

Manual for Setting and Operating the Controller Type:

Fleck SXT

timer / volume regeneration control - electronic settings

Simple valve



Duplex valve



This operating manual must be read prior to commissioning the equipment and keep it for possible future need!

It is necessary to read and uphold all instructions in this manual. This manual must be carefully maintained within reach of the operator.

During installation and use of this equipment, it is necessary to always uphold the basic safety regulations when working with electric instruments, including the following instructions:

Safety regulations stated in this operating manual must be upheld. The operator is responsible for upholding safety instructions, decrees and legal provisions valid at the location of installation of equipment. Any malfunctions and deficiencies that negatively influence safety must be removed immediately.

Content:

1. Safety instructions
2. Description of the Fleck SXT controller
3. Possibilities of initiating regeneration
4. Programming the Fleck SXT controller
5. Commissioning the Fleck SXT control valve
6. Technical information
7. Setting the Fleck SXT control valve to treat water for drinking
8. Additional information
8. Troubleshooting

1. Safety instructions**Generally**

This operating manual contains the basic instructions that must be upheld during installation, operation and maintenance.

It is thus unconditionally necessary for both the equipment installer and the operator's applicable service and maintenance staff to carefully read this operating manual prior to assembly and commissioning. This operating manual must then constantly be available at the place of use of the given equipment/system.

Markings for instructions in the operating manual

Safety instructions listed in this manual and which if not upheld may cause a threat to persons, the environment or damage to the equipment/system, are designated by the following symbols:

WARNING!

Indicates a potentially dangerous situation.
Violating this instruction may result in death or serious injury.

ATTENTION!

Indicates a potentially dangerous situation for the equipment and its functioning.
Failure to comply with this instruction may result in minor material damage.

IMPORTANT!

Indicates additional and helpful information that facilitates work and provides for its flawless operation.

Risks of failure to comply with safety instructions

Any failure to comply with safety instructions puts persons, the environment and the equipment itself at risk.
Any failure to uphold safety instructions may void the provided warranty.

WARNING!

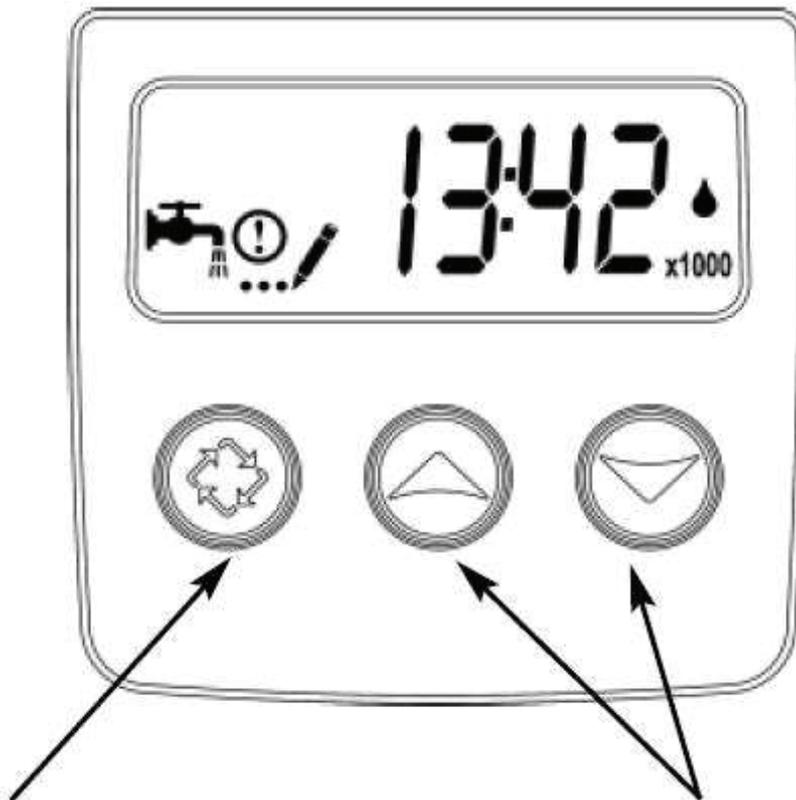
Danger of electric shock. This equipment may be connected exclusively using a grounded outlet (with protective grounding pin), whereas the wire is secured with a current breaker (electrical circuit breaker). Only a qualified electrician may perform the first connection of the plug of this equipment into the electrical socket, or checking the protection of the feeder line. The connecting cable must be protected from any possible mechanical damage.

WARNING!

In the event of damaging the cable, the damaged cable must be immediately replaced in order to prevent the origin of danger of electric shock.

To decrease danger of electric shock, do not connect the device using an extension cord, but always use connection directly into a fixed outlet.

2. Description of the Fleck SXT controller



Function:

- starting manual regeneration, hold for 5 sec
- confirming values, shift in programming

Function:

- setting time
- selecting values in programming mode

SYMBOLS FOR DISPLAY

	<p>Signalling operation:</p> <ul style="list-style-type: none"> - valve is in operating mode: the symbol is illuminated - the valve is in night regeneration mode: the symbol flashes
	<p>Notice: Illuminates during fault reporting and operating failure</p>
	<p>Display in the programme level</p>
	<p>Flow indicator</p>
<p>x1000</p>	<p>multiplier</p> <p>example of displaying volume $10\text{m}^3 = 10$ or in ltr = $10 \times_{1000} = 10.000 \text{ l} = 10\text{m}^3$</p> <p>example of displaying capacity set $\text{m}^3 = 120 = 120 \text{ m}^3 \times \text{°dH}$ set ltr $120 \times_{1000} = 120 \text{ m}^3 \times \text{°dH}$</p>

FUNCTION DURING OPERATION

When operating the valve (water softener), the following is displayed:

Volume control valve:

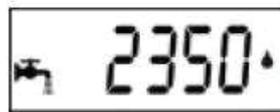
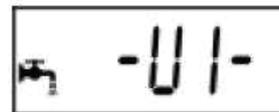
The display alternates between the time of day **1** (current time) and the water volume remaining **2** to regeneration. Water flow is displayed by a flashing droplet, whose flashing frequency is controlled by flow. The displayed water volume remaining drops with consumption.

Timer control valve:

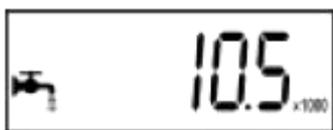
Display alternates between the time of day **1** and the days **3** remaining until the next regeneration.

Duplex valve:

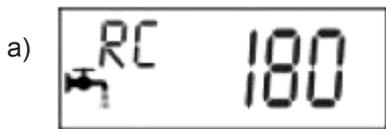
9000, 9100, 9500 display alternates between the time of day **1**, the water volume **2** remaining to regeneration and tank number **4** in service. Water flow is displayed by a flashing droplet, whose flashing frequency is controlled by flow. The displayed water volume remaining drops with consumption.

1	2	3	4
			
time of day	water volume remaining to regeneration in litres	number of days to next regeneration	tank number in service for duplex valves

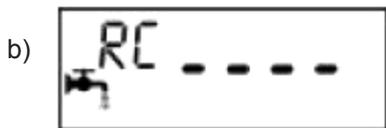
NOTES



If the value is higher than 9999 ltr, the multiplier will illuminate $\times 1000$ thereby displaying a value multiplied by 1,000
example $10.5 \times 1000 = 10,500$ ltr



For volume control, the following is displayed:
a) reserve acquired, 180 l remaining to regeneration
b) reserved exhausted, regeneration will be performed immediately or according to set time



For delayed regeneration for volume control, the symbol  flashes immediately upon acquiring the reserve (if set to do so)

SETTING THE TIME OF DAY

- a) press and hold the ▲ or ▼ button until the symbol  appears and the parameter display reads „TD“
- b) use the ▲ or ▼ buttons to set the current time and confirm by pressing the button 

MANUALLY INITIATING A REGENERATION

This is possible in two ways:

- a) by pressing the button . The symbol  begins flashing and regeneration soon starts by itself.
If you want to cancel regeneration, press the symbol  until the symbol  stops flashing.
- b) press the button  and hold for 5 sec. Regeneration starts immediately. It can no longer be stopped.

3. possibilities of initiating regeneration

For programming, we will need to set data by entering it in the programme. For determining the data, proceed as follows:

1. „tc“ timer-controlled regeneration

Water softener regeneration is initiated based on the set number of days. To set this interval to regeneration (number of days), proceed according to the following example.

Number of days until regeneration is set as follows:

We know the water softener capacity (our example of capacity $40 \text{ }^{\circ}\text{dH} \times \text{m}^3$), or we know the amount of litres of resin (number of litres $\times 4 =$ capacity, ex. $10 \text{ l} \times 4 =$ capacity $40 \text{ }^{\circ}\text{dH} \times \text{m}^3$). We share the capacity with the current water hardness in $^{\circ}\text{dH}$ (our example has hardness $20 \text{ }^{\circ}\text{dH}$). If we know the value of hardness in mmol/l , we use the conversion $\text{mmol} \times 5.6 = \text{ }^{\circ}\text{dH}$.

The result is rounded up to the next whole number. We now know the capacity and hardness of water in $^{\circ}\text{dH}$. The calculation is the capacity and hardness of water in $^{\circ}\text{dH}$. We round the calculation down to each 0.5 m^3 . (our result based on the example $= 40 : 20 = 2$). We decrease this number 2 by 20 %, in order to cover the output reserve to night regeneration. The result $1.6 =$ after each consumption of 1.6 m^3 the water softener should regenerate.

We know for example that daily consumption is 0.5 m^3 . We divide $1.6 : 0.5 = 3.2$. In our case, after rounding down to the nearest whole number on the programme wheel we thus have the resulting value - number of days to regeneration = 3.

2. regeneration controlled from volume of consumed water - meter (flow) delayed „Fd“

Water softener regeneration initiates after consuming the set amount of water, but regeneration waits to start in the nighttime based on the programme. To set the volume of water to regeneration (m^3), proceed according to the following example.

Set the calculation m^3 of water to regeneration as follows:

We know the water softener capacity (our example of capacity $40 \text{ }^{\circ}\text{dH} \times \text{m}^3$), or we know the amount of litres of resin (number of litres $\times 4 =$ capacity, ex. $10 \text{ l} \times 4 =$ capacity $40 \text{ }^{\circ}\text{dH} \times \text{m}^3$). We share the capacity by raw water hardness in $^{\circ}\text{dH}$ (our example has hardness $20 \text{ }^{\circ}\text{dH}$). If we know the value of hardness in mmol/l , we use the conversion $\text{mmol} \times 5.6 = \text{ }^{\circ}\text{dH}$.

The result is rounded up to the next whole number. We now know the capacity and hardness of water in $^{\circ}\text{dH}$. The calculation is the capacity divided by water hardness in $^{\circ}\text{dH}$. We round the calculation down to each 0.5 m^3 (our result according to the example $= 40 : 20 = 2$). We decrease this number 2 by 20 %, in order to cover the output reserve to night regeneration. In our example, we have a resulting value of 1.6 m^3 .

3. regeneration controlled from volume of consumed water - meter (flow) immediate „FI“

Regeneration of water softener is immediately initiated after consumption of the set volume of water.

To set the water volume to regeneration (m^3), proceed according to the example listed above (Calculation m^3 of water to regeneration). The difference is that after reading the water volume, regeneration will start immediately, regardless of the time of day; this is only for specific use, and it is necessary to first consult with the dealer.

4. Programming overview for controller type Fleck SXT

ATTENTION! IMPORTANT!

Programming the valve

This programming may only be performed by a qualified technician, since a change in parameters may lead to flawed operation of the entire water softener.

The programming mode is only accessible when the valve is in service and under el. voltage. During programming, the valve continues to run and stores all information into its memory. Data remain stored in a separate memory.

IMPORTANT!

So that all changes are stored into memory, programming must run until the end, and return to the operating mode, so it is necessary to run through all levels of the programme with the button  until the end.

during power failure

- a) all data remain stored in the memory, and after power is restored, data are automatically retrieved. Data may be stored this way for a year, but the electronics are not in service and no regenerations occur.
- b) if water consumption through the water softener occurs during power failure, its volume is not measured!
- c) after reconnection to the supply voltage, the Time of Day indicator flashes to signal the power failure.

If the water softener is connected to technological appliances, we recommend in the event of uncertainty of conditions of consumption, to always perform manual regeneration after a power failure.

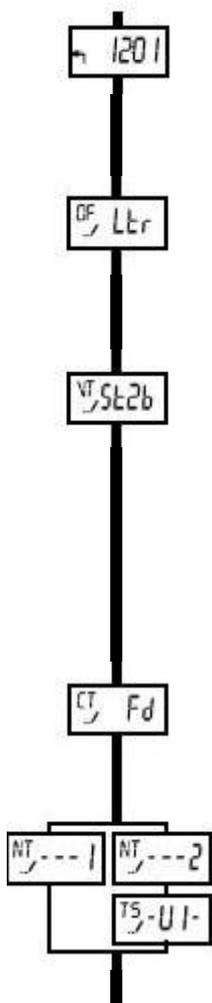
Entry to the programming level

Before entering the programming level, it is necessary to set the time using the ▼ and ▲ buttons to 12:01, and switch to the programming mode by briefly pressing the  button.

To enter programming, it is necessary to then press the ▲ and ▼ buttons together and hold for 5 seconds. This icon, the first programme level, indicates that you are now in programme 

IMPORTANT!

Programming procedure



Entering the programme

- using the ▼ and ▲ buttons, set the time to 12:01
- briefly press the  button to switch to the operation position,  symbol displays
- press and hold the ▲ and ▼ buttons together for 5 sec

DF - setting format (volume)

- format in gallons (GAL) – do not use
- format in litres (Ltr) – confirm, the value $\times 1000$ is then displayed
- format in cubic meters (m³) (Cu) – may not be available, otherwise confirm for capacity 1,000 m³ \times °dH and more

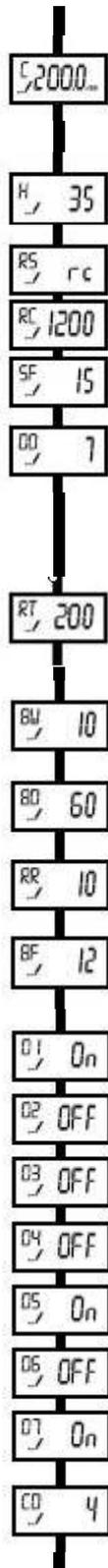
VT – valve type

- regeneration cycle - backwash (standard) (dF1b) or (St1b) - use
- regeneration cycle - brine draw (dF2b) or (St2b) - no
- filtration, not used in Europe (Fltr) - no
- regeneration cycle - filling brine (dFFF) - no (may not be available)
- counterflow regeneration with brining first (UfbF) or (Ufdb) - no
- valve 8500, not used in Europe (8500) - no
- other, Filter (Othr) - no

CT – type of regeneration

- time-based regeneration (tc) – yes for timer control
- daily cycle of initiating regeneration (dAY) – Day of Week timer control - we do not recommend - only after consultation with dealer
- meter (flow) immediate regeneration based on volume (FI) – only for duplex valves
- meter (flow) delayed regeneration based on volume (Fd) – yes for volume control

- NT --- 1 confirm for valves 5600, 5000, 4600, 2510, 2750, 2850, 2910
- NT --- 2 confirm for duplex valves 9000, 9100, 9500
- UI - if we confirm NT --- 2 the tank in service is displayed, only necessary to then confirm



Capacity of water softener Displayed only upon confirming (FI) or (Fd)
The metric format is displayed m³ Thus only for volume control, ex. 200 m³ × °dH is displayed as 200.0 × 1000

H - Feedwater Hardness Displayed only during volume control (FI) or (Fd)
- metric format degree German- °dH

RS - Reserve selection Not displayed for timer control (tc) or (dAY)
Capacity of system (RC) with fixed volume ex. 1200 litres

Safety factor set in % (SF) ex. reserve of 15% of capacity

DO - day override regeneration is also used with volume control
- for drinking, food operations set water for min. 1 × every 5 days
- other applications min. 1 × every 20 days

RT - regeneration time recommended time 2⁰⁰ a.m., adjustable to suit needs

Setting regeneration cycles

BW - Backwash duration of regeneration phase no 1
- ex.: 10 minutes – adjustable

BD - Brining and slow rinse duration of regeneration phase no 2
- ex.: 60 minutes – adjustable

RR - rapid rinse duration of regeneration phase no 3
- ex.: 10 minutes – adjustable

BF - Filling brine tank with water duration of regeneration phase no 4
- ex.: 5 minutes – adjustable

ATTENTION

The lengths of these cycles must be set with regard to the water softener capacity and inlet water pressure. BF - no 4 must be tested

Daily cycle of initiating regeneration

regeneration on Monday

no regeneration on Tuesday

no regeneration on Wednesday

no regeneration on Thursday

regeneration on Friday

no regeneration on Saturday

regeneration on Sunday

current day of week when programming

The menu displays only if the regeneration type (dAY) – timer control was selected
The numbers correspond to the days of the week 1 = Monday, 7 = Sunday

It is necessary to set this correctly, otherwise the above-mentioned settings do not function



Flow meter type

Difference between the turbine and the flow meter - see images below, have to recheck Symbols may not be displayed in the listed sequence

- 3/4" axial turbine ----- (t 0.7) – for Fleck 5000 and 5600
- 3/4" flow meter (P 0.7) – for Fleck 9100
- 1" axial turbine ----- (t 1.0)
- 1" flow meter (P 1.0)
- 1 1/2" axial turbine ----- (t 1.5)
- 1 1/2" flow meter (P 1.5) – for Fleck 9500, 2850
- 2" flow meter ----- (P 2.0) – for Fleck 2910
- other flow meter (G En) – other external flow meter not Fleck

Other flow meter

ex. flow meter 3× impulse / litre (3)

confirming by pressing the  button brings you back to operating mode, programming is completed

5. Commissioning the Fleck control valve with the SXT controller

IMPORTANT!

You must now commission the programmed valve

1. Set the current time in the clock. Set the time using the ▽ or △ button. The longer these buttons are pushed, the faster the clock cycles.
2. Initiate manual regeneration
3. Switch the valve into the position for filling the brine tank with water and allow it to run up until the operating mode.
(check the volume of water filled point 16. page 7 - see water softener manual)

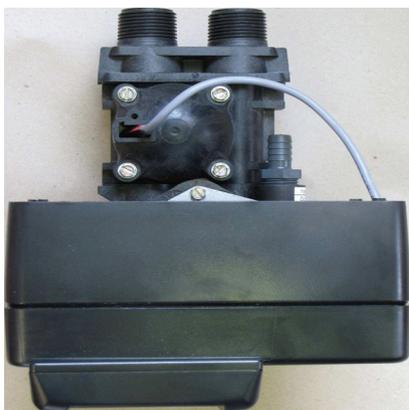
6. Technical information

Order of pictograms of regeneration phase

1 - BW	Backwash	backwash
2 - BD	Brine draw	brining and slow rinse in direction of flow
3 - RR	Rapid rinse	rapid rinse
4 - BF	Brine fill	filling tank with saline solution (brine)

Displaying flow meter and turbine

FLOW METER



TURBINE



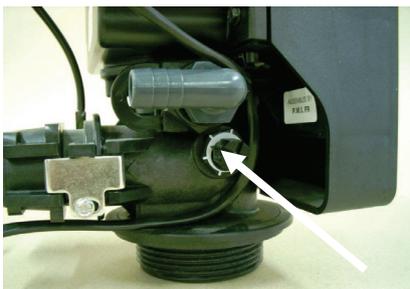
IMPORTANT!

- a) for assuring permanent function, the controller (water softener) must be under constant pressure of at least 0.2 MPa (2 bar) at full water flow and voltage 230V/50Hz
- b) Forced regeneration in the case of immediate or delayed regeneration based on volume of consumed water
Once the programmed number of days between two regeneration cycles is reached, regeneration initiates immediately or at a programmed time. In this case, regeneration initiates irrelevant of the residual volume.
- c) Indications during operation
Under normal service, the display alternates between time of day, residual capacity (only for valves controlled based on volume) and for duplex valves, also the tank in service (valves with two tanks: 9000, 9100 and 9500).
- d) Indications during regeneration
During regeneration, the display flashes to indicate a cycle currently being completed or stays lit if a cycle has already been completed. Besides the cycle numbers, the remaining cycle period appears (stays lit). After completion of regeneration cycles, the valve in service returns.
- e) Initiating manual regeneration
Two options exist for initiating manual regeneration:
1. Briefly press the  button
 - for valves with immediate regeneration, regeneration starts immediately
 - for valves with delayed regeneration, regeneration starts at the set time, and in between the „in service“ diode flashes
 2. Press the  button and hold for 5 seconds:
 - regeneration in all cases initiates automatically
- f) Fast move from one regeneration phase to the next
When pressing the button  during the regeneration phase, the valve immediately moves to a different phase without waiting for the first phase to finish. Pressing this button does nothing if the valve is already between two phases.
- g) Procedure in case of power failure
In case of a power failure, all data remains stored in the memory. This data may remain stored for years in the memory without damage. The electronics are inactive and all regeneration is delayed. When power is restored, all data are restored from the movement of the power failure. The incorrect time on the clock means that there has been a power failure.

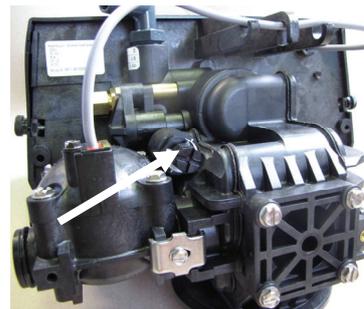
7. Setting the Fleck SXT control valve to treat water for drinking

- The control valve Fleck 4600/5600/5000/9100 has an integrated hardening valve, by which it is possible to mix hard feedwater into soft water at the softener outlet. This helps achieve the state where at the softener outlet, after mixing, compliance is achieved of a public health decree requirement for minimum quantities of calcium and magnesium determined for water intended after treatment to serve as drinking water.
- When adjusting, mind the fact that this valve has an opposite (left) thread, (hardening (opening) thus takes place upon turning the valve to the right, and vice-versa.
- For more, follow instructions in the water softener manual

Location of hardening valve with white scale
for Fleck 4600SXT, 5600SXT and 5000SXT



for Fleck 9100 SXT



8. Additional information

Decommissioning and liquidation

Decommissioning and liquidation of the old device must be performed in accordance with the currently valid legislation, applicable local regulations, the ROHS directive, and valid law governing liquidation of old electric instruments and equipment.

Maintenance

For assuring reliable and accurate function of the equipment, the supplier recommends performing preventative maintenance on the equipment at least once per year, if not determined otherwise by local regulations.

Self-help technical changes, spare parts

Any adjustments or changes to the given equipment are only permitted with the manufacturer's consent. Only original spare parts may be used on this equipment.

Scope of use

All operating modes and methods of operation that are in conflict with this use to the prescribed purpose are prohibited, and their use may thus result in the voiding of the provided warranty.

Power connection

For assuring permanent function, the controller (water softener) must be under constant pressure of at least 2 bar and voltage 230V / 50Hz

HOT-LINE

For consultation or service call:

Mon-Fri 7:00 a.m. - 4:00 p.m. tel no 582 333 960
outside of business hours and weekends at tel no 602 530 478

6. Troubleshooting:

	Error type	Cause	Reset and recovery
1	The water softener is not regenerating	A Interrupted power supply or with occasional failures	A Check the power source (fuse, plug, switch)
		B Defective programming switch	B Replace programming switch
		C Disconnected flow meter cable	C Check flow meter cable connection on the card and flow meter lid
		D Locked flow meter	D Clean or replace flow meter
		E Defective motor	E Replace motor
		F Incorrect programming	F Check the programming and possibly adjust it
2	Hard water	A By-pass in position „By-Pass“	A Set bypass to operating position
		B No salt in the solution tank	B Constantly and properly fill the tank with salt
		C Congested filter or injector	C Clean injector and replace filter
		D Not enough water in solution tank	D Check the period for filling salt possible congested lines
		E Hardness comes from the hot water tank	E Flush the hot water tank several times
		F Distribution pipe leak	F Check the distribution pipe for cracks. Check the „O“ ring
		G Internal valve leak	G Replace sealing, spacer rings or piston
		H Locked flow meter	H Clean or replace the flow meter

		I Disconnected flow meter cable	I Check the flow meter cable connection on the card and flow meter lid
		J Incorrect programming	J Check the programming and possibly adjust it
3	High salt consumption	A High salt setting	A Adjust the salt setting
		B Too much water in the brine tank	B See fault no 6
		C Incorrect programming	C Check the programming and possibly adjust it
4	Decrease in water pressure	A Calcified inlet pipe	A Clean or replace pipe
		B Iron deposits in valve	B Clean valve
		C Congested valve inlet	C Disassemble piston and clean valve
5	Loss of cation exchange resin into canal.	A Missing or damaged upper nozzle	A Assemble or replace upper nozzle
		B Air in softener device	B Check to see if the air closure is found in the saline solution tank
		C Incorrect backwash curtain (DLFC)	C Check backwash flow
6	Iron deposits in device	A Contaminating cation exchange resin deposits	A Check backwash, intake and filling of solution tank. Regenerate more frequently. Extend the duration of backwash
		B Iron content in raw water is too high.	B Check with your dealer
7	Too much water in the tank	A Congested backwash/drainage line	A Check throughput to canal. Clean the backwash curtain (DLFC)
		B The solution valve is contaminated or damaged	B Clean or replace the valve
		C Incorrect programming	C Check the programming and possibly adjust it
8	Water contains salt	A Congested filter/injector	A Clean injector and replace filter
		B Defective programming switch	B Replace programming switch
		C Contaminated or damaged solution valve	C Replace valve seating and clean valve
		D Contaminated solution filling curtain (BLFC)	D Clean BLFC
		E Water pressure too low	E Min. required pressure 1.8 bar
		F Incorrect programming	F Check the programming and possibly adjust it
9	No solution intake	A Congested backwash/drainage line	A Check throughput to canal. Clean the backwash curtain (DLFC)
		B Congested filter/injector	B Clean injector and replace filter
		C Water pressure too low	C Min. required pressure 1.8 bar
		D Valve internal leak	D Replace sealing, spacer rings and/or piston
		E Incorrect programming	E Check the programming and possibly adjust it
		F Defective programming switch	F Replace programming switch
10	Constant regeneration	A Defective programming switch	A Replace programming switch
		B Defective microswitch or cable	B Replace microswitch or cable
		C Cam cycle is defective or incorrectly set	C Reset or replace the cam

11	Constant drainage into sewer	A Foreign object in valve	A Disassemble the valve body, check it, clean and reinstall
		B Valve internal leak	B Replace sealing, spacer rings or piston
		C The valve remains standing in the position of backwash or brining	C Replace sealing, spacer rings and piston
		D Faulty programming switch motor	D Replace motor
		E Faulty program switching	E Replace programming switch

Certificate of Warranty of the Fleck Control Valve

- 1) If the controller is a part of the complete water softener, do not fill out this certificate of warranty
- 2) A certificate of warranty that is incomplete or illegible is invalid.
- 3) A warranty is provided for goods for a duration of 24 months from the date of commissioning, but 30 months at the most from the date of sale. In other matters, the parties will comply with conditions according to VOP aquina, s.r.o.

type of Fleck control valve:

control valve serial number:

control valve installed on equipment with matter volume, ltr

installation and setting performed by: name / company:

signature:

date of commissioning:

trained service representative: name:

signature:

