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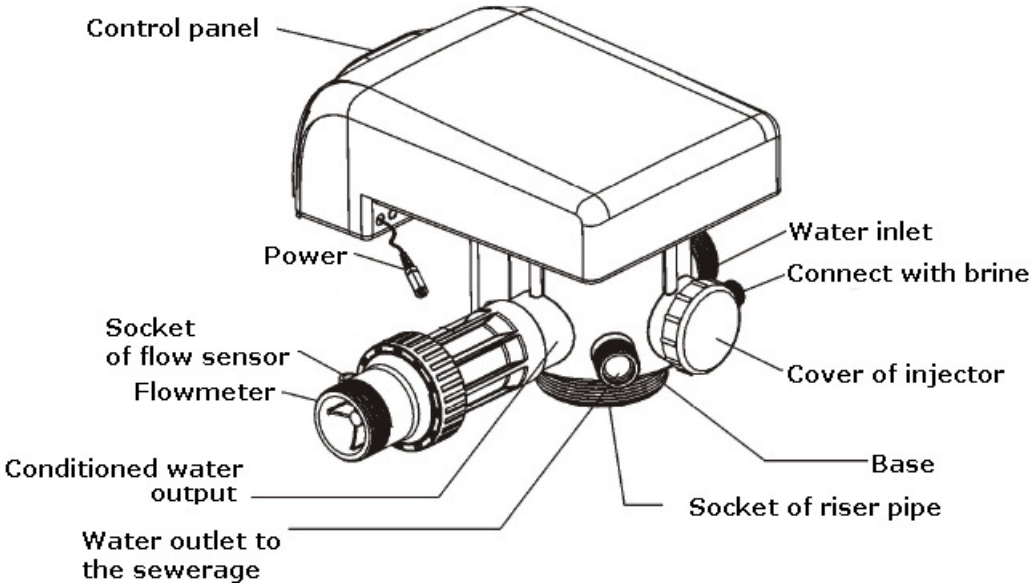
• RX74A-3 MANUAL •

CONTENTS

1. INTRODUCTION

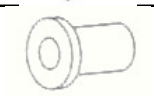
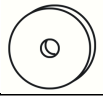
Thank you for choosing the valve RX74A-3 for your the water conditioning system. It has been a good choice that will provide you with an easy and economical service of your system.
Please, read all steps and guides carefully before installation and usage. Follow all steps exactly to correctly install. Reading this manual will also help you get all the benefits from your water treatment system.
RX valve is controlled by microcomputer and allow to set water treatment system working parameters based on your water quality. It lets you use your system economically while automatic regeneration saves your time and money.
It utilizes high technology of rotating ceramic discs. It is a breakthrough technology for water treatment valve, that guarantees perfect sealing inside the valve and in this way assures its long term and economical operation. What is more, these ceramic elements are resistant to pollution and iron sedimentation, what prevents from cumulating them inside of the valve and makes its working more efficient.
We wish you satisfaction from using your RX74A-3 valve.

2. SET INCLUDES



Picture 1: A control head RX74A-3

Connections of valve are described as IN (input) and Out (output). Looking at front of a valve IN is located on the left side, and OUT is located on the right. Inlet to the sewerage (DRAIN) is at the back.

A Draw	The Description	Quantity
	DC24V Transformer	1 pc.
	1/2” Brine Tube Hose Connector	1 pc.
	White Tube Bushing to salt spring	1 pc.
	Control flow to sewerage	1 pc.
	A base seal O-RING 4”	1 pc.
	Flowmeter	1 pc.
	The wire to link heads - interlock	1 pc.
	A threaded top strainer connector	1 pc.
	A tapping screw	5 pcs.

Schedule 1: Standard set content of RX74A-3 valve.

3. SPECIFICATION

The working pressure: 0,15 – 0,6 MPa
The temperature: 5 – 45°C
The turbidity < 5 FTU

Sizes of links					Max. flow m^3/h	A type of regeneration
Inlet/Outlet	Outlet to the sewerage	A brine connection	A base	A riser pipe		
2″ M	1″	1/2"	4″	50 mm	10	Down-flow

Schedule 2: Characteristic of a head.

4. CHOOSING THE SIZE OF INJECTOR TO THE WATER CONDITIONING SYSTEM

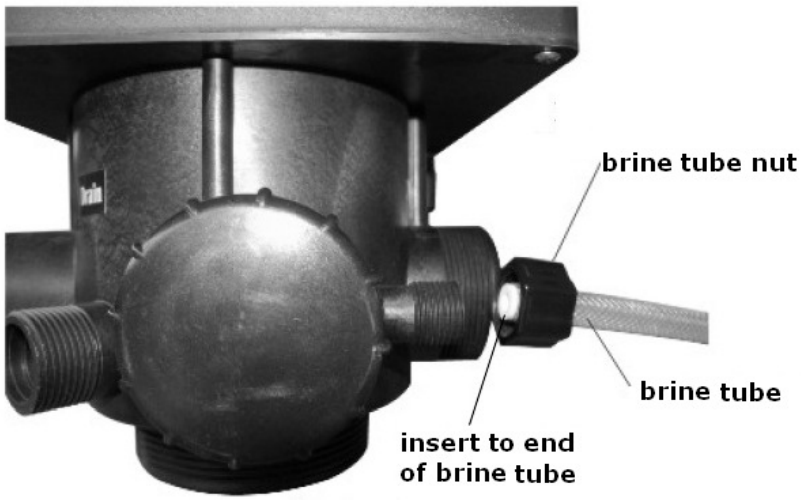
Diameter of tank [inch]	**Color of Injector**	**Total Flow through the Injector [litre/min]**	**Speed of Slow Rinse [litre/min]**	**Speed of Filling Brine Tank [litre/min]**	**Control of Flow**	**Speed of Rinse [litre/min]**
20″	Brown	16,0	10,6	23,0	# 1	46
22″	Pink	20,0	13,9	28,2	# 2	67
24″	Yellow	23,4	15,8	32,9	# 3	71
30″	Blue	36,2	24,2	50,5	# 4	75
32″	White	40,2	29,0	60,0		
36″	Black	44,7	33,8	62,7		

Schedule 3: Characteristic and choosing the injector with regard to size of water conditioning system.

ATTENTION:
Above values have been defined with 0,3 MPa pressure and they are reference values. Real rate can be different from presented in the schedule in a significant way because of differences connected with quality and pressure of raw water, type of ion exchange resin and a size of tank.

5. CONNECTING TO THE BRINE SUPPLY CONTROLLER

If a control head is not a part of complete filter to soft water, you have to connect a brine supply tube by your selves. A brine supply tube must be connected with accordance to a picture 2.



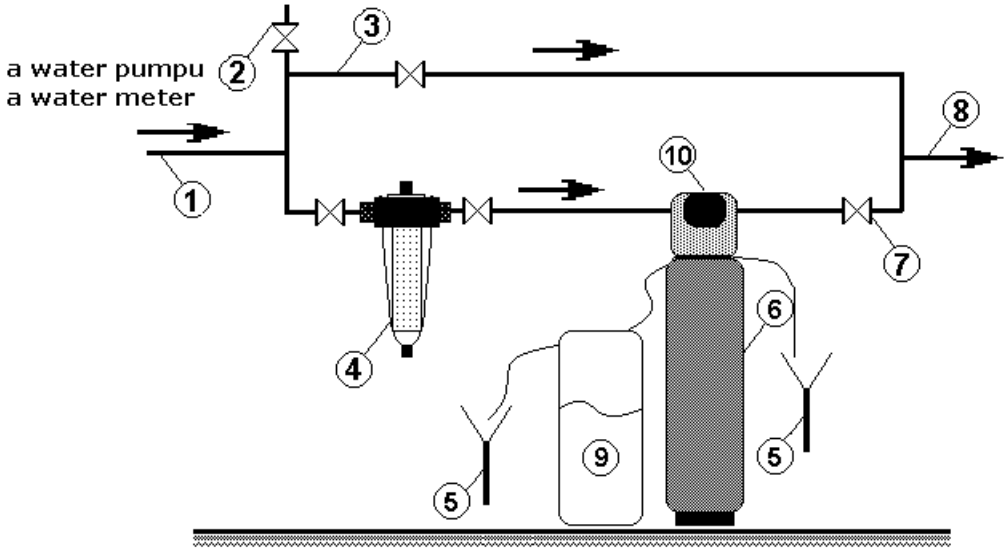
Picture 2

In this case it is required to:

1. Slide a tube, which is connected with a brine tank through a nut [A].
2. Insert a white plastic insert [B]at the end of tube from the valve's side.
3. Insert a brine tube into a hole of brine connection and max. press.
4. Tighten up a nut [A] to ensure the tightness of connection.

6. CONNECTING OF THE VALVE TO WATER AND SEWERAGE INSTAL

Before installing a head, please, read the instruction.
It is advised to use at least 50 micron sediment filter before the valve.
An example of installation has been shown in Picture 3.
Connecting with sewerage should be done below drain outlet level from water treatment system. It can be done eve with using garden hose.



Picture 3: An example of installation water conditioning system with using RX head.

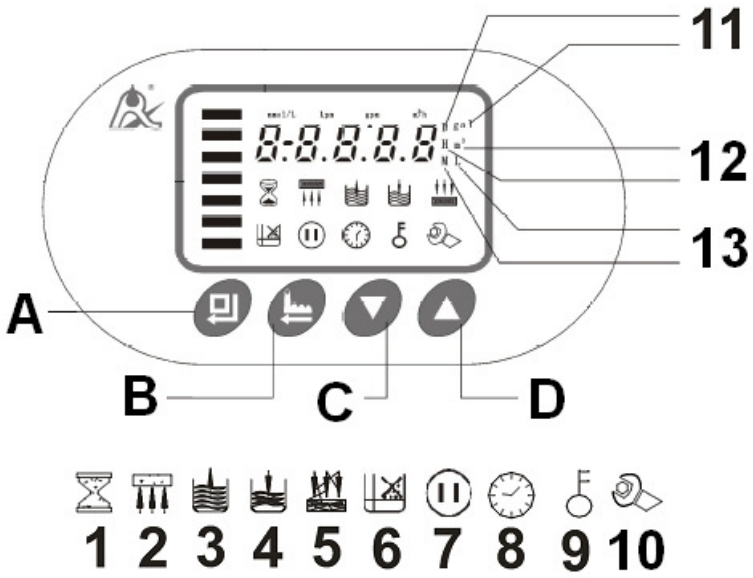
A head should be installed with accordance to flow direction, which is marked by arrows on a corpus of head.

1. raw water inlet
2. raw water output for different using
3. service system by-pass of filter devices
4. pre-filter with mechanic cartridge
5. sewerage outlet
6. water softener
7. closing valve of clear water output from the softener
8. conditioned water output (e.g. to RO filter)
9. brine tank (only included in two-frame water softeners)
10. RX valve

ATTENTION:
To assemble and use a device with RX74A-3 valve it is required to:
- have the proper knowledge or using professional services
- make sure that the ground is even and stable and that it will sustain the weight of a water conditioning system, which is filled with water and salt tablets (in case of a softener)
- make all connections in accordance with existing standards and regulations

- connect the valve to existing water supply system only with flexible connections
- use 1/2 inch flexible hose to connect drain. Sewerage connection should not be more than 6 meters away in level from the valve
- use only teflon tape for threaded o-ring free connections
- assemble the device only after all water supply system works have been finished
- control water quality periodically to make sure the device is working properly
- use only solid salt for water softening (at least 99,5% purity). It is forbidden to use small minced salt
- use the device indoors, within temperature range 5 – 45°C and avoid high humidity
- use pressure-reducing valve before water inlet if water pressure exceeds 6 bars
- not to carry the device with tubes, injector, by-pass and other delicate elements
- use parts and accessories provided only by the authorized distributor
- secure the device against access of children.

7. DESCRIPTIONS OF DISPLAYED SYMBOLS



Picture 4: A control panel.

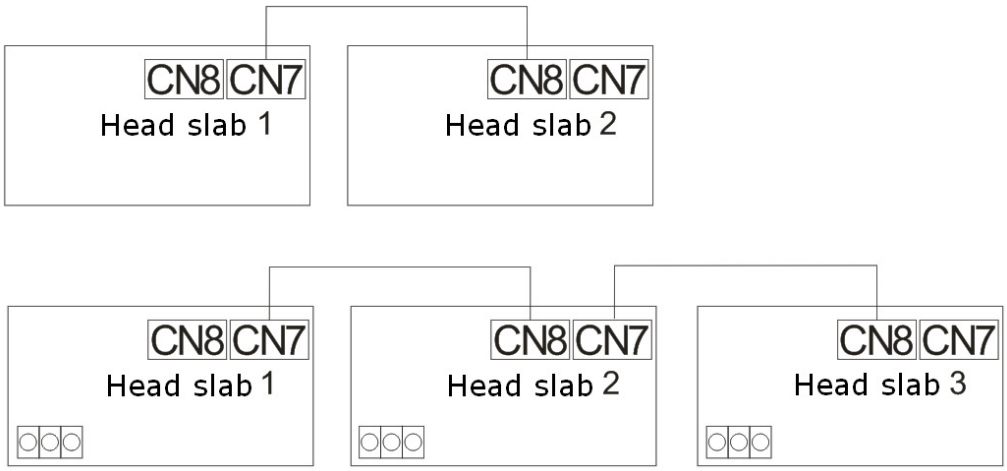
A – enter (enter the mode of changing settings, changing settings and confirming settings)
B – manual regeneration (to start regenerating or go to another level of regenerating during service cycle, press a button of immediate regeneration)
C – down (next option)
D – up (previous option)

1 - a sandglass (in a service) – the first cycle of working – water conditioning, it means that water is flowing through a device
2 - the second cycle of working (backwash) – regeneration, bed back washing
3 - the third cycle of working (regeneration) – sucking brine and slow rinsing
4 - the forth cycle of working (brine refill) – refilling a salt tank by water
5 - the fifth cycle of working (fast rinse) – bed concurrent flow rinsing
6 – inactivated in valves of softening water
7 – inactivated in valves of softening water
8 – a clock – displays current time
9 – a key informs about blockade of all buttons. **To unblock buttons push and hold at the same time up and down buttons for 5 seconds.** The blockade always activates after 1 minute of inactivity.

10 – a mode of changing settings – informs about activated mode of changing valve parameters. To turn it off push button [B].
11 – a big letter D (24 hours) – informs that numerical reading is expressed in days
12 – m^3 symbol – cubic metres – informs that numerical reading is expressed in cubic metres (1 cubic meter = 1000 litres)
13 – a big letter M - informs that numerical reading is expressed in minutes

8. LINKING MANY DEVICES AND OUTPUT ELECTRICAL SIGNALS

If the water conditioning system consists of several elements with RX contrrol valves, it is possible to connect several valves with one another in a way allowing for regeneration of 1 device at a time. Regeneration of the rest of valves is on hold till the end of regeneration cycle of the first valve. To connect the valves, two sockets are used: CN7 and CN8, they are placed on the valve control board. Always connect CN7 port of one valve with CN8 port of the other valve, as shown in the picture 5. Work of valves and water conditioning by system elements take a place independently, in accordance with given parameters programmed in every RX valve. Connecting several valves with one another allows to avoid simultaneous regeneration of 2 and more systems.

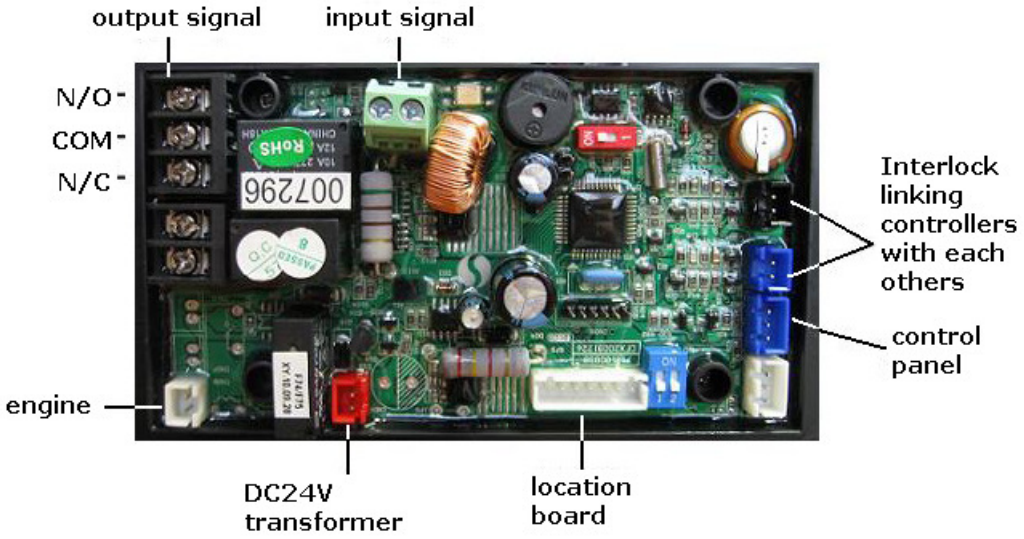


Picture 5: Connecting valves with another.

During the regeneration cycle RX valves can emit two types of electrical signals:

- b-01 – a continuous signal is emitted during the whole regeneration (from the moment of leaving the "In Serv" cycle till the moment of entering the "In Serv" cycle.
- b-02 – a signal is emitted only when the head changes the cycle (when the head motor is operating).

Regeneration and changing the regeneration cycle can be initiated by the use of output electrical signal (e.g. from an external system of control). Picture 6 shows the location of place where wires of external control should connected. Each external electric signal evokes the same result as in case of using the button of regeneration [B] placed on a valve (a signal of 5 – 24 VDC voltage).



Picture 6: Input and output connections of external electric signal.

9. FUNCTIONS OF BUTTONS DURING PROGRAMMING MODE

After entering the mode of programming there will be activated buttons with following functions:
- Enter [A]: activating and setting the value to change. After activating the changed value and a symbol of setting [10] start flashing . Then this value can be changed. After confirming set value by ENTER button [A], the symbol of setting [10] stops flashing and a valve will confirm this change by short signal.
- Back [B]: leaving mode of programming or changing values and going to the previous mode
- Down [C] changing parameter or decreasing active value
- Up [D] changing parameter or increasing active value

ATTENTION:

If you bought RX valve as a part of water conditioning system, the time of working cycles 1-5 is always programmed by a producer adequately to a type and quantity of bed in the pressure vessel and the size of a tank. The capacity of conditioned water has been set on the basis of water searching results given by you or average values. Possible correction of these parameters should be discussed with the authorized distributor of this device firstly.

10. CONTROLLER PROGRAMMING

The parameter	The band	The unit of change
Current time	00:00 – 23:59	1
Type of regeneration/mode of working	A-01, A-02, A-03, A-04	-
Regeneration starting hours (only A-01 and A-03 mode)	00:00 – 23:59	1
Capacity of conditioned water between regenerations (only A-01 and A-02 mode)	0 - 99,99	0,01
Capacity of ion-exchange resin in a bottle (only A-03 and A-04 mode)	20 – 500	1
Raw water hardness in mmol/l (only A-03 and A-04 mode)	0,1 – 9,9	0,1
Regeneration coefficient (only A-03 and A-04 mode)	0,3 – 0,99	0,01
Time of backwashing	0 – 99	1
Time of taking brine and slow rinsing	0 – 99	1
Time of fast rinsing	0 – 99	1
Time of brine tank refilling	0 – 99	1
Max. day break between regenerations	0 – 40	1
Type of sending external signal	b-01, b-02	-

Schedule 4: the band of parameter programming.

By using enter button [A] the settings mode is activated. If the keyboard is locked and the key icon is displayed, you have to unlock the keyboard by pushing at the same time DOWN button [C] and UP button [D] for 5 seconds.
If the mode of setting symbol [10] is shining, the mode of programming is active. BACK button [B] finishes mode of programming. After 1 minute of inactivity this mode will be also automatically finished and the keyboard will be locked.

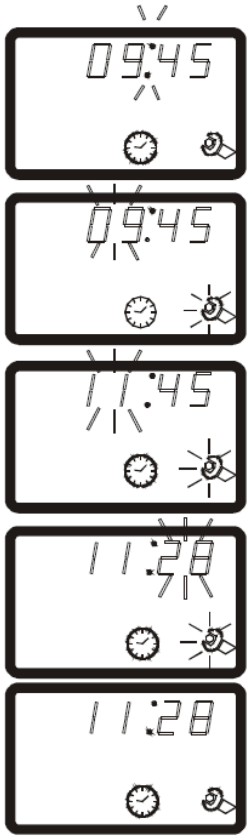
To change the displayed parameter push DOWN button [C]. Below there are parameters to program in order of appearance:

1. current time (European 24 hour standard)
2. mode of volume-delayed (A-01), mode of volume-immediate (A-02), mode of intelligent delayed (A-03), mode of intelligent immediate (A-04). In A-01 mode the valve, after conditioning destined quantity of water, will wait with bed regeneration till set hour. In A-02 mode regeneration will be done immediately after finishing the process of conditioning destined water. In A-03 mode (which requires inserting such parameters as: bed volume, water hardness, regeneration ratio) the valve automatically calculates the volume of conditioned water between regenerations, and after conditioning calculated volume of water, it will wait with bed regeneration till set hour. In A-04 mode (which requires inserting such parameters as: bed volume, water hardness, regeneration ratio) the valve automatically calculates the volume of conditioned water between regenerations, and after conditioning calculated volume of water, regeneration will be done immediately.
3. the time of regenerating in A-01 and A-02 mode after conditioning programmed volume of water (European 24 hour standard)
4. the capacity of bed in a bottle stated in litre, e.g. 20L – twenty litres of bed. (NOTICE: it is a crucial parameter for proper working of the device. It should be set by a supplier of this device)(only A-03 and A-04 mode)
5. raw water hardness of device inlet stated in mmol/litre, e.g. yd 3.0 – the raw water hardness is 3,0 mmol/litre. (NOTICE: it is a crucial parameter for proper working of the device. It should be set by a supplier of this device)(only A-03 and A-04 mode)
6. regeneration ratio. Default value: AL.65 (NOTICE: it is a crucial parameter for proper working of the device. It should be set by a supplier of this device)(only A-03 and A-04 mode)
7. capacity of water, after its flowing regeneration will be done (NOTICE: it is a crucial parameter for proper working of the device. It should be set by a supplier of this device based on the results of water analysis.
8. (2)back wash – time of backwashing stated in minutes. E.g. 2 – 10M the remaining time of cycle 2 is 10 minutes (M – stands for minutes)
9. (3) regeneration – time of regenerating and slow rinsing. E.g. 3 – 60M the remaining time of cycle 3 is 60 minutes (M – stands for minutes)
10. (4) fast rinse – time of fast rinsing. E.g. 4 – 10M the remaining time of cycle 4 is 10 minutes (M – stands for minutes)

ATTENTION: too long time of filling tank can cause overflow of water into a sewerage or around a device. The authorized distributor is not responsible for damages arisen from wrong programming of this parameter.

11. (5) brine refill – time of brine tank refilling. E.g. 5 – 05M the remaining time of cycle 5 is 5 minutes (M – stands for minutes)
12. max. day breaks between next regenerations (D – reading in days) E.g. H – 30, the time break between regenerations will be not longer than 30 days
13. type of external signal sent by a head. b-01 – a continuous signal is emitted during the whole regeneration (from the moment of leaving the "In Serv" cycle till the moment of entering the "In Serv" cycle). b-02 – a signal is emitted only when the head changes the cycle (when the head motor is operating).

10.1 AN EXAMPLE OF CONTROLLER PROGRAMMING



If the symbol of keyboard locked is displayed , you have to unlock it by pushing at the same time DOWN button [C] and UP button [D] till this symbol disappears.

1. To activate mode of changing settings push ENTER button [A]

2. In mode of changing settings the symbol [10] , the symbol [8] will be displaying and a sign of colon: (between shown hour and minutes) will be fleshing to inform that the current time is displaying on the display.

3. To activate mode of changing current time push ENTER button [A] . Shown time and the symbol [10] start fleshing.

4. Use DOWN [C] and UP [D] buttons to change the hour.

5. To confirm chosen settings push ENTER button [A] . Chosen indication will be accepted and the valve goes to mode of minute setting.

6. Use DOWN [C] and UP [D] buttons to change the minutes. To confirm chosen settings push ENTER button [A] . The valve will confirm the time change by a short sound and next it turns back to mode of changing settings.

7. To go to next mode push DOWN button [C].

8. To activate mode of changing next option push ENTER button [A] . Indication of display and the symbol [10] start fleshing. By DOWN [C] and UP [D] buttons choose the required value and confirm it by ENTER button [A] . The valve will confirm this setting change by a short sound and next it will turn back to mode of changing settings.

9. To exit mode of changing settings push BACK button [B] .

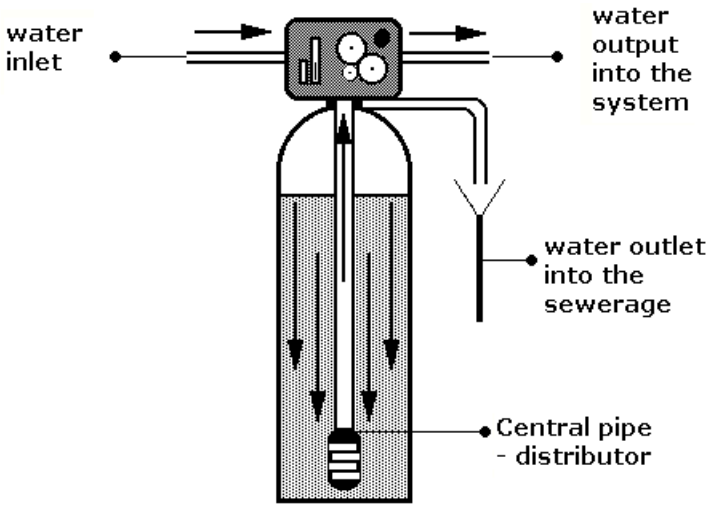
11. DEVICE WORKING CYCLES

During 2 to 5 cycles the display shows a symbol of current cycle and a number of cycle [2, 3, 4, 5], and time of cycle in minutes. E.g. „2 – 10 M" means that current device is in the cycle number 2 (back wash) and to the end of it is 10 minutes.

IN SERVICE

(on the left side of display green stripes and a sandglass symbol will be displayed) - The device is in the first cycle of working – water conditioning. Water is flowing through the device. Raw water is flowing through the valve into the pressure vessel with the bed, next water is flowing through the bed and going up through the distribution tube to the valve and out to the water system.
The display of valve alternatingly shows following indications in 15 seconds intervals:

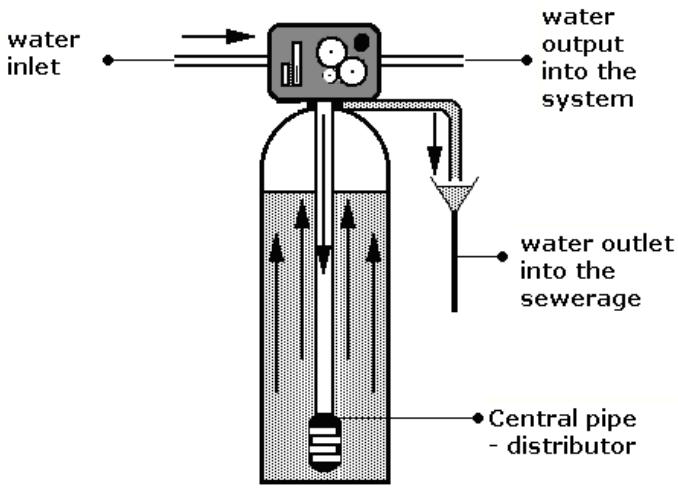
- Current time, e.g. 12:03
- The time of regeneration which will be done after conditioning calculated volume of water, e.g. 02:00
- Capacity of left water to regenerating in m^3, e.g. 10,00 m^3
- Temporary speed of water flowing in m^3/h, e.g. 0,15



Picture 7: Water flowing through the device during water conditioning cycle.

BACKWASH

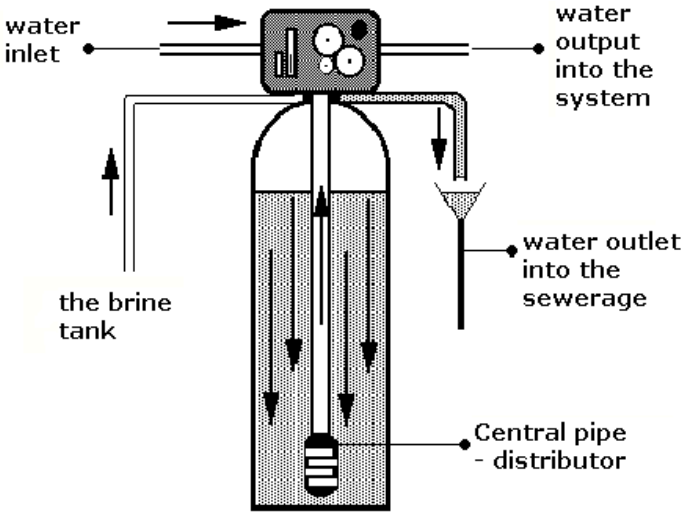
(the symbol number 2 is displaying) The device is in the second cycle of working – counter flow backwashing. Raw water the inlet into the tank with ion-exchange bed and through the inlet valve it is going down through the central pipe. Water, which is flowing through the bed, is rinsing and loosening it. Next water is going to the sewerage. During this cycle the valve cuts off water supply into the existing water system. In this way it protects the water system from coming polluted water which appears after rinsing the device.



Picture 8: Water flowing through the device during backwashing cycle.

REGENERATION

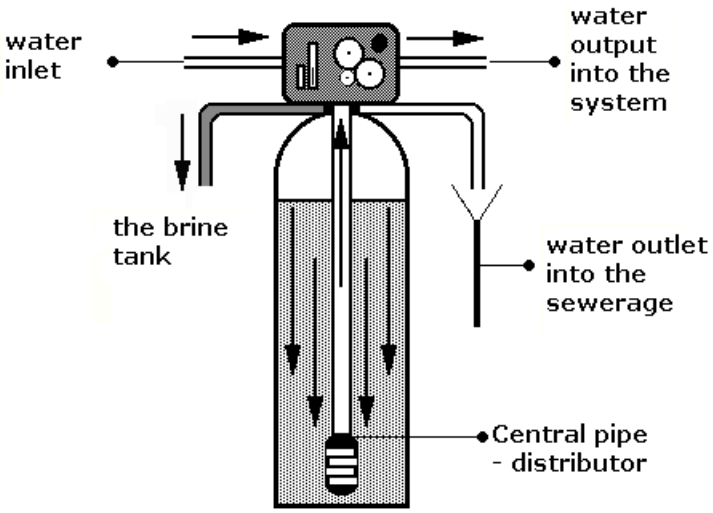
(the symbol number 3 is displaying) The device is in the third cycle of working – brine regenerating and slow rinsing. Raw water and brine are flowing into the tank with ion-exchange bed. Next water and brine are flowing through the inlet valve and through the bed in a tank what makes regeneration of its ion-exchange ability. Water after flowing through the bed, is going to the sewerage. After using whole brine from the tank the ion-exchange bed is rinsed by water in a slow way. In this way the bed is washed in the careful way by brine what gives proper conditions to regenerate it. During this cycle the valve cuts off water supply into the existing water system. In this way it protects water system from being polluted by wastewater.



Picture 9: Water flowing through the device during regenerating cycle.

BRINE REFILL

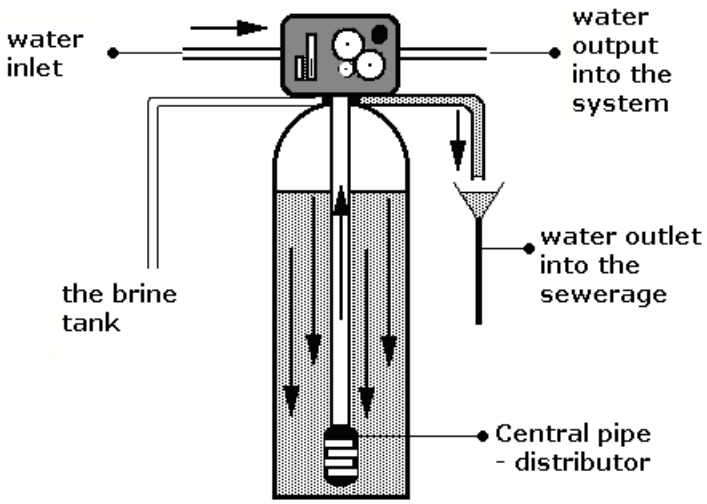
(the symbol number 4 is displaying) Salt tank refilling to prepare brine for the next regeneration. Volume of brine (water in the tank with salt) can be adjusted by the time of water refilling. The longer time of refilling, the more salt dissolves in the water. During this cycle the valve cuts off water supply into the existing water system. In this way it protects water system from being polluted by wastewater.



Picture 9: Water flowing through the device during the cycle of refilling the brine tank.

FAST RINSE

(the symbol number 4 is displaying) Ion-exchange bed fast rinsing from rest of brine and disposing it. After water flowing through the ion-exchange bed, it is going up through the central pipe and next through the line of drain to the sewerage. During this cycle the valve cuts off water supply into the existing water system. In this way it protects water system from being polluted by wastewater.



Picture 11: Water flowing through the device during the cycle of ion-exchange bed fast rinsing.

12. SOLVING PROBLEMS

a problem	**the cause**	**the resolution**
No regeneration	Lack of power	Double check all electrical connections: plug, safety valves, adapter.
	Improperly programmed valve	Reprogramme the valve or cotnact the authorised service
The water after device is still hard	Opened by-pass	Close by-pass
	No salt in a brine tank	Put the salt in the brine tank and regenerate the device using regeneration [10] button
	Dirty injector	Clean the injector or contact the authorised service
	Insufficient brine refill	Double check brine refill time and regenerate the device using the regeneration button [10]
	Water stirrer is opened too widely	Change settings of water stirrer in a head (a control of regulating water hardness [13])
	A head is regenerating now	Wait till the end of regenerating

Excessive brine consumption	Too much water in a brine tank	Decrease the brine refill time
Pressure drop	Iron-containing sludge	Clean the valve and the bed. Increse the frequency of regenerations and/or backwash time
	Clogged water mains	Check if any sediments clogged the water mains before the softener
	Clogged main water inlet in the valve (due to sediments resulting from installation process)	Clean the main inlet and the valve
	Dirty cartridge of the mechanical prefilter	Clean or change the cartridge for a new one
	Air in softener tubing	Check the tubing and make sure if the brine is in the tank
Too much water in a brine tank	Too long brine refill time	Decrease brine refill time
	Clogged injector	Clean the injector
	Foreign bodies in the brine valve	Exchange the brine valve
	Power cut-off during brine refill	Check power supply
There is no brine suction	Too low pressure in water mains	Increase water pressure at the inlet to 1,5 bar
	Clogged brine connection tube	Check the brine connection tube and remove possible clogs
	Leakage from the brine connection tube	Change the brine connection tube
	Damaged injector	Change the injector
Constant leakage of water to the drain	Foreign bodies in the control valve	Unscrew the control and check its inside. Remove the clogs and then check how the valve works during particular cycles
	Power cut-off during regeneration	Check power supply