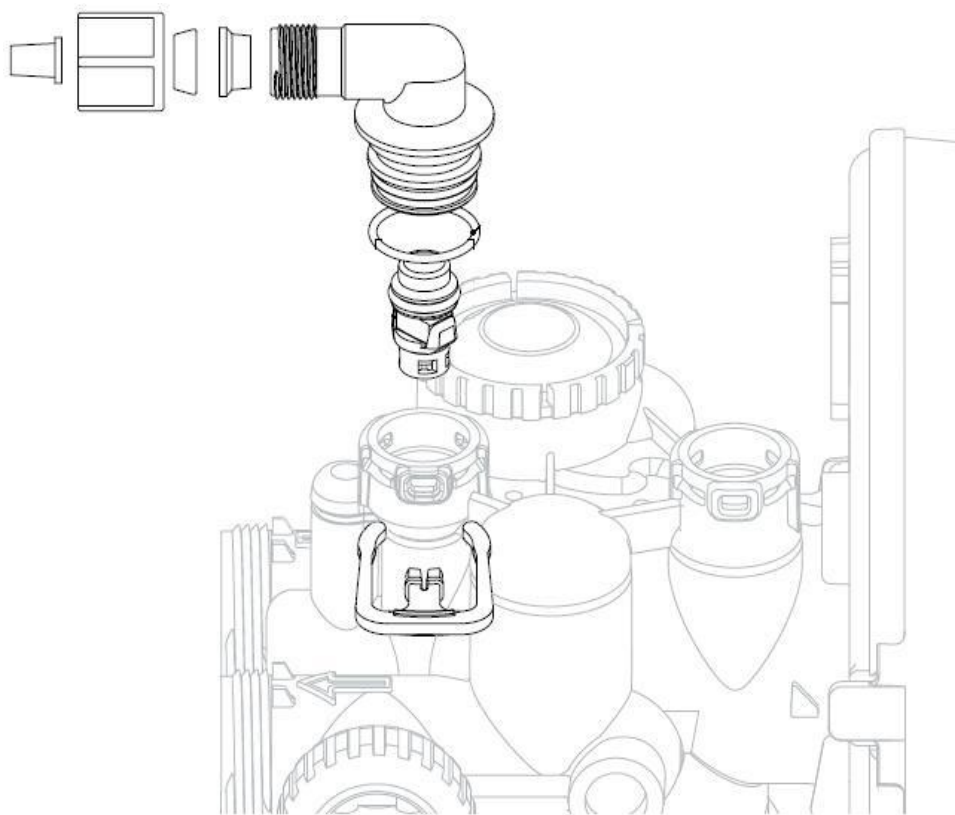
3.4. Connecting the brine tank

The kit includes a reagent tank as well as a 3/8'' connection pipe. The flexible plastic tube is placed in the brine tank under the lid. The brine tank should be placed next to the filter column. Can be placed on either side of the filter column.

The brine tank has a float valve that is placed in the plastic cylinder of the reagent tank. Remove the float and remove the transport rubber from the bottom of the float. No packing material is required on the threads.

Remember!

The brine tank will need to be refilled with reagent on a regular basis, so it is recommended that it be located where it is easily accessible. The illustration shows the control unit, highlighting the connection point for the reagent supply line. The pipeline is connected as follows



salt tablets (NaCl) to the reagent tank and 15 liters of water for the first start up.

1. Pull out the red clamp and remove the brine elbow from its port.
2. Pull the pipe through the nut
3. Insert the cylindrical insert at the end of the tube, then the two rings in turn.
4. Insert the end of the pipe into the brine elbow completely and tighten by hand.
5. Insert the brine elbow in its porte and put in place the red clamp.
Note: The brine elbow has a sealing ring that can be rotated in the direction you want. The turning angle is 270 degrees.
6. Pull the other end of the tube through the hole in the side of the reagent tank and connect in the same way as in points 2, 3 and 4. When the equipment is connected to the water supply, sewer, and the brine tank, add

3.5. Connecting to electricity

The control valve is supplied with an electrical transformer for 220 V. The power supply to the equipment must be provided at all times. The transformer is only intended for use in dry areas.

Note: All electrical connections must be made in accordance with local regulations. Provide uninterrupted power supply within 2 meters of the water filter.

There is a rectangular socket at the end of the transformer cable that must be connected to the electronic plate on the control valve. To do this, do the following:

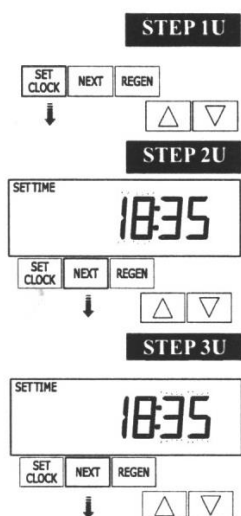
1. Remove the front plastic cover on the control unit.
2. At the top side on of the control valve, release the middle mounting tab that holds the system board frame to the control valve.
3. The plastic wall of the control valve has an opening on the right side through which the end of the transformer cable must be routed.
4. Connect the end of the cable to the contact port on the bottom right of the motherboard called “power”.
5. The rest of the cable section must be routed along the side of the motherboard frame behind the clamps provided.
6. Slide the control valve board frame back to the mounting tab and secure it in place.
7. Put back in place the plastic front cover.

4. FIRST START UP

At default for all WATEX CMS series devices, all key operating parameters are already installed and programmed in the service center. The only thing you need to set up for the first start up is the current time.

4.1. Setting up the time

In case the time needs to be reset or if there has been a power failure, the correct time must be set. This control valve must be set for both hours and minutes. All other information will be stored in the memory, regardless of how long the power supply has been interrupted. To set the time, follow these steps:



1. Press button “SET CLOCK”;
2. Using buttons “UP” Δ and “DOWN” ∇ , set up the current hour;
3. Press button “NEXT” and using buttons “UP” Δ and “DOWN” ∇ , set up the current minutes;
4. Press button “NEXT”, to finish setting up the time and to return to the default position. In the display correct time can be visible and it does not flash anymore..

4.2. Regeneration cycle length and capacity set up.

Press and hold simultaneously button “NEXT” and button down ∇ for 3 seconds.

- 1) On the top left corner, the word „softening” is flashing.
- 2) Press “NEXT” and the first regeneration cycle “backwash” is shown and the cycle length. With buttons ∇ and Δ it is possible to change the cycle length.
- 3) Press “NEXT” and the cycle “brine” is shown as well as the cycle length in minutes. With buttons ∇ and Δ it is possible to change the cycle length.
- 4) Press “NEXT” and the third cycle „rinse” is shown and the cycle length in minutes. With buttons ∇ and Δ it is possible to change the cycle length.
- 5) Press “NEXT” and the fourth cycle „fill” is shown and the cycle length in minutes. With buttons ∇ and Δ it is possible to change the cycle length.
- 6) Press “NEXT” the equipment capacity in m3 is shown. With buttons ∇ and Δ it is possible to change the capacity. Press “NEXT” and the set-up data will be automatically saved and further settings are shown. Further on press “NEXT” until the current time is shown. After this is done setting up is done and the data is saved.

4.3. Regeneration set up after days passed and time of day

Press and hold the "NEXT" button and the "UP" arrow at the same time, hold for 3 seconds until:

- 1) The number "14" flashes in the lower right corner, indicating that the rinsing cycle must be performed every 14 days. Use the "UP" and "DOWN" keys to set the desired rinsing day interval (how many days the filter will rinse). Press the "NEXT" button.
- 2) The arrow and the number "2" will start flashing in the lower left corner. This indicates the start time of the rinsing cycle at 2.00 at night. Use the "UP" and "DOWN" keys to set the desired regeneration start hour. Press "NEXT" and use the "UP" and "DOWN" keys to set the desired minutes.
- 3) Press "NEXT" to complete the installation and return to normal operation. The display shows the current time.

4.4. Manual regenerations

Sometimes it is necessary to perform regenerations faster than the system determines that it is necessary. This is usually called manual recovery. It is possible that there has been a period when water has been used more than usual, such as when there have been guests or more laundry, etc.

To start manual recovery with the set delayed recovery time, press and release the "REGEN" button. The words "REGEN TODAY" will flash on the display, indicating that the system will start recovery at the pre-set recovery time. If you press the "REGEN" button by mistake, pressing the button again will cancel the request.

To start manual recovery immediately, press and hold the "REGEN" button for 3 seconds. The system will start recovery immediately. This request cannot be canceled.

When the system starts recovery, the display will change to show the current recovery cycle. The system will automatically go through the regeneration steps and set itself to water purification mode when the regeneration is complete.

4.5. Operation control

When the system is operating, one of the three displays may appear. By pressing "NEXT", you can switch between the displays. There is always time in one of the displays. The second display shows: number of days remaining or volume remaining (m3). The number of days remaining is the number of days remaining until the system begins the regeneration cycle. The remaining capacity is the number of cubic meters that will be purified before the unit begins the regeneration cycle. The third display shows the current flow rate of purified water to the consumers.

5. EQUIPMENT MAINTANANCE

The water softener requires maintenance during exploitation.

There is a charge for both warranty and post-warranty maintenance.

Frequency of standard equipment maintenance - once a year.

The frequency of maintenance may vary depending on the water quality, amount of water consumed, reagent replenishment, etc. (6-24 months).

If you plan to do maintenance without WATEX services please contact WATEX staff for assistance.

6. 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 "softening", 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 material
	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 home 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