INSTALLER MANUAL

Evolio 5800 SXT

IMPORTANT SAFETY INSTRUCTIONS

Read and follow all instructions

Save these instructions

WWW.PENTAIR.EU

Table of Contents

1 Generalities

1.1 Scope of the documentation

The documentation provides the necessary information for appropriate use of the product. It informs the user to ensure efficient execution of the installation, operation or maintenance procedures.

The content of this document is based on the information available at the time of publication. The original version of the document was written in English.

For safety and environmental protection reasons, the safety instructions given in this documentation must be strictly followed.

The manufacturer reserves the right to make changes at any time without notice.

This manual is a reference and will not include every system installation situation. The person installing this equipment should have:

- training in the Evolio series, SXT controllers and water treatment appliances installation;
- knowledge of water conditioning and how to determine proper controller settings;
- basic plumbing skills.

This document is available in other languages on https://www.pentair.eu/product-finder/product-type/softeners.

1.2 Release management

Revision	Date	Authors	Description
A	27.03.2020	BRY/FLA	First edition.
B	16.01.2023	BRY	Website, new design and scan & service removal.
C	03.03.2026	AMI	General corrections, Update of the manufacturer's address.

1.3 Manufacturer identifier, product identification

Manufacturer: **EMEA legal entity**
Pentair Manufacturing Italy S.R.L.
Via Tiziano 32
20145 Milano (MI)
Italy

Product identification: Evolio 5800 SXT

1.4 Intended use

- For domestic use only;
- the water softener series Evolio may only and exclusively be used for residential water softening under specified conditions, see Water [→Page 23];
- the water softener series Evolio protects water pipes and connected water-carrying systems from scaling, respectively from malfunctions and damage caused by scaling;

- the water softener series Evolio is designed for continuous supply of water for different family sizes depending on the chosen model.

1.5 Abbreviations used

Assy	Assembly
BLFC	Brine Line Flow Controller
BV	Brine Valve
DF	Down Flow
DLFC	Drain Line Flow Controller
Inj	Injector
QC	Quick Connect
Regen	Regeneration
S&S	Seals & Spacers
Std	Standard
SBV	Safety Brine Valve
TC	Time Clock
UF	Up Flow

1.6 Norms

1.6.1 Applicable norms

Comply with the following guidelines:

- 2014/35/UE: Low Voltage Directive;
- 2014/30/UE: Electromagnetic compatibility;
- 2011/65/UE: Restriction of use of certain hazardous substances in electrical and electronic equipment (RoHS);
- UNI EN ISO9001.

Meets the following technical standards:

- EN IEC 61326-1;
- EN IEC 61010-1.

1.6.2 Available certificates

- CE;
- DM174;
- ACS.

Please find beside the certifications for some of our product families. Please note that this list is not an exhaustive list of all our certifications. In case of need for more information please contact us.

1.7 Procedure for technical support

Procedure to follow for any technical support request:

1. Collect the required information for a technical assistance request.
   - ⇨ Product identification (see Serial label location [→Page 10] and Recommendations [→Page 58]).
   - ⇨ Description of the device problem.
2. Please refer to the Troubleshooting [→Page 74]. If the problem persists contact your local tech support.

1.8 Copyright and Trademarks

All indicated Pentair trademarks and logos are property of Pentair. Third party registered and unregistered trademarks and logos are the property of their respective owners.

1.9 Limitation of liability

Pentair Water Treatment EMEA products benefit, under specific conditions, from a manufacturer warranty that may be invoked by Pentair's direct customers. Users should contact the vendor of this product for applicable conditions and in case of a potential warranty claim.

Any warranty provided by Pentair regarding the product will become invalid in case of:

- installation done by a non-water-professional;
- improper installation, improper programming, improper use, improper operation and/or maintenance leading to any kind of product damages;
- improper or unauthorized intervention on the controller or components;
- incorrect, improper or wrong connection/assembly of systems or products with this product and vice versa;
- use of a non-compatible lubricant, grease or chemicals of any type and not listed by the manufacturer as compatible for the product;
- failure due to wrong configuration and/or sizing.

Pentair accepts no liability for equipment installed by the user upstream or downstream of Pentair products, as well as for process/production processes which are installed and connected around or even related to the installation. Disturbances, failures, direct or indirect damages that are caused by such equipment or processes are also excluded from the warranty. Pentair shall not accept any liability for any loss or damage to profits, revenues, use, production, or contracts, or for any indirect, special or consequential loss or damage whatsoever. Please refer to the Pentair List Price for more information about terms and conditions applicable to this product.

2 Safety

2.1 Safety pictograms definition

DANGER

This combination of symbol and keyword indicates an imminently hazardous situation that will result in serious or fatal injury if not avoided.

WARNING

This combination of symbol and keyword indicates a potentially hazardous situation that can result in serious or fatal injury if not avoided.

CAUTION

This combination of symbol and keyword indicates a potentially hazardous situation that can result in minimal or minor injury if not avoided.

Caution - material

This combination of symbol and keyword indicates a potentially hazardous situation that can result in material damage if not avoided.

Prohibition

Mandatory advice to follow.

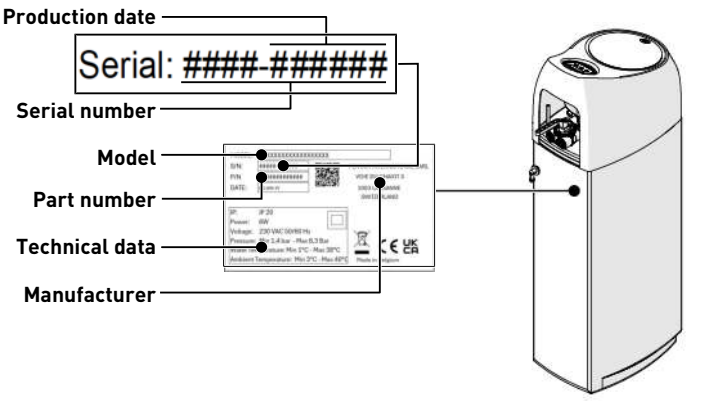
Mandatory

Applicable guideline, measure!

Info

Informative comment

2.2 Serial label location



Mandatory

Ensure that the serial label and the safety tags on the device are completely legible and clean.

2.3 Hazards

All the safety and protection instructions contained in this document must be observed in order to avoid temporary or permanent injury, damage to property or environmental pollution.

At the same time, any other legal regulations, accident prevention and environmental protection measures, as well as any recognized technical regulations relating to appropriate and risk-free methods of working which apply in the country and place of use of the device must be adhered to.

Any non-observation of the safety and protection rules, as well as any existing legal and technical regulations, will result in a risk of temporary or permanent injury, damage to property or environmental pollution.

2.3.1 Personnel

⚠ CAUTION

Risk of injury due to improper handling!

Only qualified and professional personnel, based on their training, experience and instruction as well as their knowledge of the regulations, the safety rules and operations performed, are authorized to carry out necessary work.

⚠ WARNING

Appliance

This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensor or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved.

⚠ WARNING

Children

Children shall not play with the appliance.

Cleaning and salt refill shall not be made by children without supervision.

Mandatory

Any other maintenance operation must be carried out only by qualified and professional personnel!

2.3.2 Transport

The following points must be observed to ensure proper operation of the system:

- do not lay down or flip over the softener at any time. The media may paste to the upper distributor thus obstructing its slots or enter the valve and may therefore compromise the softener operation;
- pay attention not to hit the softener;
- use all the safety lifting systems to move the softener;
- do not lift the softener by the valve or bypass.

2.3.3 Material

The following points must be observed to ensure proper operation of the system and the safety of user:

- do not remove the locking bar while system is pressurized;
- beware of high voltages present on the transformer (100 – 240 VAC);
- do not put your fingers in the system (risk of injuries with moving parts and shock due to electric voltage).

2.4 Hygiene and sanitization

2.4.1 Sanitary issues

Preliminary checks and storage

- Check the integrity of the packaging. Check that there is no damage and no signs of contact with liquid to make sure that no external contamination occurred;
- check that the brine tank and the brine well are clean and free from burr, debris or any scraps;
- the packaging has a protective function and must be removed just before installation. For transportation and storage, appropriate measures should be adopted to prevent the contamination of materials or the objects themselves.

Assembly

- Assemble only with components which are in accordance with drinking water standards;

- after installation and before use, perform one or more manual regenerations in order to clean the media bed. During such operations, do not use the water for human consumption. Perform a disinfection of the system in the case of installations for treatment of drinking water for human use.

Info

This operation must be repeated in the case of ordinary and extraordinary maintenance.

It should also be repeated whenever the system remains idle for a significant time.

Info

Valid only for Italy

In case of equipment used in accordance with the DM25, apply all the signs and obligations arising from the DM25.

2.4.2 Hygiene measures

⚠ DANGER

Do not use with water that is micro-biologically unsafe or of unknown quality without adequate disinfection before or after the softener.

⚠ WARNING

Water softeners using sodium chloride for regeneration will add sodium to the water.

Person who are on sodium-restricted diets should consider the added sodium as part of their overall sodium intake.

Disinfection

- The materials used for the construction of our products meet the standards for use with potable water; the manufacturing processes are also geared to preserving these criteria. However, the process of production, distribution, assembly and installation, may create conditions of bacterial proliferation, which may lead to odor problems and water contamination;
- it is therefore strongly recommended to sanitize the products. See Cleaning, disinfection and sanitization [→Page 50];
- maximum cleanliness is recommended during the assembly and installation;
- for disinfection, use Sodium or Calcium Hypochlorite and perform a manual regeneration.

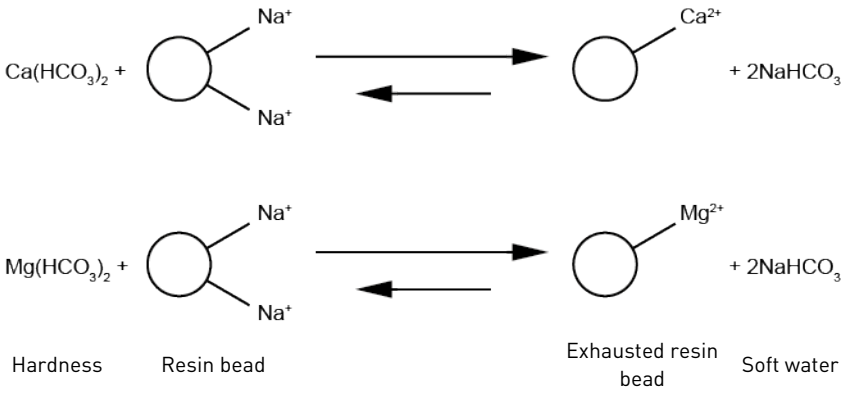
3 Description

3.1 Introduction to softeners

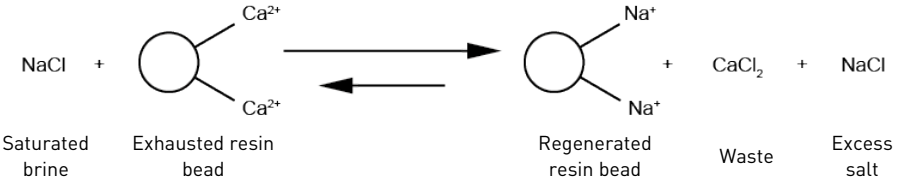
3.1.1 Softening principles

Softening is an ion exchange process where the hard ions are getting exchange by soft ions, typically sodium or potassium. This is achieved by placing the water in contact with an ion exchange resin and ensuring the contact time is appropriate for the flow rate to produce.

The basic chemistry of softening resins is very simple: the resin is made of small polymer beads with chemical functionality that selectively captures the divalent ions (such as Ca^{2+} and Mg^{2+} - hardness ions) and releases in exchange less tightly held monovalent ions, usually sodium (Na^{+}) or less frequently potassium. Here below is shown the chemical reactions mechanism for softening:



The ⇌ means that under certain conditions, the reactions can be reversed. This is due to the equilibrium between the water composition and the amount of hardness that can be removed. This reverse reaction is observed at different kinetics and at high monovalent ions concentration. Usually for softening this conditions are obtained using concentrated NaCl (or KCl) solutions that are put in contact with the resin. This is called regeneration:



The service and regeneration reaction can be done over and over, so softening systems last years.

A softener consists of different components:

- a tank, filled with softening resin;
- a valve, that will direct the inlet water flow on the resin bed so that the softening or regeneration reaction can take place;
- a timer, that will control when the regeneration phases have to be done;

- a brine tank, where saturated brine solution is prepared for the regenerations.

The present softener will simply allow the previously described reaction to happen, alternating softening period of few days with regeneration that may last up to few hours depending on setting done. The softener is equipped with a controller that will trigger automatically the different phases of service and regeneration upon the programming done.

The valve configuration has been chosen to be in accordance with the volume of resin contained in the tank. Do not intend to modify it or you may cause kinetics changes and may cause regeneration malfunction.

In order to ensure proper softener function, make sure it always contains salt in the brine tank and remains electrically powered. Softener installation, start up and programming must be done by trained professional water treatment specialist. Incorrect installation or wrong programming may cause softener malfunctions or even damage the softener and its components.

Respect programming recommendations for each softener size in order to achieve best optimized softener performances.

Softener requires periodical cleaning/maintenance operations to ensure proper function over years. Those are described in the present manual on chapter Maintenance [→Page 54].

3.1.2 Downflow regeneration cycle (5-cycles operation)

Service — normal use

Untreated water is directed down through the resin bed and up through the riser tube. The hardness ions attach themselves to the resin and are removed from the raw water being exchanged on the resin beads towards sodium ions. The water is conditioned as it passes through the resin bed.

Backwash — cycle C1

The flow of water is reversed by the valve and directed down the riser tube and up through the resin bed. During the backwash cycle, the bed is expanded and debris is flushed to the drain, while the media bed is remixed.

Brine draw & slow rinse — cycle C2

The controller directs water through the brine injector and brine is drawn from the brine tank. The brine is then directed down through the resin bed and up through the riser tube to the drain. The hardness ions are displaced by sodium ions and are sent to the drain. The resin is regenerated during the brine cycle. Then the slow rinse phase starts.

Rapid rinse — cycle C3

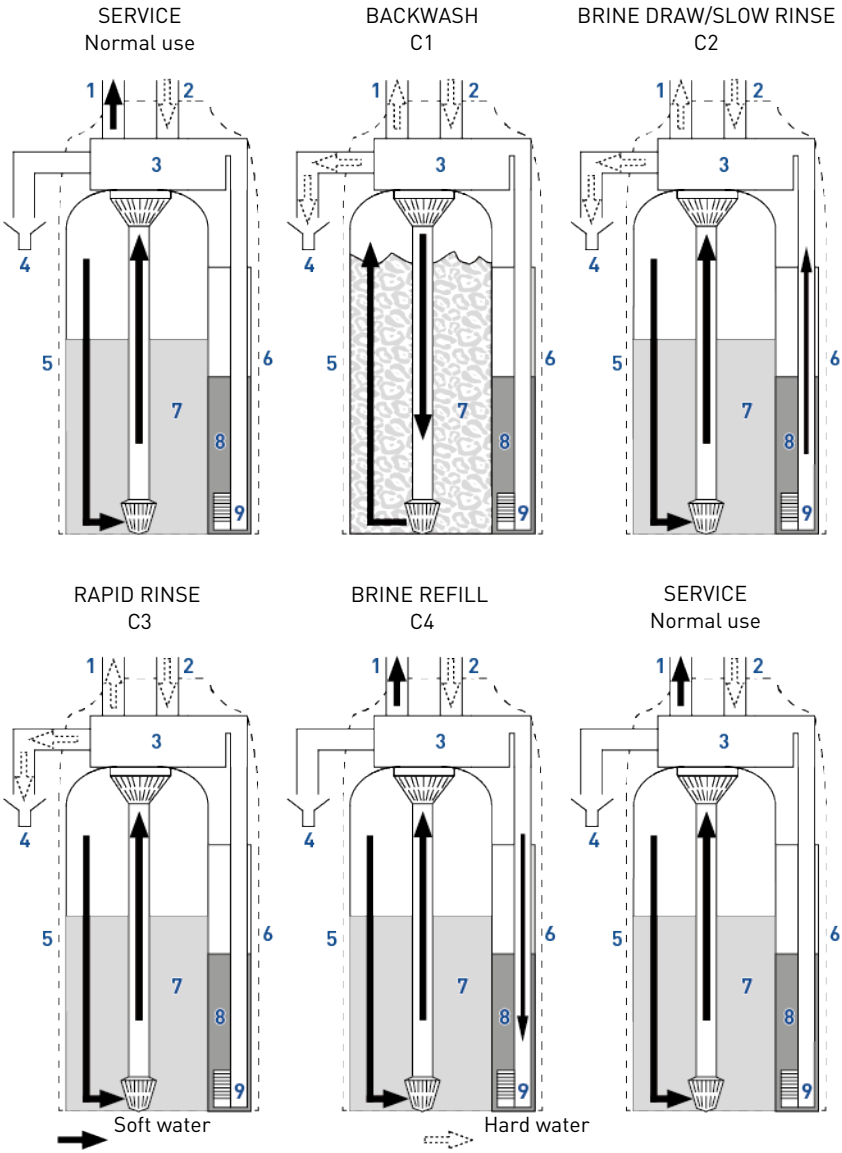
The valve directs water down through the resin bed and up through the riser tube to the drain. Any residual brine is rinsed from the resin bed, while the media bed is recompacted.

Brine tank refill — cycle C4

Water is directed to the brine tank, at a rate controlled by the refill controller [BLFC], to create brine for the next regeneration. During brine refill, treated water is already available at the valve outlet.

Info

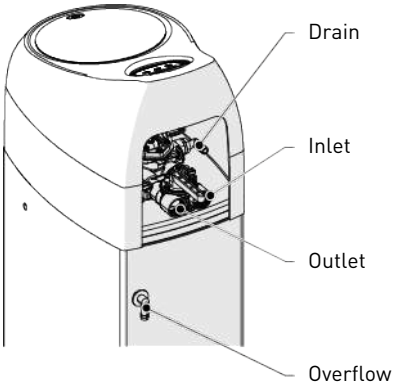
For illustration purpose only. Always verify inlet and outlet marking on the softener.



1 Inlet
2 Outlet
3 Valve
4 Drain
5 Media tank
6 Brine tank
7 Media bead
8 Brine
9 SBV + air check

3.2 Technical specifications

3.2.1 General



Softener type

Evolio 5800 SXT	8	15	22	30

Design specifications/ratings

Softener cabinet	ABS			
Tank body	Dowex® HCRS-s resin			
Valve body	Glass-filled Noryl® - NSF listed material			
Rubber components	Compounded for cold water - NSF listed material			
Valve material certification	WQA Gold Seal Certified to ORD 0902, NSF/ANSI 44, CE, ACS			
Volume of resin	8 L	15 L	22 L	28 L
Approximative shipping weight	12 kg	20 kg	30 kg	35 kg
Salt storage	25 kg	50 kg	50 kg	50 kg
Operating pressure	1.4 - 8.6 bar			
Hydrostatic test pressure	20 bar			
Water temperature	1 - 43°C			
Ambient temperature	0 - 52°C			

3.2.2 Performance flow rate characteristics

Info

Flow rates are indicative data. Maximum flow rate to produce in order to respect the required service velocity for an optimal ion exchange upon resin manufacturers recommendation, regardless of the inlet pressure.

Nominal (residual hardness 0°f)	0.32 m^3/h	0.60 m^3/h	0.88 m^3/h	1.20 m^3/h

Nominal (residual hardness 10°f, 30% mixing)	0.42 m^3/h	0.78 m^3/h	1.14 m^3/h	1.56 m^3/h
Peak (residual hardness 0°f)	0.64 m^3/h	1.20 m^3/h	1.76 m^3/h	2.40 m^3/h
Peak (residual hardness 10°f, 30% mixing)	0.83 m^3/h	1.56 m^3/h	2.29 m^3/h	3.12 m^3/h
Softening	8	15	22	30
Number of people	1-2	3-4	5-6	7-8

Capacity & salt consumption for the different salt dosage setting (3 bar inlet dynamic pressure)

Softener	Evolio 5800 SXT 8	Evolio 5800 SXT 15
Salt dosage (g/L of resin)	120	120
Salt amount per regen (kg)*	0.96	1.80
Softener capacity [°Fm^3]	40.2	75.3
Minimum of water to refill for brine preparation at 120 g/L (L)	2.7	5.0
Total approximative water usage per regeneration (L)	49.9	89.3

Softener	Evolio 5800 SXT 22	Evolio 5800 SXT 30
Salt dosage (g/L of resin)	120	120
Salt amount per regen (kg)*	2.64	3.60
Softener capacity [°Fm^3]	110.4	150.6
Minimum of water to refill for brine preparation at 120 g/L (L)	7.4	10.1
Total approximative water usage per regeneration (L)	121.8	173.9

Softener connections

Inlet/Outlet	1"
Drain line	½" O.D.
Overflow drain line	½"

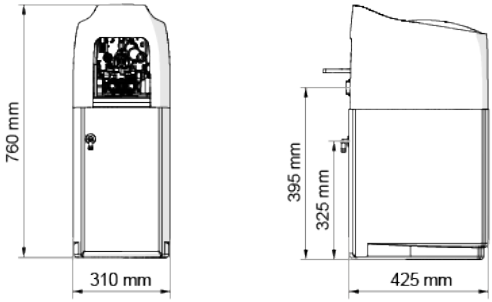
Electrical

Transformer input voltage	100-240 VAC 50/60 Hz
Softener max. power consumption	6 W
Protection rating	IP 20
Transient overvoltage	within the limits of category II
Pollution Degree	3

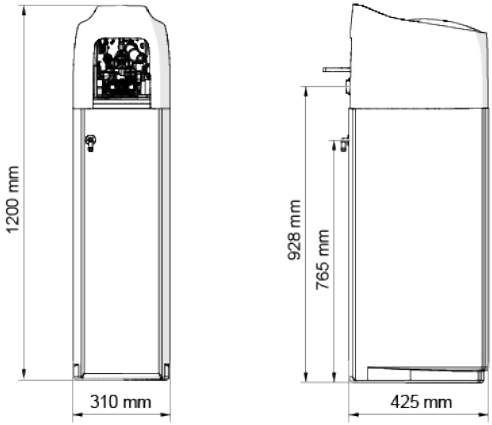
Temporary overvoltage must be limited in duration and in frequency.

3.3 Outline drawing

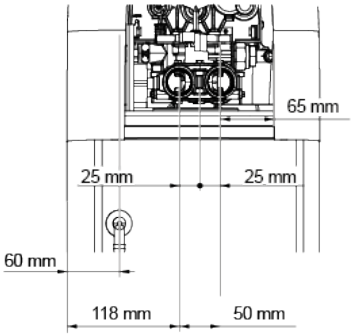
Evolio 5800 SXT 8 model



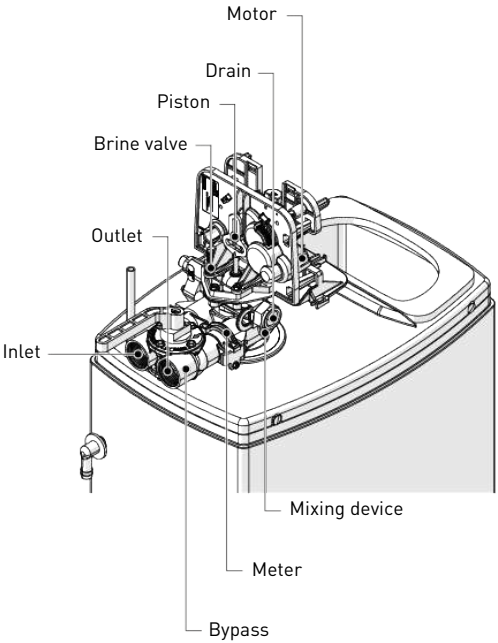
Evolio 5800 SXT 15, 22 and 30 models

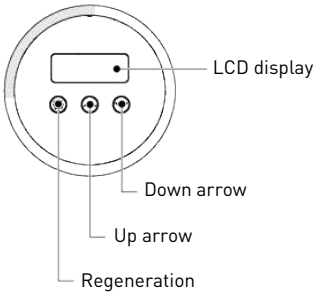


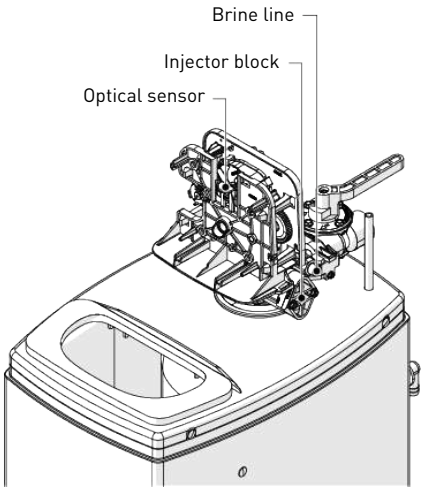
Evolio 5800 all models



3.4 Description and component location



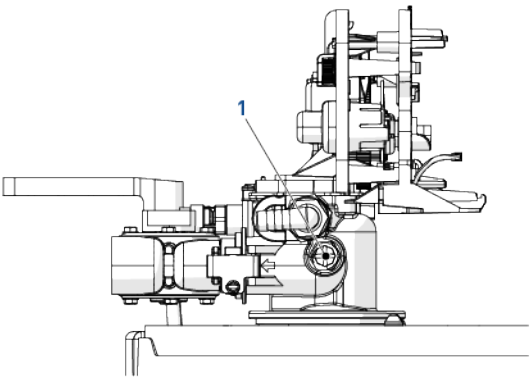


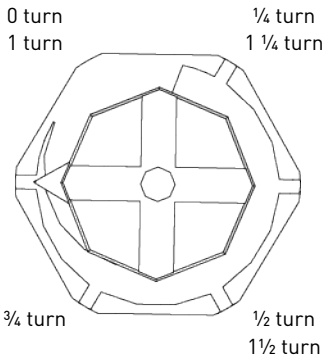


3.5 Softener's available options

3.5.1 Mixing device

The softener can be equipped with a mixing device (1) whose function is to regulate the hardness of the water at the outlet. The mixing can be set from 0% to 50% of hard water (i.e. 0 turn = 0% of hard water with 100% of treated water and 1-½ turn = 50% of hard water with 50% of treated water).





3.6 Accessories included

The following accessories are delivered with the Evolio:

- voltage transformer: 210-240 VAC to 12 VDC;
- by-pass.

4 Installation

4.1 Warnings

⚠ CAUTION

Do not lay down or flip over the softener at any time. The media may paste to the upper distributor thus obstructing its slots and may therefore compromise the softener operation.

Softener must be protected against freezing, which can cause cracking of the softener and water leakage.

4.2 Safety notices for installation

- Observe all warnings that appear in this manual;
- only qualified and professional personnel are authorized to carry out installation work.

4.3 Installation environnement

4.3.1 General

- Use only regenerant salts designed for water softening. Do not use ice melt, block, or rock salts;
- keep the media tank in an upright position. Do not turn on its side, upside down, or drop it. Turning the tank upside down may cause media to enter the valve or might clog the upper screen;
- follow State and local codes for water testing. Do not use water that is micro-biologically unsafe or of unknown quality;
- when filling the media tank with water, first place the valve in the backwash position, then partly open the manual valve. Fill the tank slowly to prevent media from exiting the tank;

4.3.2 Water

⚠ CAUTION

Do not treat water over 43 °C, hot water would damage the softener and void warranty.

- If you are on a private well system, check minimum water pressure with an accurate gauge (gauges on older water systems are often inaccurate). Static pressure that is less than 2 bar may cause low flow rate and inadequate regeneration, depending by the pressure drop of the system as a minimum of 1.38 bar dynamic pressure is required for the valve's injector to operate effectively.

Mandatory

Do not exceed a maximum of 8.6 bar inlet pressure. Should this happen or be subject to happen, it is necessary to install a pressure regulator upstream the system.

4.3.3 Electrical

There are no user-serviceable parts in the transformer, motor, or controller. In the event of a failure, these should be replaced.

- All electrical connections must be completed according to local codes;
- make sure power source matches the rating on the unit;
- use only the 12 VDC power supply transformer that is supplied.

Mandatory

Plug the supplied transformer in an AC 100-240 V, 50/60 Hz power supply. The use of any other power supply than the one supplied void the warranty of all electronic parts of the valve.

Mandatory

The unit must be plugged into an outlet.

Make certain the electrical supply cannot be turned off accidentally and is not controlled by a wall switch.

⚠ CAUTION

Due to some house using piping as a source of electrical grounding, a grounding strap must be installed when required.

Electrical components are not waterproof.

- The power outlet must be grounded;
- to disconnect power, unplug the AC cable from its power source;
- do not use any extension cord;
- locate cord where it cannot be accidentally unplugged or cause any bodily harm.

4.3.4 Mechanical

⚠ CAUTION

Do not over-tighten the pipe to piping boss.

Do not put excessive force on the inlet, outlet or drain connections of the valve.

Prohibition

Use of silicone or petroleum-based lubricants, oils or hydrocarbon-based lubricants, is strictly prohibited with Evolio 5800 SXT as the valve 5800 is equipped with silicone o-rings that are not compatible with silicone based lubricant.

Caution - material

Risk of damage due to wrong lubricant use

Do not use petroleum-based lubricants such as Vaseline, oils, or hydrocarbon-basedlubricants.

Do not use silicon grease.

Use only P-80® Emulsion lubricant (water-based lubricant)!

- All plastic connections should be hand-tightened. PTFE (plumber's tape) may be used on connections that do not use an O-ring seal. Do not use pliers or pipe wrenches;
- existing plumbing should be in a good shape and free from limescale. In case of doubt, it is preferable to replace it;
- all plumbing must be completed according to local codes and installed without tension or bending stresses;
- soldering near the drain line should be done before connecting the drain line to the valve. Excessive heat will cause interior damage to the valve;
- do not use lead-based solder for sweat solder connections;
- observe the drain line requirements: maximum 1 m high at 2 bars inlet pressure. Add 50 cm for additional 1 bar at the softener's inlet;
- the valve is designed for minor plumbing misalignments. Do not support the weight of the system on the valve fittings, plumbing, or the bypass;
- it is not recommended to use sealants on the threads. Use PTFE (plumber's tape) on the threads of the 25.4 mm (1") NPT elbow, the drain line connections, and other NPT/BSP threads.

4.4 Integration constraints

Location of a water treatment system is important. The following conditions are required.

⚠ CAUTION

The surface for installation (platform or floor) must be solid, flat and level.

Mandatory

Drain must be capable of handling a backwash flow rate of 19 l/min.

- Locate the softener as close as possible from drain discharge point and within 12.2 m maximum of drain discharge point, respecting minimum drain line diameter advises given at chapter Drain line connection [→Page 32];
- room to access equipment for maintenance and adding brine (salt) to tank;
- constant electrical supply to operate the controller;
- total minimum pipe run to water heater of 3 m to prevent backup of HW into system;
- always install check valve before water heater to protect the softener from HW return;
- local drain for discharge as close as possible;
- water line connections with shut off or bypass valves;
- must meet any local and state codes for site of installation;
- use flexible piping to connect main piping to softener;
- be sure all soldered pipes are fully cooled before attaching plastic valve to the plumbing.

4.5 Softener connection to piping

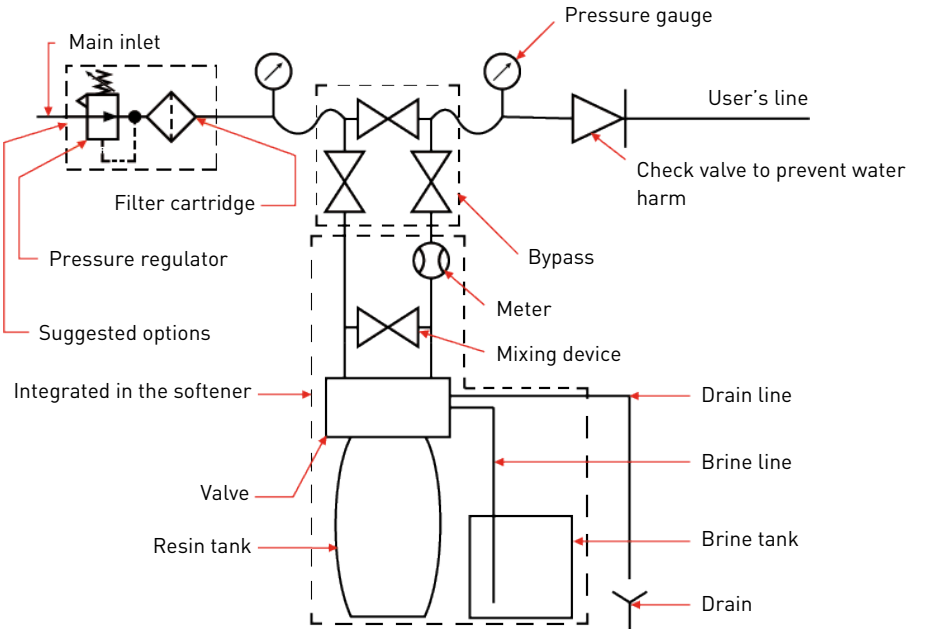
Tip

To prevent your softener from incoming sediment and iron particles, Pentair recommends the installation of a 100 µm pre-filter upstream the unit.

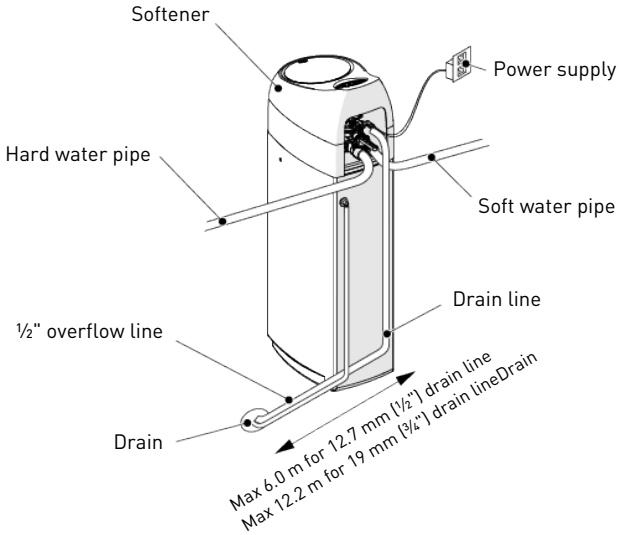
Mandatory

The unit should be installed in accordance with the manufacturer's recommendations and meet all applicable plumbing codes.

4.5.1 Block diagram



4.5.2 Installation layout



4.5.3 Tools and material required for installation

Info

Not all listed tools may be necessary for installation. Read installation procedures before starting to determine if additional tools are necessary.

Valves, grounding straps, wire, clamps and wall pipes are not supplied with the water softener.

Tip

Use ball or globe valves.

Tools:

- pipe wrenches;
- screw drivers;
- safety glasses;
- safety shoes;
- measuring tape;
- level;
- file;
- utility knife or tube cutter.

Materials:

- softener;
- pipes;
- Teflon® tape;
- grounding straps (optional);
- overflow pipe ½";
- valve drain pipe ½".

Material included:

- voltage transformer: 210-240 VAC to 12 VDC;
- by-pass.

4.5.4 Inspection/preliminary assembly

4.5.4.1 Inspection

Mandatory

Any missing or faulty equipment must be specified on the transport documents. Notify the transporter company and supplier immediately.

Info

In some case, some damage can only be observed when commissioning the softener.

Check that all delivered equipment corresponds to the shipping list and that it is not damaged.

4.5.4.2 Preliminary installation

Info

This softener doesn't need any preliminary assembly.

4.5.5 Softener installation

1. Shut off power or fuel supply to water heater, see manufacturer's instructions.
2. Shut off all water at main supply water line.
3. Open highest and lowest faucet of the line where softener will be installed to relieve pressure and drain the system.
4. Set the unit in place, see Softener connection to piping [→Page 26] and Installation layout [→Page 27].
5. Place the softener in a firm concrete floor or slab base. Be sure the unit is reasonably level.

⚠ CAUTION

Do not shim the softener directly for levelling. If necessary to shim, fabricate a platform base to set the tank on and then shim under the platform base.

6. Make necessary piping changes for connecting the softener inlet and outlet to the home piping. Make sure not to reverse inlet and outlet.
7. Installation of supplied bypass is highly recommended, see Bypassing [→Page 31].
8. Connect the inlet and outlet piping, see Water supply line [→Page 29].

Info

The softener connection threads are 1" BSPT female.

Mandatory

Make sure having the incoming water connected to the right side (looking from the front of the softener).

Mandatory

Do not use pipe joint compound or plumber's putty on the valve body threads and do not over-tighten fitting.

Use only Teflon® tape.

9. Make certain proper piping alignment is maintained. Do not apply heat to any fitting connected to the softener or damage to the valve may occur.
10. Move the softener in position and level.

Tip

To prevent water leaks, connections to the softener must be straight when the softener is levelled.

11. Carefully connect the valve drain line at the back of the softener, see Drain line connection [→Page 32].
12. Connect salt storage tank overflow elbow to drain, see Overflow line connection [→Page 33].

⚠ CAUTION

Do not connect valve drain line and overflow drain line together by teeing.

4.5.6 Water supply line and bypass connections

4.5.6.1 Water supply line

The connections should be hand tightened using PTFE (plumber's tape) on the threads if using the threaded connection type.

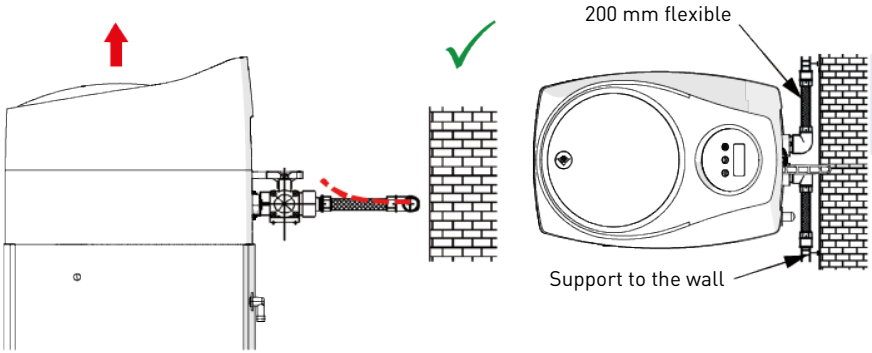
In case of heat welding (metal type connection), the connections should not be made to the valve when soldering.

Info

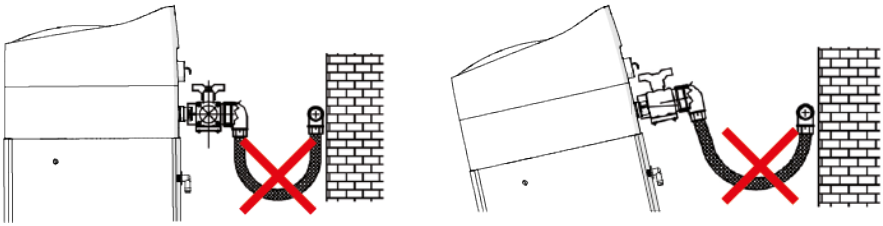
See chapter Description and component location [→Page 21] to identify the connections.

When pressurized, any composite tank will expand both vertically and circumferential. In order to compensate the vertical expansion, the piping connections to the valve must be flexible enough to avoid overstress on the valve and tank.

In addition, the valve and tank should not be supporting any part of the piping weight. This is hence compulsory to have the piping fixed to a rigid structure (e.g. frame, skid, wall...) so that the weight of it is not applying any stress on the valve and tank.



- The diagrams above illustrate how the flexible piping connection should be mounted;
- in order to adequately compensate the tank elongation, the flexible tubes must be installed **horizontally**;
- should the flexible piping connection be installed in vertical position, instead of compensating the elongation, it will create additional stresses on the valve & tank assembly. Therefore, this is to be avoided;
- the flexible piping connection must also be installed stretched, avoiding excessive length. For instance 20 - 40 cm is enough;
- excessively long and non-stretched flexible piping connection will create stresses on the valve and tank assembly when the system is pressurized, as illustrated in the below picture: on the left the assembly when the system is unpressurised, on the right the flexible piping connection when put under pressure tends to lift up the valve when stretching up. This configuration is even more dramatic when using semi-flexible piping;
- failure to provide enough vertical compensation may lead to different kinds of damage, either on the valve thread which is connected to the tank, or on the female thread connection of the tank. In some cases, damage may also be seen on the valve inlet and outlet connections;



- in any case, any failure caused by improper installations and/or piping connections may void the warranty of Pentair products;

- in the same way, using lubricant* on the valve thread is not allowed and will void the warranty for the valve and tank. Indeed, using lubricant there will cause the valve to be over-torqued, which may lead to valve thread or tank thread damage even if the connection to piping has been done following the above procedure.

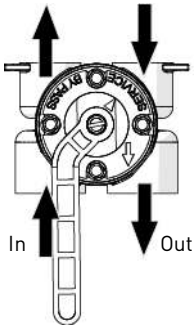
*Note: do not use petroleum or hydrocarbon-based lubricants. Using these types of lubricants will structurally damage valve and cause failures. Use only 100 % silicone lubricants.

4.5.6.2 Bypassing

A bypass valve system should be installed on all water conditioning systems. Bypass valves isolate the softener from the water system and allow unconditioned water to be used. Service or routine maintenance procedures may also require that the system is bypassed.

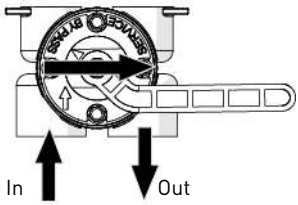
Normal operation

Softening System



In Bypass

Softening System



Caution - material

Risk of damage due to bad mounting!

Do not solder pipes with lead-based solder.

Do not use tools to tighten plastic fittings. Over time, stress may break the connections.

Do not use petroleum grease on gaskets when connecting bypass plumbing. Do not use silicon grease. Use only P-80® Emulsion lubricant (water based lubricant). Using another lubricant may damage the valve.

⚠ CAUTION

Do not solder pipes with lead-based solder.

Do not use tools to tighten plastic fittings.

Over time, stress may break the connections.

Prohibition

Use of silicone or petroleum-based lubricants, oils or hydrocarbon-based lubricants, is strictly prohibited with Evolio 5800 SXT as the valve 5800 is equipped with silicone o-rings that are not compatible with silicone based lubricant.

Mandatory

Use only P-80® Emulsion lubricant (water based lubricant).

Using another lubricant may damage the valve.

4.5.7 Drain line connection

Info

Standard commercial practices are expressed here.

Local codes may require changes to the following suggestions.

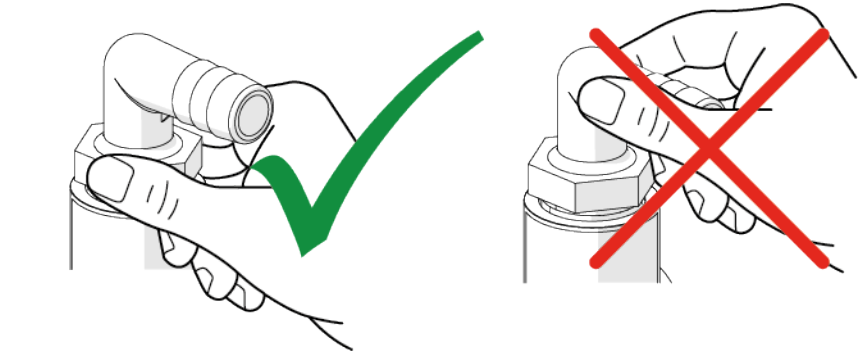
Check with local authorities before installing a system.

⚠ CAUTION

The drain line plastic elbow must always be hand-tighten without using the elbow as a lever.

The drain plastic elbow is not designed to support the weight of the tube. The tube has to have its own support.

Do not overtighten the tube on the drain line plastic elbow.



If available, use a floor drain or sump drain, but it is also possible to use a sump pit, dry well, clothes washer drain, laundry tube or sanitary sewer line with sink type trap.

The drain line should be as short as possible and the unit should not be more than 12.2 m from the drain. Use an appropriate adapter fitting to connect a 12.7 mm (½") plastic tubing to the drain line connection of the valve if the drain line is shorter than 6 m. Use a 19 mm (¾") tubing if the drain is longer than 6 m or if the backwash flow rate is greater than 22.7 l/min.

Use appropriate fittings to connect the 19 mm (¾") tubing to the drain connection on the valve.

Where the drain line is elevated but empties into a drain below the level of the valve, form a 18 cm loop at the far end of the line so that the bottom of the loop is level with the drain line connection. This will provide an adequate siphon trap.

Where the drain empties into an overhead sewer line, a sink-type trap must be used.

Also select a firm hose that will not soften and collapse or shrink at high temperature, at suspension points or at sharp bends. Clamp the drain line securely to a rigid surface to prevent it from moving during regeneration.

Info

Plumbing codes do not allow a direct connection into any sanitary or storm drain, sewer line trap.

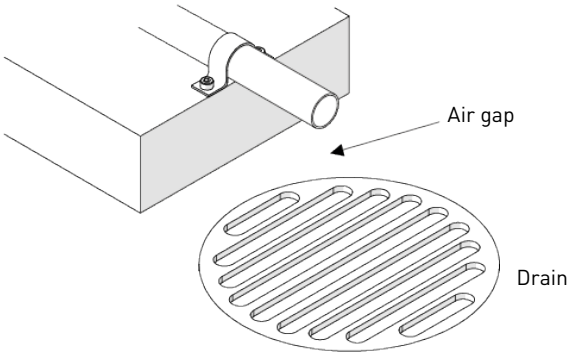
Waste connections or the drain outlet shall be designed and constructed to provide connection to the sanitary waste system through an air gap of at least 5 cm.

This is usually required so sewer backup will not be back-siphoned into the softener.

CAUTION

When running the drain line to a floor drain, the area around the drain may become wet during the regeneration process.

Keep floor drain area clean at all times to prevent any damage.



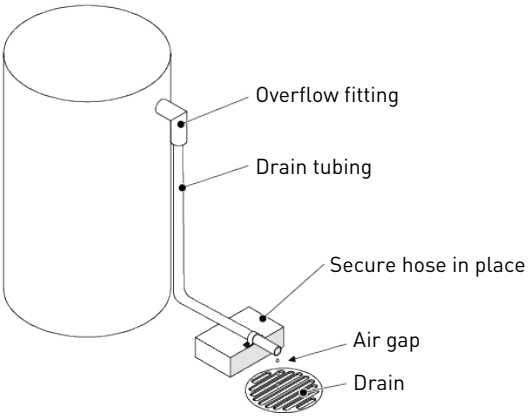
4.5.8 Overflow line connection

In the event of a malfunction, the brine tank overflow fitting will direct "overflow" to the drain instead of spilling on the floor. This fitting is at the back of the cabinet.

To connect the overflow line, locate the barbed elbow at the back of the cabinet and connect a ½" tubing (not supplied) from the elbow to the drain.

Do not elevate overflow higher than overflow fitting.

Do not tie into drain line of softener. Overflow line must be a direct, separate line from overflow fitting to drain, sewer or tub. Allow an air gap as per drain line instructions.



Caution - material

Risk of flooding due to lack of floor drain!

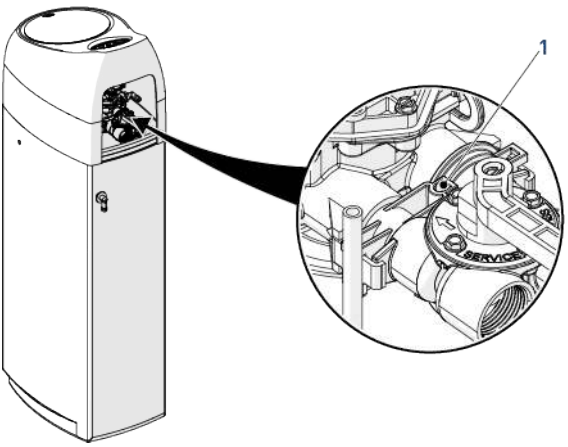
Floor drain is always recommended to avoid flooding in case of overflow.

4.6 Electrical connection

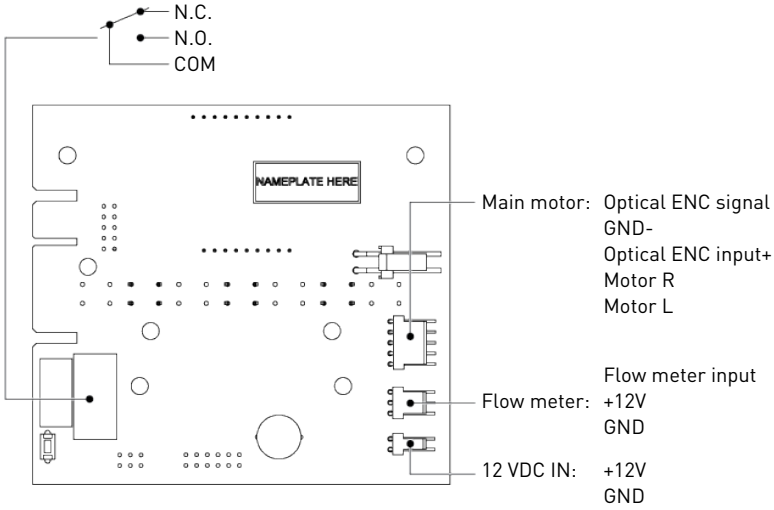
4.6.1 Meter connection

Info

During shipping, the cable from the back of the controller to the meter assembly may have been disconnected. If it has, insert the end of the cable into the top of the meter assembly (1).

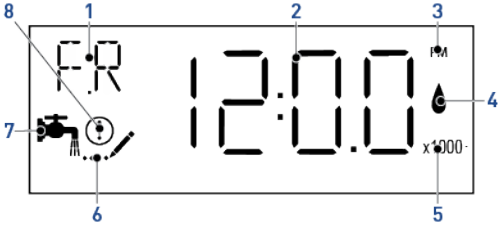


4.6.2 Evolio 5800 SXT controller connection



5 Programming

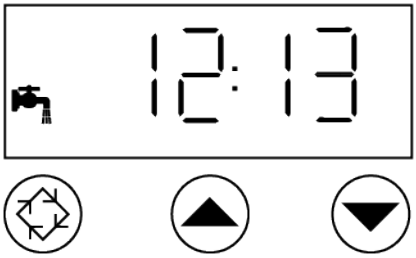
5.1 Display



1. Parameter display
   - → C: Unit capacity;
   - → CD: Current day;
   - → CT: Regeneration control type;
   - → DF: Display format;
   - → Dn, n=1 to 7: Day of week;
   - → DO: Days override;
   - → ET: Relay end time;
   - → FM: Flow meter;
   - → FR: Current flow rate;
   - → H: Feedwater hardness;
   - → HR: Hours in service;
   - → K: Meter pulse;
   - → PF: Peak flow rate;
   - → RC: Fixed reserve capacity;
   - → RE: Time base relay setting;
   - → RF: Regeneration flow;
   - → RS: Reserve selection;
   - → RT: Regeneration time;
   - → SF: Safety factor;
   - → ST: Relay start time;
   - → SV: Software version;
   - → TD: Time of day;
   - → TO: Relay time on;
   - → TV: Totalizer;
   - → V: Filter capacity;
   - → VO: Volume interval;
   - → VR: Flow base relay setting;
   - → VT: Valve type;

	→ VU: Volume used.
Regeneration cycles:	→ B1: First backwash (for dF2b regeneration flow);
	→ B2: Second backwash (for dF2b regeneration flow);
	→ BD: Brine draw;
	→ BF: Brine fill;
	→ BW: Backwash;
	→ LC: Last cycle (for "other" regeneration flow);
	→ RF: Refill (for "other" regeneration flow);
	→ RR: Rapid rinse;
	→ SP: Service position (for "other" regeneration flow);
	→ SR: Slow rinse (for "other" regeneration flow);
	→ SV: Service position for brine preparation (for "UFFF" regeneration flow).
2. Data display	
3. PM indicator	→ Appears if controller set in US unit.
4. Flow indicator	→ Flashes when outlet flow is detected.
5. x1000 indicator	→ Appears when the displayed number is bigger than 9999.
6. Programming icon	→ Appears in programming modes.
7. Service icon	→ Appears in service mode;
	→ Flashes if a regeneration cycle has been queued
8. Error / Information icon	→ Appears in case of error, see Diagnostic [→Page 46].

5.2 Commands



1	Display	Used to show information, see Display [→Page 36].
2	Regenerate	Used to command the controller to regenerate. Also used to change the lock mode.
3	Up arrow	Used to scroll up in a parameter list or to increment a parameter value.
4	Down arrow	Used to scroll down in a parameter list or to decrement a parameter value.

5.3 Quick program guide

Caution - material

Bad programming

Softener can work improperly and may be damaged

- The SXT controller can be programmed in many different ways. For Evolio 5800 SXT, use only the values presented in the next table. Not following this table will make the softener working improperly and may damage it.

Press	Initial display	Value to enter for model Evolio 5800 SXT				Range	Parameter
		8	15	22	30		
Press and hold ▼ or ▲ until the programming icon replaces the service icon. Press ▼/▲ to program time of day, press ⟲ to confirm or wait for 10 seconds.	TD	Set current time at 12:01.				00:00 24:00	Time of day

Info

The current time (TD) works as a password to the complete set of parameter, else all the other steps of this programming procedure will not work.

Press and hold ▼ and ▲ until the programming icon replaces the service icon. Press ▼/▲ to program display format, press ⟲ to confirm.	DF	Ltr				-	Display format
Press ▼/▲ to program valve type, press ⟲ to confirm.	VT	5800				-	Valve type
Press ▼/▲ to program regeneration flow, press ⟲ to confirm.	RF	dF1b				-	Std DF single backwash
Press ▼/▲ to program regeneration control type, press ⟲ to confirm.	CT	Fd				-	Meter delayed
Press ▼/▲ to program unit capacity, press ⟲ to confirm.	C	40200	75300	110400	150600	1 - 999'900	Unit capacity °TH*L g as $CaCO_3$

Press ▼/▲ to program feed water hardness, press ⟲ to confirm.	H	To set at the installation site feed water hardness.				1 - 1999	Feed water hardness °TH, ppm
Press ▼/▲ to program reserve, press ⟲ to confirm.	RS	cr				SF cr rc	Variable reserve capacity
Press ▼/▲ to program days override, press ⟲ to confirm.	DO	Set in accordance with local regulation.				OFF - 99 Days	
Press ▼/▲ to program regeneration time, press ⟲ to confirm.	RT	Set at a time of low or no water usage.				00:00 24:00	Regen time
Press ▼/▲ to program backwash time, press ⟲ to confirm.	BW	2	3	3	4	0 - 199	Backwash time min
Press ▼/▲ to program brine draw time, press ⟲ to confirm.	BD	21	38	31	42		Brine draw time min
Press ▼/▲ to program rapid rinse time, press ⟲ to confirm.	RR	3	6	5	8		Rapid rinse time min
Press ▼/▲ to program refill time, press ⟲ to confirm.	BF	3	5	8	11		Refill time min
Press ▼/▲ to program flow meter type, press ⟲ to confirm.	FM	t0.7				-	¾" turbine flow meter
Press ▼/▲ to program time base relay, press ⟲ to confirm.	RE	tb				OFF tb	Time base relay
Press ▼/▲ to program relay start time, press ⟲ to confirm.	ST	0				0 to BW+BD +RR+ BF-1	Relay start time min
Press ▼/▲ to program relay end time, press ⟲ to confirm.	ET	29	52	47	65	ST+1 to BW+BD +RR+ BF	Relay end time

5.4 Basic programming

Info

Menus are displayed in a defined and incremental order.

If no button is pressed for 5 minutes in the Programming mode (basic or master mode), or if there is a power failure, the controller returns to Service mode and changes made are not saved.

Mandatory

In order to save the new settings in the programming mode, it is necessary to go through all the parameters.

5.4.1 Setting the time of the day (TD)

Set the time in the system.

1. Press and hold ▼ or ▲ until the programming icon replaces the service icon and the parameter display reads TD.
2. Set the time with ▼ or ▲.
3. Press ⟲ to validate the selection and return to the service mode, or wait for 10 seconds.

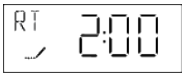
5.4.2 Day of override (DO)

Set the maximum number of days of operation without regeneration according to local regulation.

1. Press ▼ and ▲ simultaneously for 5 seconds to enter the menus sequence.
2. Select the number of days of override with ▼ and ▲.
3. Press ⟲ to validate the selection and advance to the next parameter.

5.4.3 Regeneration time (RT)

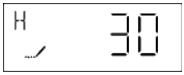
Determine the time of regeneration at a time of low or no water usage.



1. Adjust the regeneration time with ▼ and ▲.
2. Press ⟲ to validate the selection and advance to the next parameter.

5.4.4 Feed water hardness (H)

Set the feed water hardness in °TH.



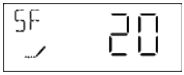
1. Adjust the feed water hardness with ▼ and ▲.
2. Press ⟲ to validate the selection and advance to the next parameter.

5.4.5 Satety factor (SF)

Set the safety factor in %.

Info

The safety factor value, expressed in percentage, will be added to the calculated reserve if cr option is selected in RS. It could be a fixed percentage of total volume if RS SF option is selected.



1. Adjust the safety factor with ▼ and ▲.
2. Press ⟲ to validate the selection and get out of basic programming mode.

5.5 Master programming mode

Info

As soon as programming mode is entered, all parameters can be displayed or set to suit the needs. Depending on the current programming, some functions will not be displayed.

If no button is pressed for 5 minutes in the Programming mode (basic or master mode), or if there is a power failure, the controller returns to Service mode and changes made are not saved.

Menus are displayed in a defined and incremental order.

Mandatory

In order to save the new settings in the programming mode, it is necessary to go through all the parameters.

Caution - material

The SXT controller can be programmed in many different ways. For Evolio 5800 SXT, use only the values presented in this chapter.

Not following those values will make the softener working improperly and may damage it.

5.5.1 Entering master programming mode

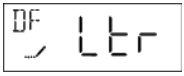
1. Press and hold ▼ or ▲ until the programming icon replaces the service icon and the parameter display reads TD.
2. Set the time to 12:01 PM with ▼ or ▲.
3. Press ◈ to validate the selection and return to the service mode, or wait for 10 seconds.
4. Press and hold ▼ and ▲ until the programming icon replaces the service icon and the display format screen appears.

5.5.2 Display format mode (DF)

Select the unit of measure.

Options:

- GAL: U.S. gallons and 12-Hour AM/PM;
- Ltr: litres and 24-Hour.



1. Press ▼ or ▲ to select Ltr (metrical unit system).
2. Press ◈ to validate the selection and move to the next parameter.

5.5.3 Valve type (VT)

Select the 5800 valve type.

Options: 5800, 5810 & 5812.

1. Press ▼ or ▲ to select the 5800 valve type.
2. Press ◇ to validate the selection and move to the next parameter.

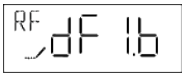
5.5.4 Regeneration flow (RF)

Select the standard downflow single backwash regeneration flow.

Options:

- dF1b: Standard downflow single backwash;
- dF2b: Standard downflow double backwash;
- UFFF: Upflow fill first;
- UFbd: Upflow brine first;
- FLtr: Filter, to be used with standard piston only;
- O-dF: Other downflow;
- O-UF: Other upflow.

1. Press ▼ or ▲ to select the dF1b (Std DF single backwash) regeneration flow.
2. Press ◇ to validate the selection and move to the next parameter.



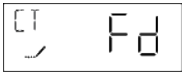
5.5.5 Regeneration control type (CT)

Select the meter delayed regeneration controller type.

Options:

- Fd: meter delayed;
- FI: meter immediate;
- tc: time clock;
- dAY: day of the week.

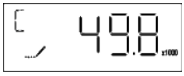
1. Press ▼ or ▲ to select the Fd (meter delayed) regeneration control type.
2. Press ◇ to validate the selection and move to the next parameter.



5.5.6 Unit capacity (C)

Set the unit capacity.

1. Press ▼ or ▲ to select the unit capacity to 4200, 75300, 110400 or 150600 g as $CaCO_3$ or °TH*L respectively for Evolio 5800 SXT 8, 15, 22 and 30.
2. Press ◇ to validate the selection and to move the next parameter.



5.5.7 Feedwater hardness (H)

Set the feedwater hardness.

Info

The feedwater hardness parameter is only available if the regeneration control type has been programmed for volumetric regeneration.

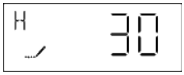
Mandatory

Enter the feed water hardness in °TH or ppm for softener system.

Info

The feed water hardness can be set from 1 to 1999 °TH or ppm.

1. Press ▼ or ▲ to set the feedwater hardness in accordance with display format (DF), see Display format mode (DF) [→Page 41].
2. Press ⟲ to validate the selection and to move the next parameter.



5.5.8 Reserve selection (RS)

Select the variable reserve capacity.

Options:

- SF: Safety factor, in % of initial capacity;
- rc: Fixed reserve capacity (fixed volume in L);
- cr: Variable reserve capacity.

1. Press ▼ or ▲ to select cr (variable reserve capacity).
2. Press ⟲ to validate the selection and move to the next parameter.

5.5.9 Days override (DO)

Set the maximum number of days between regeneration cycles.

Info

This parameter allows setting the maximum amount of days that the system can stay in service mode without regeneration.

Mandatory

Set number of days override in accordance with local regulation.

Info

Setting the parameter to "OFF" disables this function.

The number of days can be set from OFF, or 1 to 99 days.

1. Press ▼ or ▲ to set the days override.
2. Press ⟲ to validate the selection and move to the next parameter.

5.5.10 Regeneration time (RT)

Set the regeneration time.

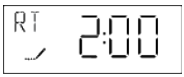
Info

Regeneration time is the time of the day when regenerations occur for meter delayed regeneration, time clock regeneration, day of the week regeneration and calendar override regeneration.

Tip

Set regeneration time at a time of low or no water usage.

1. Press ▼ or ▲ to set the regeneration time.
2. Press ◈ to validate the selection and move to the next parameter.



5.5.11 Regeneration cycle step duration

Set the duration in minutes of each regeneration cycle.

Info

Setting a cycle step to 0 will cause the controller to skip that step during regeneration, but keeps the following steps available.

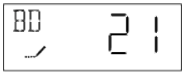
All cycles can be set from 0 to 199 minutes.

5.5.11.1 Backwash duration

1. Press ▼ or ▲ to set the backwash cycle step duration to 2 min, 3 min, 3 min or 4 min respectively for Evolio 5800 SXT 8, 15, 22 and 30.
2. Press ◈ to validate the selection and move to the next parameter.

5.5.11.2 Brine draw duration

1. Press ▼ or ▲ to set the brine draw cycle step duration to 21 min, 38 min, 31 min or 42 min respectively for Evolio 5800 SXT 8, 15, 22 and 30.
2. Press ◈ to validate the selection and move to the next parameter.



5.5.11.3 Rapid rinse duration

1. Press ▼ or ▲ to set the rapid rinse cycle step duration to 3 min, 6 min, 5 min or 8 min respectively for Evolio 5800 SXT 8, 15, 22 and 30
2. Press ◈ to validate the selection and move to the next parameter.

5.5.11.4 Refill duration

1. Press ▼ or ▲ to set the refill cycle step duration to 3 min, 5 min, 8 min or 11 min respectively for Evolio 5800 SXT 8, 15, 22 and 30.
2. Press ⟲ to validate the selection and move to the next parameter.

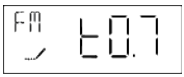
5.5.12 Flow meter type (FM)

Select the t0.7 flow meter type.

Options:

- P0.7: ¾" paddle wheel meter;
- t0.7: ¾" turbine meter;
- P1.0: 1" paddle wheel meter;
- t1.0: 1" turbine meter;
- t1.2: 1¼" turbine meter;
- P1.5: 1½" paddle wheel meter;
- t1.5: 1½" turbine meter;
- P2.0: 2" paddle wheel meter;
- Gen: generic or other non-Fleck meter.

1. Press ▼ or ▲ to select the t0.7 (¾" turbine meter) flow meter type.
2. Press ⟲ to validate the selection and move to the next parameter.



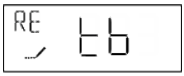
5.5.13 Time base relay (RE)

Select the **tb** option.

Options:

- OFF;
- tb.

1. Press ▼ or ▲ to set the time base relay **tb**.
2. Press ⟲ to validate the selection and move to the next parameter.



5.5.14 Start time base relay (ST)

Select the start time base relay to 0.

Options:

- 0 to BW+BD+RR+BF-1.

1. Press ▼ or ▲ to select the start time relay to 0.
2. Press ⟲ to validate the selection and move to the next parameter.

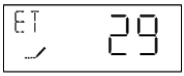
5.5.15 End time base relay (ET)

Select the end time base relay to 0.

Options:

- ST+1 to BW+BD+RR+BF.

1. Press ▼ or ▲ to select the end time relay 29 min, 52 min, 47 min or 65 min respectively for Evolio 5800 SXT 8, 15, 22 and 30.
2. Press ⟲ to validate the selection and end programming.



5.6 Diagnostic

Info

Depending on current settings, some displays cannot be viewed.

If none of the buttons are pushed for 1 minute in the diagnostic mode the controller returns to Service mode.

5.6.1 Commands

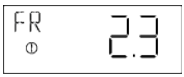
1. Press and hold ⟲ and ▲ for five seconds to enter the diagnostic mode.
2. Press ▼ or ▲ to navigate in the diagnostic mode.
3. Press ⟲ to exit the Diagnostic mode at any time.

5.6.2 Current flow rate (FR)

Info

The display is updated every second.

1. Current flow rate display (L/min or gpm depending on display format programmed):



5.6.3 Peak flow rate (PF)

Info

The controller registers the highest flow rate since the last regeneration.

1. Peak flow rate display (L/min or gpm depending on display format programmed):

5.6.4 Hours in service (HR)

Info

Shows the number of hours since the last regeneration, indicating the length of the current service cycle.

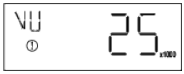
1. Hours since last regeneration display:

5.6.5 Volume used (VU)

Info

Shows the volume used since the last regeneration.

1. Volume used since last regeneration display (L or Gal depending on display format programmed):

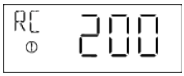


5.6.6 Reserve capacity (RC)

Info

Shows the programmed reserve volume. With calculated reserve as default it assume a value of 50% of total capacity.

1. Reserve capacity display (L or Gal depending on display format programmed):

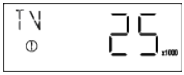


5.6.7 Totalizer (TV)

Info

Shows the total volume used since last installation or last reset.

1. Totalizer display (L or Gal depending on display format programmed):

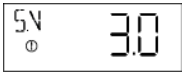


5.6.8 Software version (SV)

Info

Shows the version of the software used by the controller.

1. Software version display:



5.7 Resetting the controller

Info

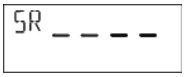
There are two methods to reset.

5.7.1 Soft reset (SR)

CAUTION

All the parameters are set to default values, except volume remaining in volumetric systems and days since last regeneration in time clock systems.

1. Press and hold and for 25 seconds while in normal service mode until **SR** is displayed.



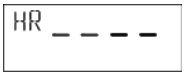
2. Reprogram all parameters in Master programming mode.

5.7.2 Hard reset (HR)

CAUTION

All the parameters are set to default values.

1. Hold while powering up the unit.
2. The display shows **HR**.



3. Reprogram all parameters in Master programming mode.

6 Commissioning

Info

This chapter is available for standard regeneration types.

Contact your supplier if the actual regeneration is not standard and if you need assistance.

6.1 Softener commissioning

6.1.1 Water filling, draining and waterproofness inspection

Once the previous initial programming steps are performed, that the softener is in place and hydraulically connected to the main water line (see Softener installation [→Page 28]), the unit can be started up.

Follow these steps carefully:

1. With the bypass still in bypass position (inlet and outlet of the valve closed), plug in the SXT controller to the power source.
2. Proceed to programming according to your system specification if not done yet.
3. Start a manual regeneration by pressing the regen button for 5 seconds. The piston will move into backwash position. Once in this position, unplug the SXT controller from the power source.
4. Open the nearest faucet close to the system.
   With the bypass still in bypass position, put the bypass slowly in service position.
5. The valve and tank will slowly get filled with raw water, allowing air to be purged by the drain and/or by the open faucet next to the system.
6. Once the drain runs clear and the bypass valve is fully in service position, plug in again the SXT controller to the power source.

6.1.2 Quick cycling

1. Push on the regen button once to move the piston to the next regeneration cycle position. Leave the valve 1 minute in each position and move to the next one, until refill cycle is displayed. When refill cycle is displayed, let the valve run the entire cycle and check the level of water in the brine tank or cabinet. The level of water in the brine tank should be about 25 cm high for Evolio 5800 SXT 8 model and about 70 cm high for Evolio 5800 SXT 15, 22 and 30 models. You may want to mark the level on the brine tank as this can be used as an indicator for the future lifetime of the softener.
2. Once refill cycle is completed, the valve will automatically go back into service position. Start again a manual regeneration by pressing for 5 seconds on the regen button. The valve will move to backwash position.
3. Press the regen button once to move to brine draw position. Check to see in the brine tank if the water level decrease.
4. Once the draw function is observed and confirmed (level of water in the brine tank or cabinet has decreased), you may go through each cycle pushing on the regen button until refill cycle, leave the water come back to the 'full' level, and then push on the regen button so that the valve returns into service position.

6.1.3 Startup

1. Fill the brine tank or cabinet with salt. You may want to mark the level of water in the brine tank/cabinet when completely refilled with water and full of salt. In the future, after each regeneration, you can visually control that the quantity of water refilled should be between the 2 marks done. Marking are optional, but may allow to visually detect any irregularity during regeneration that may lead to softener inefficiency.
2. With the brine tank completely refilled and full of salt, adjust the safety brine valve in the brine well. Make sure the overflow elbow is installed above the float level.
3. After the softener has been running a few minutes in service, proceed to hardness test on outlet water to make sure the water is treated as per requirements.

6.2 Cleaning, disinfection and sanitization

The construction materials of the modern water softener will not support bacterial growth, nor will these materials contaminate a water supply. During normal use, a softener may become fouled with organic matter, or in some cases with bacteria from the water supply. This may result in an off-taste or odour in the water. In this case, the tank of the softener must be cleaned and disinfected.

Some softeners may need to be disinfected after installation and some softeners will require periodic disinfection during their normal lifetime.

Depending on the conditions of use, the softener type, the type of ion exchanger, and the disinfectant available, a choice can be made among the following methods.

6.2.1 Cleaning of softeners

Make sure the brine tanks remains free from debris, waste, scraps that could be drown in the valve during brine draw cycles of regenerations. Make sure the softener and its parts remains clean to ensure proper function. Note that camshaft positioning is made by a optical sensor. Should this optical sensor be obstructed, malfunctions may happen.

6.2.2 Disinfection with sodium or calcium hypochlorite

These materials are satisfactory for use with polystyrene resins, synthetic gel zeolite, greensand and bentonites.

6.2.2.1 5.25 % Sodium hypochlorite

If stronger solutions are used, such as those sold for commercial laundries, adjust the dosage accordingly.

Dosage

Polystyrene resin: set 1.25 ml per liter of resin.

Brine tank softeners

Backwash the softener and add the required amount of hypochlorite solution to the well of the brine tank. The brine tank should have water in it to permit the solution to be carried into the softener.

Proceed with the normal regeneration.

6.2.2.2 Calcium hypochlorite

Calcium hypochlorite, 70 % available chlorine, is available in several forms including tablets and granules. These solid materials may be used directly without dissolving before use.

Dosage

Measure 0.11 ml per liter of resin.

Brine tank softeners

Backwash the softener and add the required amount of hypochlorite to the well of the brine tank. The brine tank should have water in it to allow the chlorine solution from being carried into the softener.

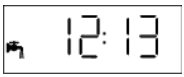
Proceed with the normal regeneration.

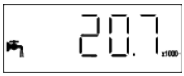
7 Operation

7.1 Display during operation

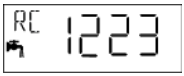
Examples:

- Valve in service. Day time is alternating with volume remaining before regeneration:





- In reserve mode, 1223 litres remaining:



- Exhausted reserve, regeneration will occur on next programmed time:

Info

In delayed volumetric mode, the icon flashes as soon as the reserve begins to be used.

7.1.1 During regeneration

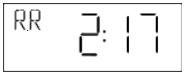
During a regeneration the display shows the current cycle step and the time remaining for that cycle.

The countdown for the time remaining starts only when the valve is in the cycle displayed.

Examples:

- Refill cycle, 12 min 38 sec. left:

- Rapid rinse cycle, 2 min 17 sec. left:



7.2 Recommendations

- Use only regeneration salts designed for water softening in accordance with EN 973;
- for optimal system operation, the use of clean salt, free from impurities, is recommended (for example salt pellets);
- do not use ice melt, block, or rock salts.

7.3 Manual regeneration

Mandatory

The controller must be in service in order to enable this procedure.

7.3.1 Manual delayed regeneration

1. Press ⟲ once for delayed regeneration.
   ⇨ The regeneration starts at the programmed regeneration time. See chapter Regeneration time (RT) [⇒Page 44].
   ⇨ The service icon flashes.

Info

To cancel: press ⟲ again.

The service icon stops flashing.

7.3.2 Immediate regeneration

1. Press and hold ⟲ for 5 seconds to initiate immediate manual regeneration, regardless from the programmed regeneration control type.

7.3.3 To advance regeneration cycles

1. Press ⟲ to pass to the next regeneration cycle.

7.4 Operation during a power failure

- Current valve position, cycle step time elapsed, and time of day is stored 24 hours during a power failure, and will be restored upon power restoration;
- in regeneration, when power is shutting down, the controller saves the current regeneration data. When power is restored, the controller resumes the regeneration cycle at the point where power failed;

Caution - material

Without power, the softener stays in its current position.

The softener system should include all required safety components to prevent overflows.

- all the program settings are stored in a permanent memory;
- time is kept during a power failure and the time of day is adjusted upon restoration of the power (as long as the power is restored within 24 hours);
- the time of day on the main display screen will flash when there has been a power failure;
- the flashing of the time of day can be stopped by pressing any button on the display.

8 Maintenance

Mandatory

Cleaning and maintenance shall take place at regular intervals in order to guarantee the proper functioning of the complete system, and be documented in the Maintenance chapter in the User Guide document.

Mandatory

The maintenance and service operation must be done by qualified personnel only.

Failure in respecting this may void the warranty.

8.1 General system inspection

Tip

Has to be done once a year at minimum!

Disinfect and clean the system at least once a year or if the treated water has an off-taste or an unusual odour.

8.1.1 Water quality

1. Raw water total hardness.
2. Treated water hardness.

8.1.2 Mechanical checks

1. Inspect general condition of valve and associated ancillaries and check for any leaks, ensure valve connection to piping is made with adequate flexibility as per manufacturer instruction.
2. Inspection of electrical connections, verify wiring connections and search for evidence of overloading.
3. Verify settings of electronic or electromechanical timer, verify regeneration frequency, make sure the valve configuration corresponds to the settings.
4. Check water meter, if present, report water meter settings, compare with previous inspection.
5. Verify total water consumption compared to previous visit.
6. If pressure gauges are installed before and after softening system, verify and record static and dynamic pressure, reporting pressure drop. Verify that inlet pressure respects valve and softening system limits.
7. If pressure gauges are not present, but suitable points exist, install temporary pressure gauge(s) to perform precedent point.

8.1.3 Regeneration test

1. Check condition of brine tank and any associated equipment.
2. Check salt level in brine tank.
3. Initiate regeneration test.
   - ⇨ Check brine draw during brine draw stage.
   - ⇨ Check brine tank refill.
   - ⇨ Check operation of safety brine valve, where fitted.
   - ⇨ Check for brine draw off levels.
   - ⇨ Check for resin loss at the drain during regeneration.
   - ⇨ Where fitted, check for satisfactory operation of solenoid, i.e. outlet shut off during regeneration and/or brine line shut off valve(s).
4. Test and record Total Hardness of outlet water from softener vessel(s).

8.2 Recommended maintenance plan

Items	1 year	2 year	3 year	4 year	5 year
Injector & filter	Clean	Clean	Clean	Clean	Clean/replace if necessary
BLFC***	Clean	Clean	Clean	Clean	Clean/replace if necessary
DLFC***	Clean	Clean	Clean	Clean	Clean/replace if necessary
Bypass (contains Orings***)	Clean	Clean	Clean	Clean	Clean/replace if necessary
Piston*	****	Replace	****	Replace	****
Seals & spacers*	****	Replace	****	Replace	****
Brine valve	Check/clean/ replace if necessary	Check/clean/ replace if necessary	Check/clean/ replace if necessary	Check/clean/ replace if necessary	Check/clean/ replace if necessary
O-rings***	Check for watertightness /clean or replace in case of leakage	Check for watertightness /clean or replace in case of leakage	Check for watertightness /clean or replace in case of leakage	Check for watertightness /clean or replace in case of leakage	Check for watertightness /clean or replace in case of leakage
Motor	Check	Check	Check	Check	Replace
Optical sensor	Check	Check	Check	Check	Replace
Gearing	Check	Check	Check	Check	Check/replace if necessary
Encoding wheel	Clean	Clean	Clean	Clean	Clean

Items	1 year	2 year	3 year	4 year	5 year
Inlet hardness	Check	Check	Check	Check	Check
Residual hardness	Check/adapt mixing screw if necessary	Check/adapt mixing screw if necessary	Check/adapt mixing screw if necessary	Check/adapt mixing screw if necessary	Check/adapt mixing screw if necessary
Electronic/ settings**	Check	Check	Check	Check	Check/replace if necessary
Transformer**	Check	Check	Check	Check	Check/replace if necessary
Meter*	Check and Clean	Check and Clean	Check and Clean	Check and Clean	Replace
Meter cable	Check	Check	Check	Check	Replace
Valve watertightness	Check	Check	Check	Check	Check
Valve to piping watertightness	Check	Check	Check	Check	Check
Brine tank & brine well	Clean	Clean	Clean	Clean	Clean
Safety brine valve	Check and clean	Check and clean	Check and clean	Check and clean	Check/clean/ replace if necessary
Air check	Check and clean	Check and clean	Check and clean	Check and clean	Check/clean/ replace if necessary
Brine tube	Clean	Clean	Clean	Clean	Check/clean/ replace if necessary
Brine line	Clean	Clean	Clean	Clean	Check/clean/ replace if necessary
Cabinet body and cover (external)	Clean	Clean	Clean	Clean	Clean

* Wear parts - durability strongly affected by raw water quality and regeneration frequency.

** Electronic parts - durability strongly affected by power source quality and stability.

*** Elastomer durability is strongly affected by raw water concentration in chlorine and its derivative.

**** Seals & Spacer cartridge is equipped with O-rings that ensure watertightness by compression, therefore by unmounting/remounting the same cartridge may cause it not to be watertight anymore, each time the seals & and spacer cartridge is extracted from the valve body it must be pre-placed by a new one. Note that extraction the piston may also extract the Seals and spacer cartridge at the same time for this reason it not advised to unmount the piston, clean and lubricate it with silicon grease as with former residential fleck valves for the regular maintenance, but only to replace it at least every 3 years.

8.2.1 Maintenance instructions

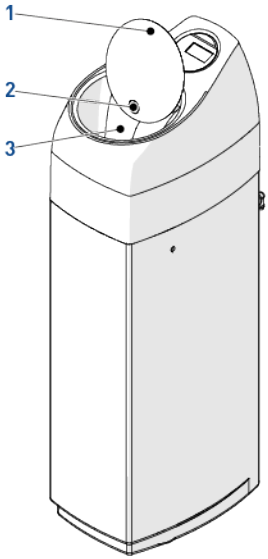
- Disinfect and clean the system at least once a year or if the treated water has an off-taste or an unusual odour.

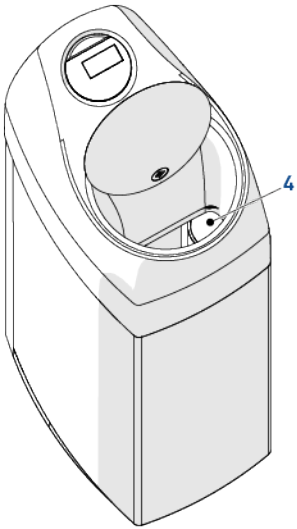
8.3 Adding salt

Tip

Do no fill the brine tank with too much salt if you are approaching to brine tank cleaning date.

1. Open the salt lid (**1**) pressing at point (**2**).
2. Make sure the brine well (**4**) is closed by its cap.
3. Dump salt in the funnel (**3**) leaving the brine well (**4**) uncovered for a minimum of 2 cm.
4. Close the salt lid (**1**).





8.4 Recommendations

8.4.1 Use original spare parts

Caution - material

Risk of damage due to use of non-genuine spare parts

To ensure correct operation and safety of the device, only use original spare parts and accessories recommended by the manufacturer.

Usage of non-genuine spare parts voids all warranties.

Parts to keep in stock for potential replacements are the pistons, S&S kit, injectors, optical sensor and motors, controllers and power adapter BLFC and DLFC.
Refer to maintenance sheet.

8.4.2 Use original approved lubricants

- P-80® Emulsion lubricant (water base lubricant).

8.5 Cleaning and maintenance

8.5.1 First steps

Before any cleaning or maintenance procedure, complete the following steps:

⚠ CAUTION

These operations must be performed before any cleaning or maintenance procedure.

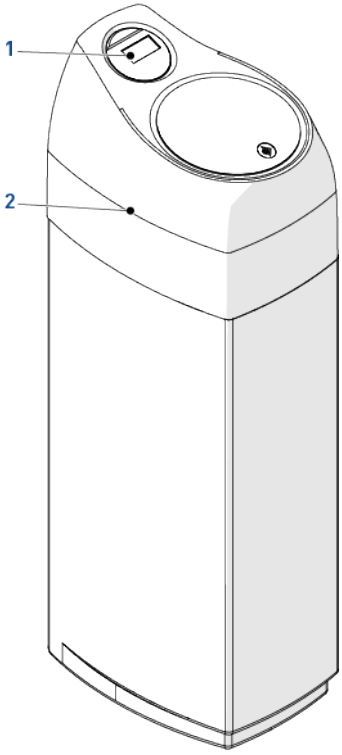
1. Shut off water supply or put bypass valve(s) into bypass position.
2. Relieve system pressure before performing any operations by cycling the valve in all regeneration phases while the main water line is shut off.
3. Unplug the wall-mounted transformer.

8.5.2 Softener cover removal

⚠ CAUTION

Do not pull on the cables. Release the connectors from controller (1).

1. Acceding from behind the softener, disconnect the controller **(1)**.
2. Remove the softener cover **(2)**.
3. Reverse above procedure steps to rebuild. See Evolio 5800 SXT controller connection [→Page 35].



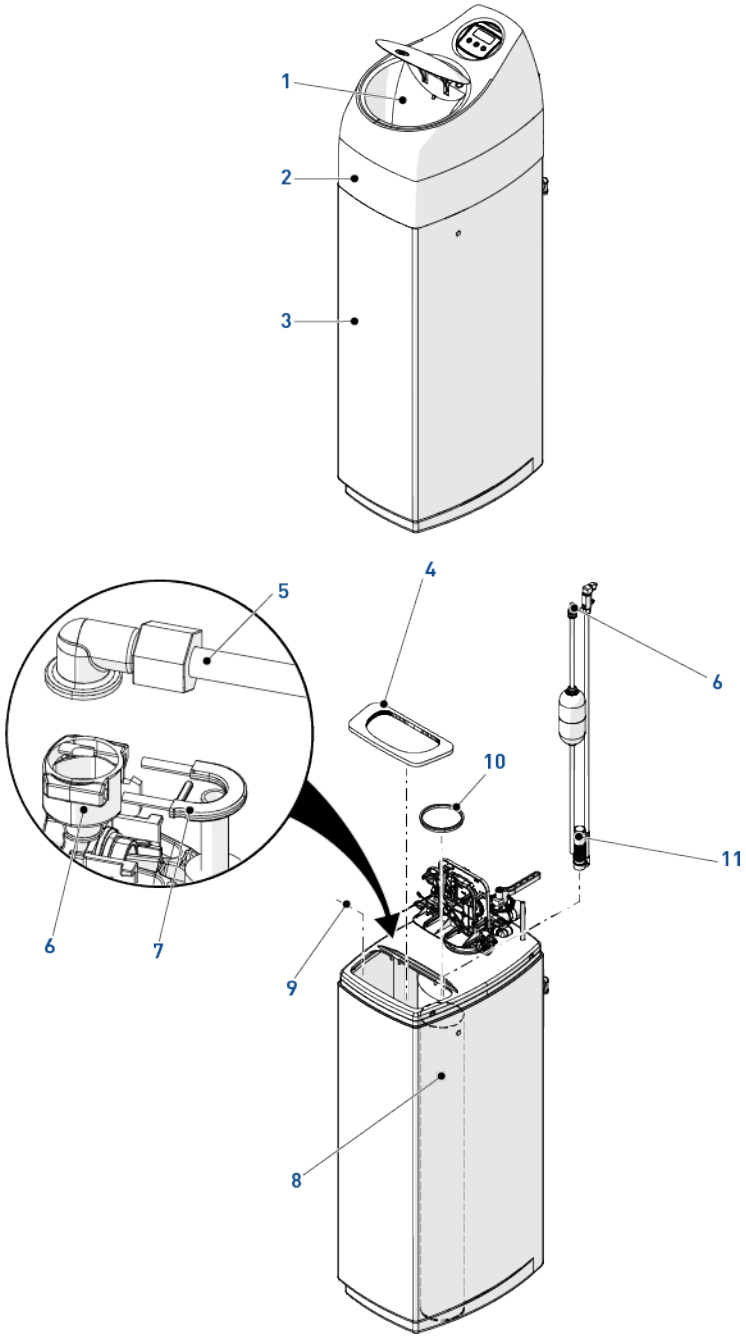
8.5.3 Brine tank, brine well, safety brine valve and air check cleaning

1. Remove the softener cover, see First steps [→Page 58] and Softener cover removal [→Page 59].
2. Remove the brine tank cover **(4)**.
3. Remove the remaining salt from cabinet **(3)** to a basket.
4. Remove the brine well covers **(10)**.
5. Remove the safety brine valve clip **(7)** and free the brine valve tube **(5)** from the safety brine valve **(6)**.
6. Remove the nut **(9)** and remove the safety brine valve **(6)** and the air check **(11)** from the brine well **(8)**.
7. Remove the brine from brine well **(8)**.

⚠ CAUTION

Do not lay down or flip over the softener to empty the brine tank.

8. Clean the cabinet (3), the cover **(2)**, the brine well **(8)**, the safety brine valve **(6)**, the air check **(11)** and the salt funnel **(1)** with water and sponges.
9. Using a water vacuum, remove the cleaning waste and remaining water from cabinet **(3)** and from brine well **(8)**.
10. Reverse above procedure steps to rebuild.
11. Fill the cabinet **(3)** with salt, see Adding salt [→Page 57].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8.5.4 Injector and injector screen cleaning

1. Remove the softener cover, see First steps [→Page 58] and Softener cover removal [→Page 59].
2. Remove the injector cap screws (**3**).
3. Remove the injector cap (**2**).
4. Remove the seal (**4**) taking note of its position.

Caution - material

Depending of configuration, the position of the seal can be different as shown. The mid part of the seal should be aligned with the position of the injector.

5. Using the injector puller **(1)**, remove the injector **(5)**.

Caution - material

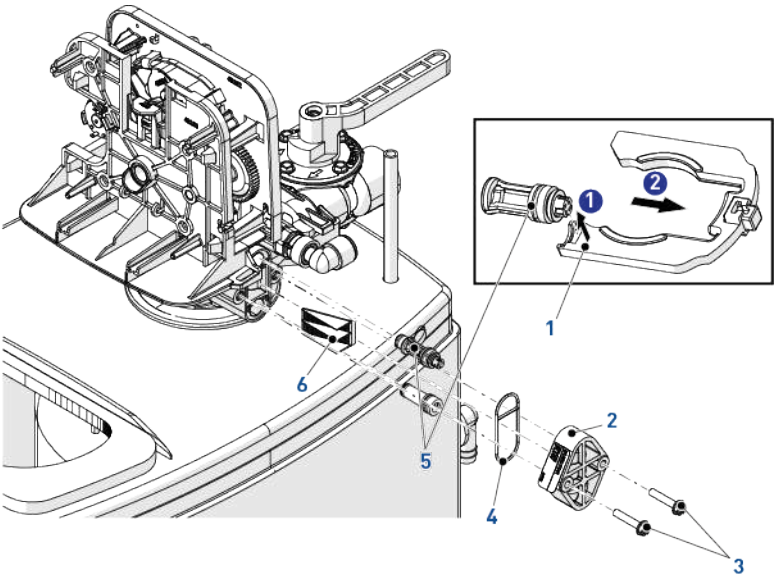
To avoid any damage on the injector, use only the dedicated puller to remove it.

6. Remove the screen (**6**).
7. Clean or change the injector (**5**), the screen (**6**) and the seal (**4**).
8. Lubricate all seals with approved lubricant only.

Caution - material

Using another type of lubricant, such as petroleum-based lubricants (Vaseline, oils, or hydrocarbon-based lubricants) or silicone grease, may damage the valve.

9. Reverse above procedure steps to rebuild.



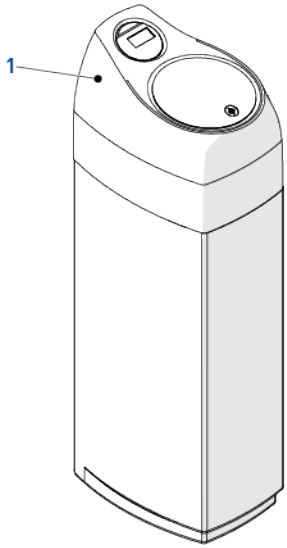
8.5.5 Controller replacement

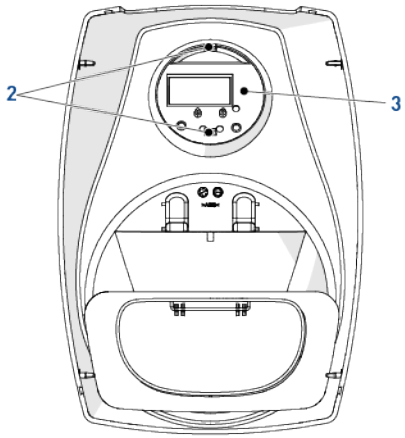
⚠ CAUTION

Do not pull on the cables.

Release the connectors from controller **(3)** by pressing on their locking clips

1. Acceding from behind the softener, disconnect the controller **(3)**.
2. Remove the softener cover **(1)**.
3. Press the controller locking pad **(2)** and slide the controller **(3)** out of its position.
4. Change the controller **(3)**.
5. Reverse above procedure steps to rebuild.





8.5.6 Brine valve and/or piston and seals & spacers replacement

1. Remove the gearing system, see Power head disassembly/replacement [→Page 71].
2. Remove the screws (**1**).
3. Remove the piston (**3**) and the top plate (**2**) by pulling the top plate (**2**) on the points indicated by arrows.
4. Remove the brine valve (**7**).
5. Change the piston (**3**) and the seals & spacers cartridge (**5**).

Mandatory

Pentair recommends always to change piston and seals & spacers simultaneously!

Info

The larger spacer (6) is the lower part of the seals & spacers cartridge.

6. Change or clean the brine valve (**7**).
7. Lubricate all seals (**4 + 5 + 7**) and with approved P-80® Emulsion lubricant only.

Caution - material

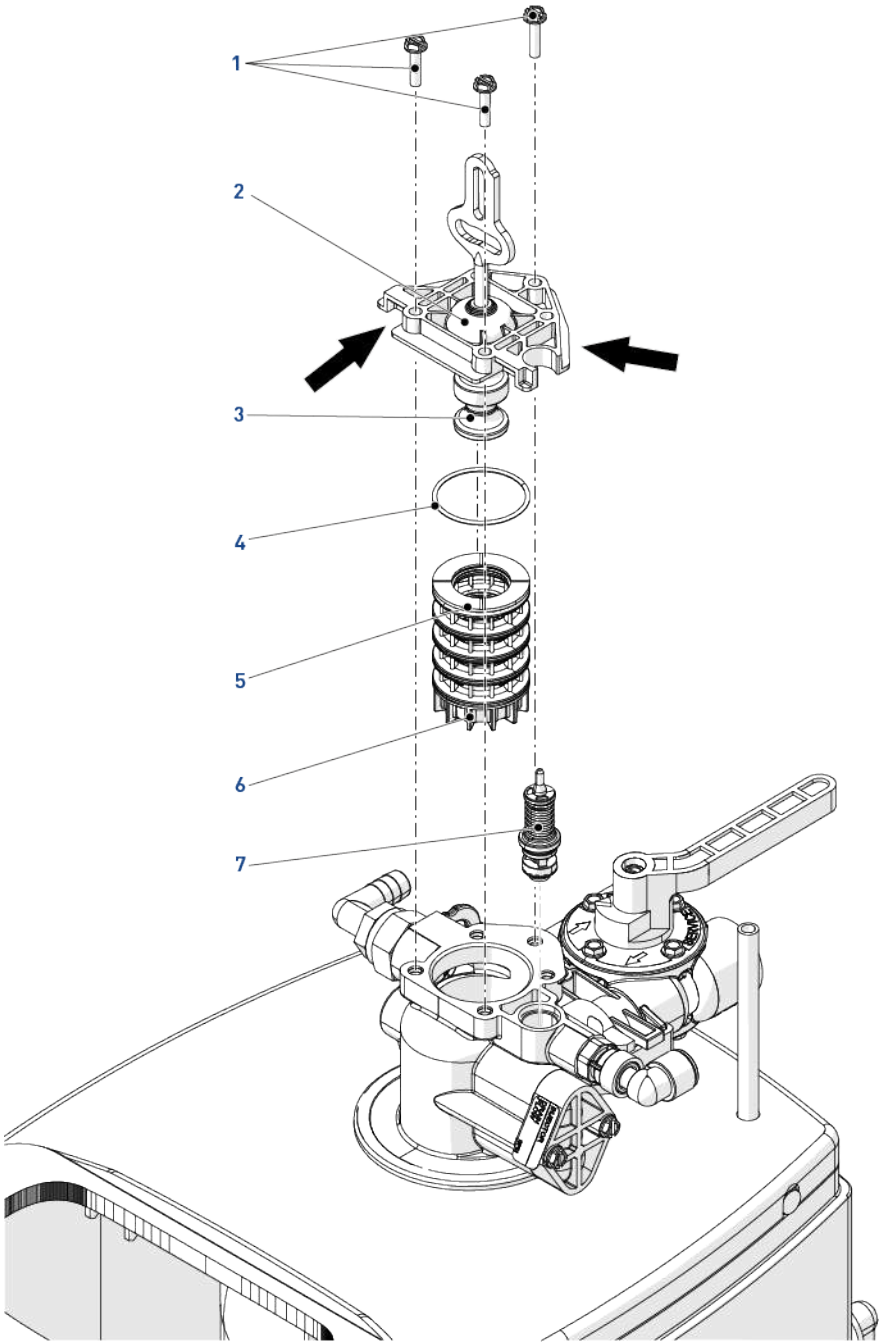
Risk of damage due to wrong lubricant use

Do not use petroleum-based lubricants such as Vaseline, oils, or hydrocarbon-basedlubricants.

Do not use silicon grease.

Use only P-80® Emulsion lubricant (water-based lubricant)!

8. Reverse above procedure steps to rebuild.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8.5.7 Other wear and tear parts

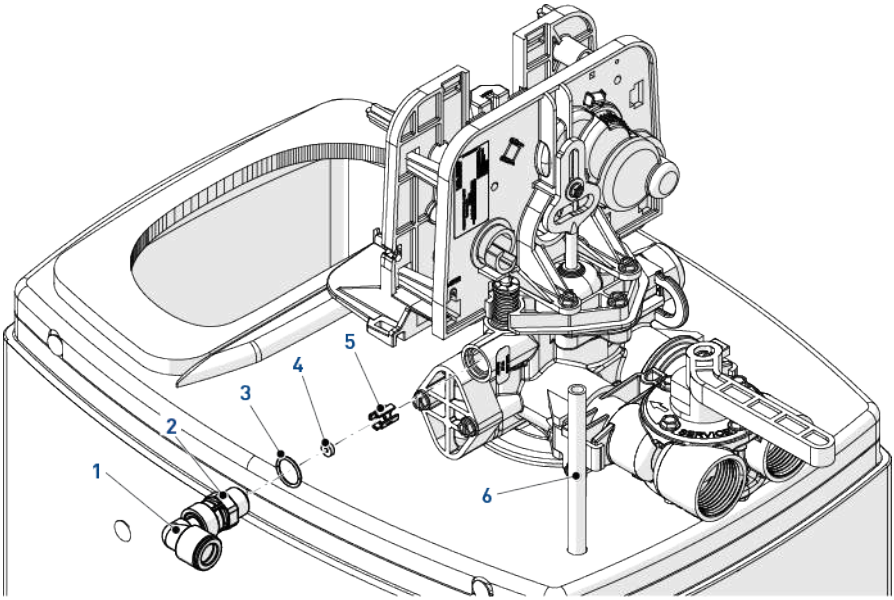
8.5.7.1 BLFC cleaning

1. Remove the softener cover, see First steps [→Page 58] and Softener cover removal [→Page 59].
2. Release the tube (6) from push-fit fitting **(1)**.
3. Remove the BLFC holder **(2)**.
4. Using pliers, remove the grid (5) from BLFC holder **(2)**.
5. Remove the BLFC **(4)** from the grid **(5)**.
6. Clean or change the BLFC **(4)** and the seal **(3)**.
7. Lubricate the seal **(3)** with approved P-80® Emulsion lubricant only.

Caution - material

Using another type of lubricant, such as petroleum-based lubricants (Vaseline, oils, or hydro-carbon-based lubricants) or silicone grease, may damage the valve.

8. Reverse above procedure steps to rebuild.



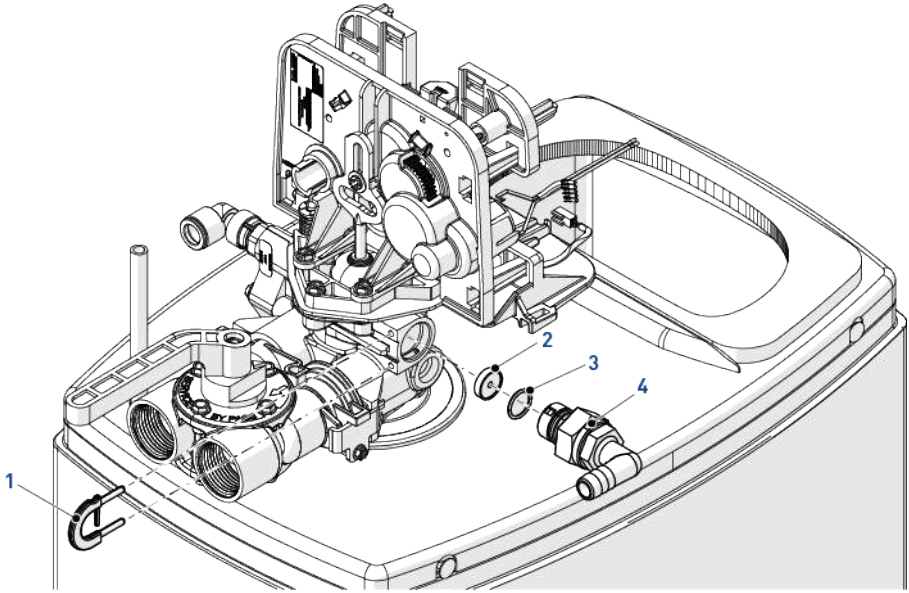
8.5.7.2 DLFC cleaning

1. Remove the softener cover, see First steps [→Page 58] and Softener cover removal [→Page 59].
2. Remove the DLFC locking clip **(1)** and the DLFC housing **(4)**.
3. Insert one of the pin of the DLFC locking clip **(1)** in the DLFC washer **(2)** and extract it from the DLFC housing **(4)**.
4. Clean DLFC **(2)** using a soft brush or compressed air.
5. Lubricate the seal **(3)** with approved P-80® Emulsion lubricant only.

Caution - material

Using another type of lubricant, such as petroleum-based lubricants (vaseline, oils, or hydro-carbon-based lubricants) or silicone grease, may damage the valve.

6. Reverse above procedure steps to rebuild.



8.5.7.3 Motor replacement

1. Remove the softener cover, see First steps [→Page 58] and Softener cover removal [→Page 59].
2. Disconnect the optical sensor (**3**).
3. Open the motor clips (**1**) and pull out the old motor (**2**).

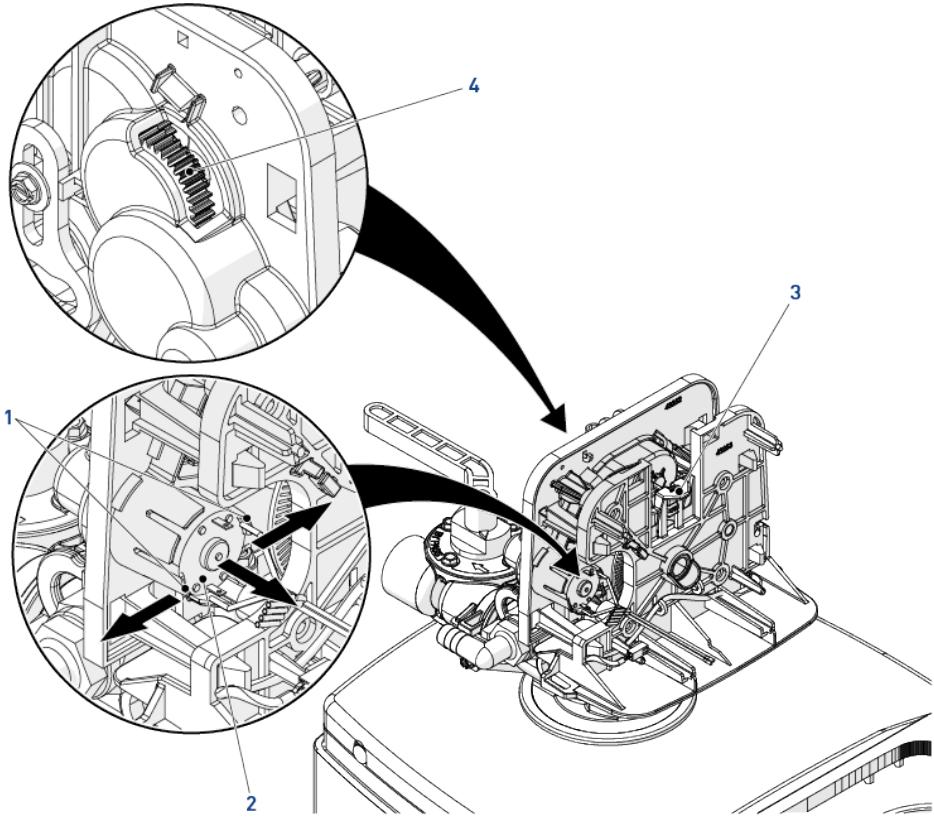
Caution - material

Do not pull on motor cables to extract the motor from its location.

4. Change the motor (**2**).
5. Reverse above procedure steps to rebuild.

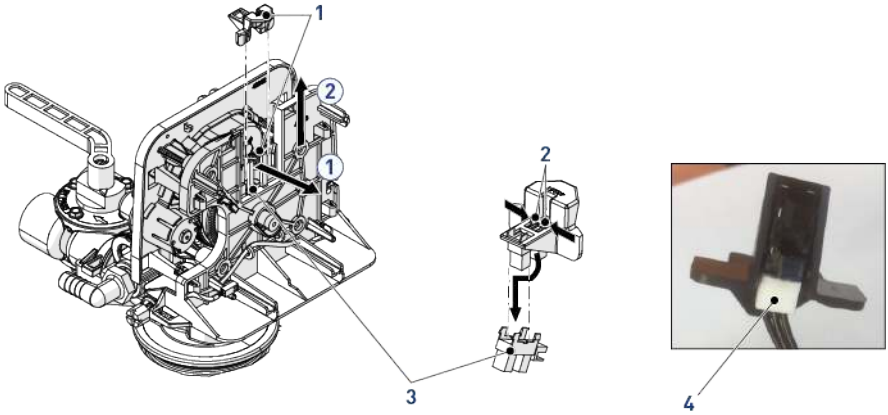
Tip

When re-inserting the motor, it may be required to manually turn the gear (4) of the gearbox to align the motor and the gearbox making the motor inserting easier.



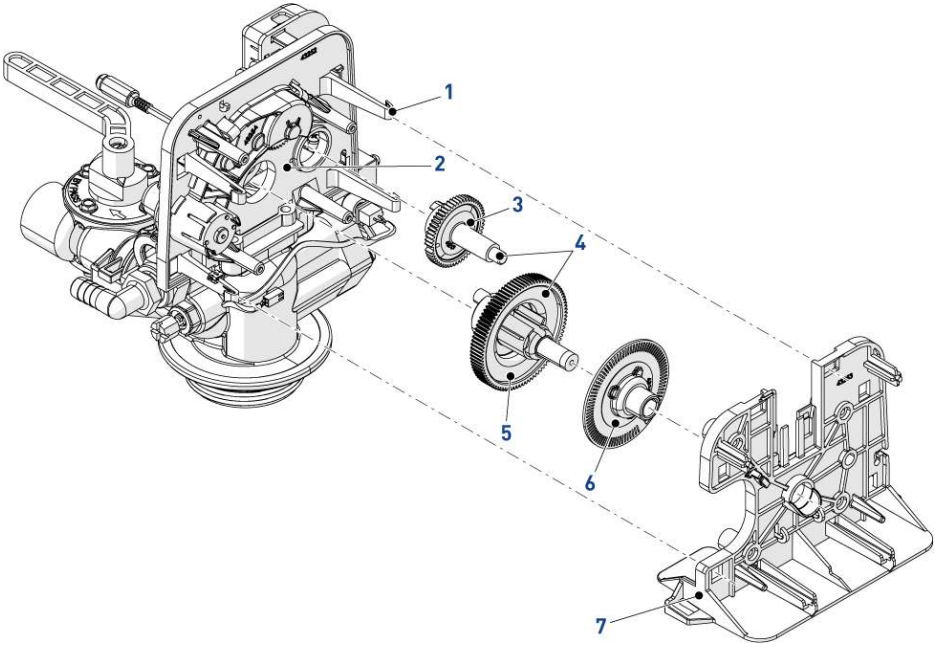
8.5.7.4 Optical sensor replacement

1. Remove the softener cover, see First steps [→Page 58] and Softener cover removal [→Page 59].
2. Disconnect the wire from the motor to the optical sensor (**4**).
3. Release the optical sensor support (**1**) by pushing it back and up as shown.
4. Release the optical sensor (**3**) from its support (**1**) by pressing the clips (**2**).
5. Change the optical sensor (**3**).
6. Reverse above procedure steps to rebuild.



8.5.7.5 Encoding wheel cleaning

1. Remove the softener cover, see First steps [→Page 58] and Softener cover removal [→Page 59].
2. Remove the plate (**7**) by pushing the 4 clips (**1**).
3. Remove and clean the encoding wheel (**6**).
4. Eventually, removing the encoding wheel will cause the brine cam (**3**) and the gearbox output wheel (**5**) to fall. Remount starting with the brine cam (**3**), aligning the positioning holes (**4**) with the backplate hole (**2**).
5. Reverse above procedure steps to rebuild.



8.5.7.6 Power head disassembly/replacement

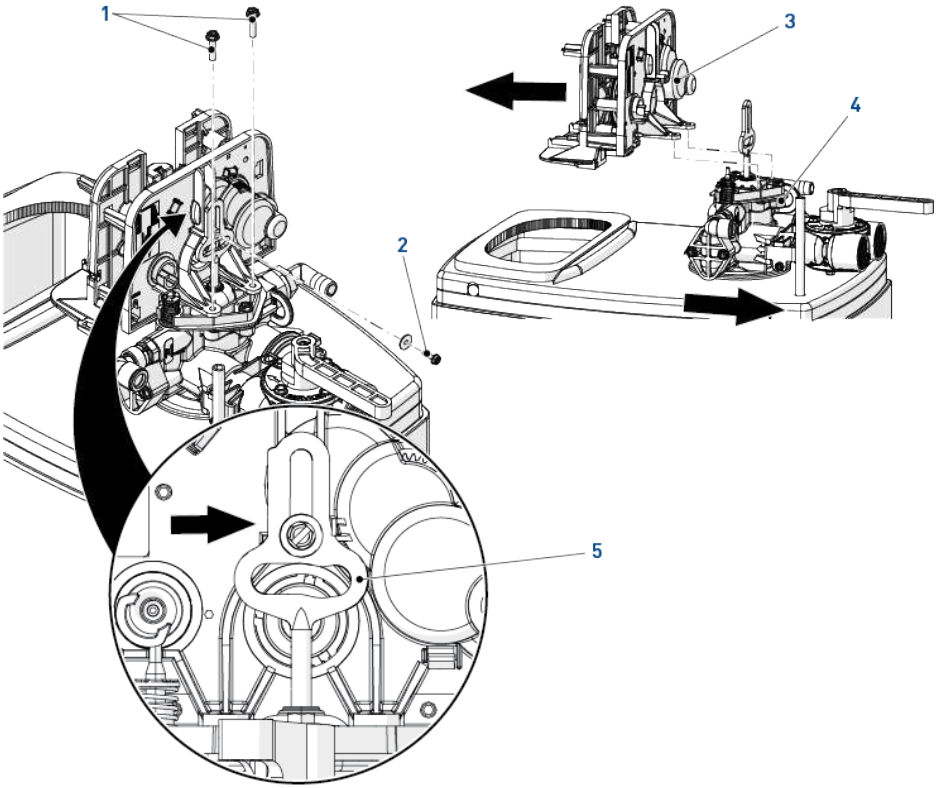
1. Remove the softener cover, see First steps [→Page 58] and Softener cover removal [→Page 59].
2. Using a ¼" (6,35 mm) standard hexagon bits holder or flat screwdriver, unscrew **(2)**.
3. Using a 8 mm wrench or flat screwdriver, unscrew **(1)**.
4. Separate the power head **(3)** from the valve body **(4)**.
5. Change the power head **(3)**.
6. Reverse above procedure steps to rebuild.

CAUTION

When assembling the gearing system (3) on the valve body (4), make sure to put the brighter part of the piston axe (5) on the left when looking at the valve from behind.

Tip

These operations need to be performed before any cleaning or maintenance procedure.



8.5.7.7 Disassembling/assembling valve from/on tank

1. Remove the softener cover, see First steps [→Page 58] and Softener cover removal [→Page 59].
2. Release the tube **(1)** from push-fit fitting **(2)**.
3. Remove the DLFC clip **(5)** and extract the DLFC assembly and elbow **(4)**.
4. Unscrew (3) and remove the meter **(6)**.
5. Unscrew, counter-clockwise, the valve **(7)** from tank **(8)**.
6. Perform maintenance or change the valve **(7)**.
7. Lubricate the valve tank adapter and riser tube o-rings with approved P-80® Emulsion lubricant only.

Caution - material

Using another type of lubricant, such as petroleum-based lubricants (Vaseline, oils, or hydro-carbon-based lubricants) or silicone grease, may damage the valve.

8. Spin the valve (7) onto the tank (8), ensuring the threads are not cross-threaded.
9. Rotate the valve (7) clockwise and freely, without using force until it comes to a stop.

Info

This stop position is considered point zero.

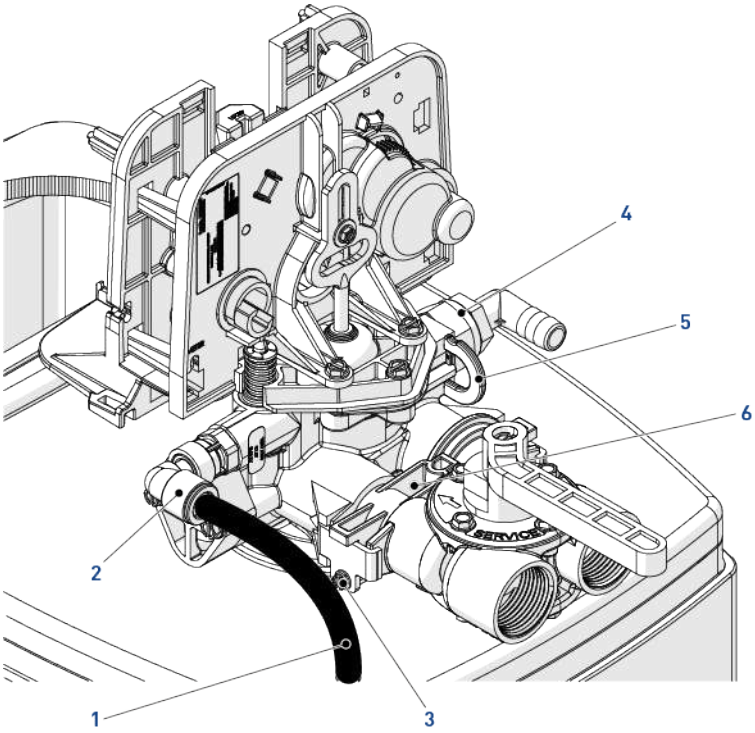
10. Rotate the valve (7) clockwise from point zero to between ¼ turn and ½ turn.

Caution - material

Risk of damage due to excessive force!

Do NOT exceed 27 Nm of torque when installing the valve. Exceeding this limit may damage the threads and cause failure.

11. Reverse steps **1** to **4** to rebuild.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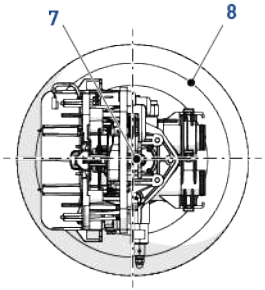
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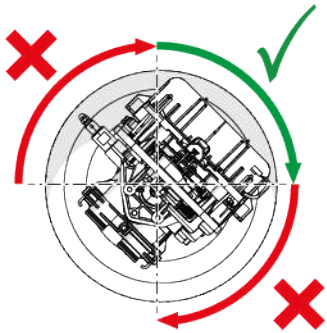


9 Troubleshooting

9.1 Controller

9.1.1 Error detection

Errors codes appear on the service display.

Info

It can take up to 1 minute before an error can be detected and displayed.

9.1.2 Error types and causes

9.1.2.1 Motor stall/cam sense error

CAUTION

No states changes in the optical sensor detected for six seconds.

1. Unplug the unit and plug back in. Allow the controller to attempt to find position again.
2. If the unit doesn't find position, unplug, open the cover and verify the optical sensor is in place with the wires connected to the circuit.
3. Verify the motor and gearing components are in good condition and assembled properly.
4. Check the valve and verify that the piston travels freely.
5. Replace/reassemble the various components as necessary.
6. Plug the unit back in and observe its behaviour.
7. If the error reoccurs, unplug the unit.
8. Put it into bypass.
9. Contact your supplier.

9.1.2.2 Motor run-ON error/cycle sense error

Info

An undesired optical sensor state change occurred.

1. Non critical error, extra optical sensor pulse detected.
2. Press any button to clear the error.
3. Press to advance motor to clear error.

9.1.2.3 Regeneration failure

Info

The system has not regenerated for more than 99 days or 7 days if the regeneration control type has been set to day of week.

1. Perform a manual regeneration to reset the error code.
2. If the system is metered, verify that it is measuring flow by running service water and watching for the flow indicator on the display.
3. If the unit doesn't measure flow, verify that the meter is working properly and its cable is well connected.
4. Enter master programming mode.
5. Verify that the unit is configured properly.
6. Check that system capacity has been selected.
7. Check that day override is set properly.
8. Check that meter is identified correctly.
9. If the unit is configured as a day of week system, verify that at least one day is set ON.
10. Correct the setting as necessary.

9.1.2.4 Memory error

Info

The controller board has a memory failure.

1. Perform a master reset.
2. Reconfigure the system via master programming mode.
3. Step the valve through a manual regeneration.
4. If the error reoccurs, unplug the unit.
5. Put it into bypass.
6. Contact your supplier.

9.1.2.5 Fail safe error

Info

The valve has failed to find position in one minute.

1. Unplug the unit and plug back in.
2. If the error reoccurs, unplug the unit.
3. Put it into bypass.
4. Contact your supplier.

9.2 Valve

Problem	Cause	Solution
Flowing or dripping water at drain or brine line after regeneration.	Foreign debris caught between piston and seals & spacers.	Replace piston and seals & spacers.
	Incorrect piston position.	Clean the encoding wheel, clean or replace the optical sensor, check motor and gearing and replace if necessary.
Loss of capacity/ hardness leakage at end of cycle.	Seasonal raw water hardness increase.	Check programming and update inlet hardness.
	Brine concentration and/or quantity.	Keep brine tank full of salt at all times. Clean it yearly. Salt may be bridged. If using a salt grid plate ensure refill water is over it.
	Resin fouling.	Call your supplier, find out how to confirm it, clean the resin and prevent future fouling. Eventually installing a pre-filter must be done.
	Poor distribution, channelling (uneven bed surface).	Call your supplier. Check distributors and backwash flow rate.
	Internal valve leak.	Call your supplier. Replace spacers, seals and/or piston.
	Resin age.	Call your supplier.
	Resin Loss.	Call your supplier. Check for correct bed depth, broken distributors, incorrect DLFC and valve configuration
Valve cycles continuously.	Faulty controller.	Replace controller.
	Wrong programming.	Check programming.
Continuous flow to drain.	Foreign material in control valve.	Call your supplier. Clean valve, rebuild unit.
	Internal control valve leakage.	
	Valve jammed in regeneration position.	
	Motor stopped or jammed during regeneration.	Replace motor.

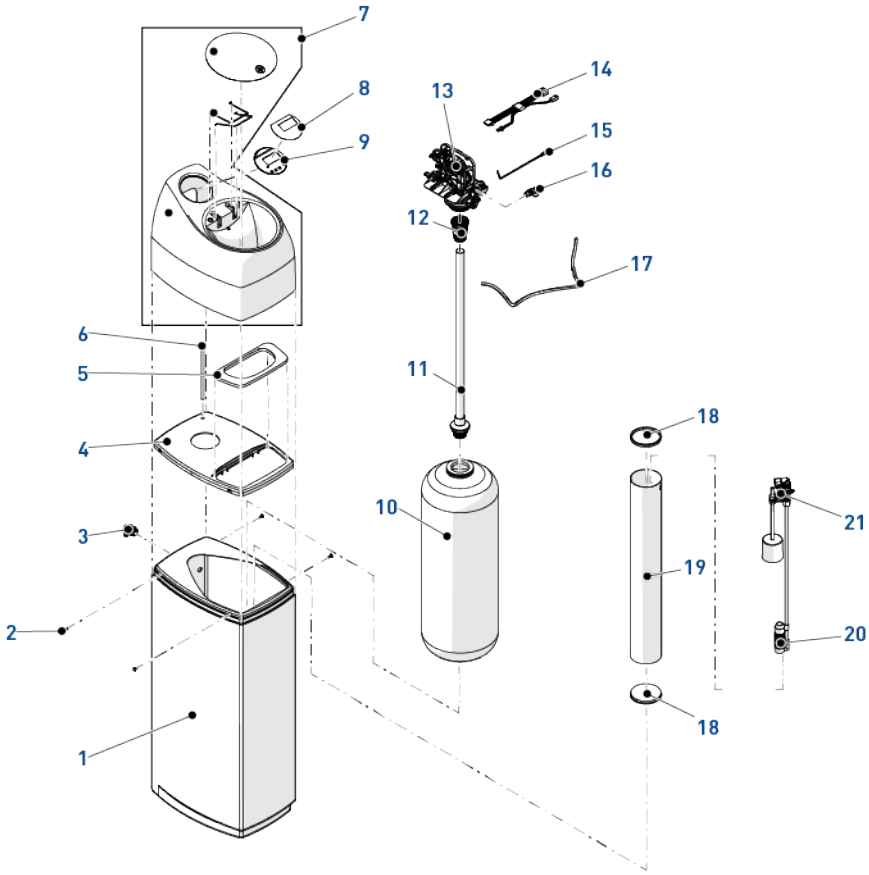
9.3 System

Issue	Cause	Reset and recovery
Water softener fails to regenerate automatically.	Cord plugged into intermittent or switched off power source.	Connect to constant power source.
	Disconnected/faulty meter cable.	Reconnect/replace cable.
	Defective power cord.	Replace cord.
	Defective controller, meter or sensor.	Replace or repair.
	Bad programming.	Program correctly.
Regeneration at wrong time.	Controller improperly set, due to power failure.	Update time of day and day of week programming.
Hard water leakage after regeneration.	Improper regeneration.	Control brine dosage setting and repeat regeneration.
	External bypass valve leaking.	Repair/replace bypass.
	O-ring around riser pipe damaged.	Replace o-ring.
	Incorrect controller settings.	Check that controller setting match with your actual softener model.
No conditioned water after regeneration.	No brine in brine tank.	Add brine to brine tank.
	Injector plugged.	Clean injector and screen.
No water flow display on controller while water is currently being used.	Bypass valve in bypass.	Shift bypass valve to non-bypass position.
	Meter probe disconnected or not fully connected to meter housing.	Fully insert probe into meter housing.
	Restricted meter turbine rotation due to foreign matter in meter.	Remove meter housing, free up turbine and flush with clean water. Turbine should spin freely. If not, replace meter.
Run out of conditioned water between regenerations.	Improper regeneration.	Control brine dosage set and repeat regeneration.
	Incorrect brine setting.	Set brine to proper level.
	Incorrect hardness or capacity settings.	Set hardness and capacity settings. See Feedwater hardness (H) [→Page 42] and Unit capacity (C) [→Page 42].
	Water hardness has increased.	Check hardness settings. See Feedwater hardness (H) [→Page 42]
	Restricted meter turbine rotation due to foreign matter in meter.	Remove meter housing, free up turbine and flush with clean water. Turbine should spin freely. If not, replace meter.

Issue	Cause	Reset and recovery
Brine tank overflow.	Air leak in brine line.	Check all connections in brine line for any leaks.
	Incorrect BLFC size with regards to injector size.	Use of too small BLFC with large injector will reduce draw rates.
	BLFC/DLFC causing inconsistent brine draw clogged with resin or other debris.	Clean BLFC & DLFC.
	Incorrect controller settings.	Check that controller setting match with your actual softener model and/ or valve configuration.
	Injector plugged causing refill instead of drawing.	Clean injector.
	Valve fails to draw brine in brine draw cycle.	Check for seals & spacers integrity. Clean or replace if necessary.
		Check upper screen cleanliness. Clean or replace if necessary.
		Check inlet pressure. Make sure it is above 1.4 bar dynamic.
		Check safety brine valve and air check. Clean, repair or change if necessary.
		Check for leak/air intake in brine line. Change if necessary.
		Check if brine line is not plugged or partially obstructed. Remove plug if necessary.
		Check if drain line is not plugged or partially obstructed. Remove plug if necessary.

10 Spare parts

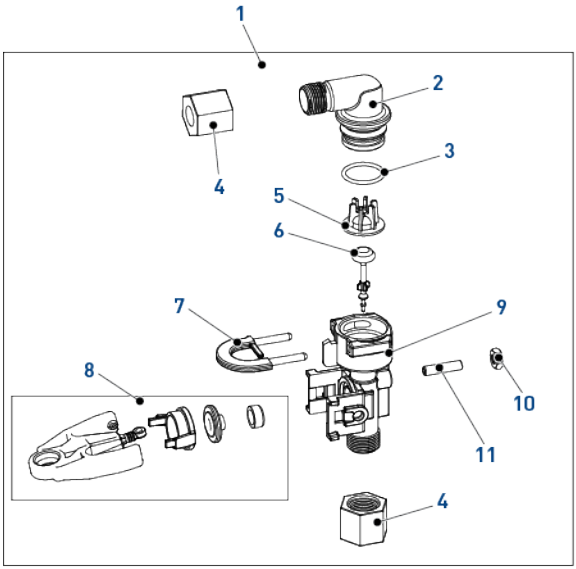
10.1 Softener

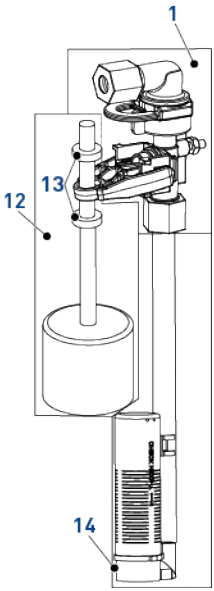


Item	Part number	Description	Package quantity
1	CABSMINW	Cabinet body 10 model	1
-	CABSMINW	Cabinet body 15, 22 and 30 model	1
2	CABCLIP1	Clip	10
3	E01200	Overflow elbow	1
4	CABPLATELPEV	Cabinet plate	1
5	CABSEALDEV	Brine tank cover	1
6	E01480	3/8" brine tubing, roll of 30 m	1
7	CABCOVEVW	Softener cover all Evolio 255 models	1
8	LB-255-EV	Controller label	1

Item	Part number	Description	Package quantity
9	62076	Timer assy 5800 Syphon	1
10	Q-0818-A1	Tank 10 L	1
-	Q-0735-A1	Tank 15 L	1
-	Q-0835-A1	Tank 22 L	1
-	Q-1035-A1	Tank 30 L	1
11	27827	Distributor 1" high flow 1m10	1
12	18280SP	Upper screen	10
13	CAB-62041-15	Fleck 5800 valve meter DF, BLFC 0.25 gpm, INJ 0, DLFC 1.2 gpm for 10 & 15 models	1
-	CAB-62041-30	Fleck 5800 valve meter DF, BLFC 0.25 gpm, INJ 1, DLFC 2.0 gpm for 22 & 30 models	1
14	43921	Connecting cable valve-controller	1
15	CAB-400028	Power cable prolongator	1
16	27121SP	Elbow 3/8"x 3/8" residential male	10
17	1037194	Brine tube 3/8" x 34.75"	1
18	E02588	Brine well cap	1
19	E02131	Brine well and brine well cap for model 10	1
-	E02231	Brine well and brine well cap for 15, 22 and 30 models	1
20	18168	Air Check 500 (0.915 m)	48
21	60014SP	Safety brine assembly, 2310	10

10.1.1 Safety brine valve

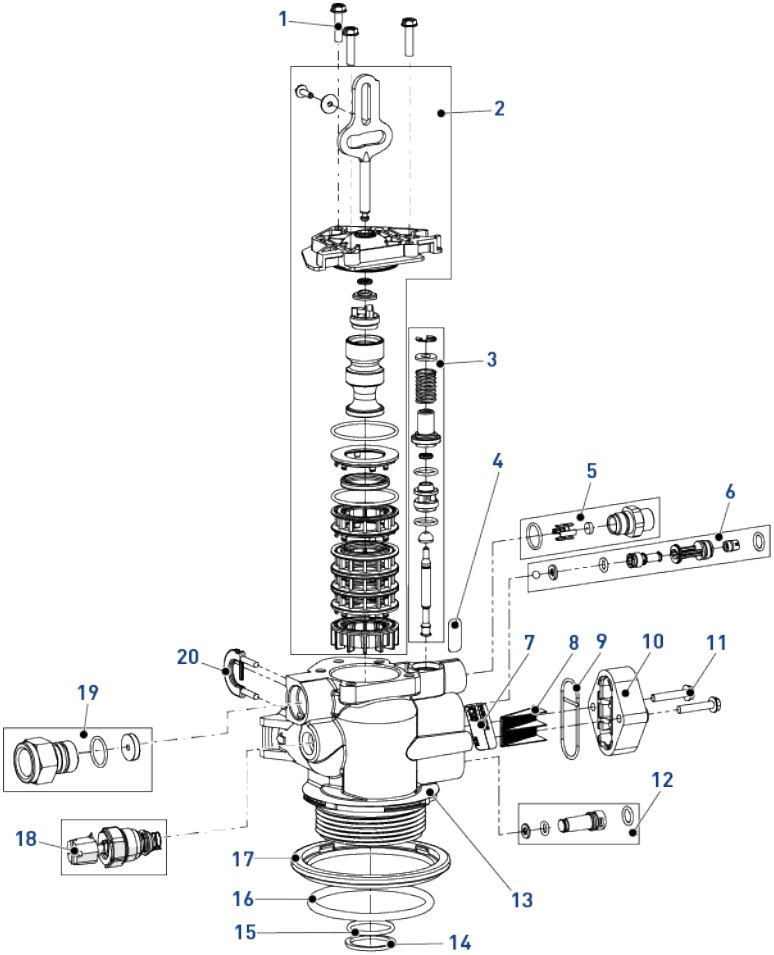




Item	Part number	Description	Package quantity
1	60014SP	Safety brine assembly, 2310	10
2	N/A	Elbow assembly, safety brine valve	1
3	N/A	O-ring	50
4	19625SP	Brine Valve 1650 Plastic Nut assembly	10
5	N/A	Flow disperser	1
6	N/A	Poppet assembly, SBV, with o-ring	1
7	18312SP	Retainer, drain	10
8	N/A	Safety brine valve arm assembly	1
9	N/A	Body, safety brine valve, 2310	1
10	19805SP	Plastic SBV 2310 Nut	50
11	N/A	Screw, sckt Hd, set, 10-24 x 0.75"	1
12	60068-30SP	New Float assy 2310	10
13	10150SP	Grommet pass rod 2300/2310/2350	50
14	18168	Air Check 500 (0,915 m)	48

10.2 Valve

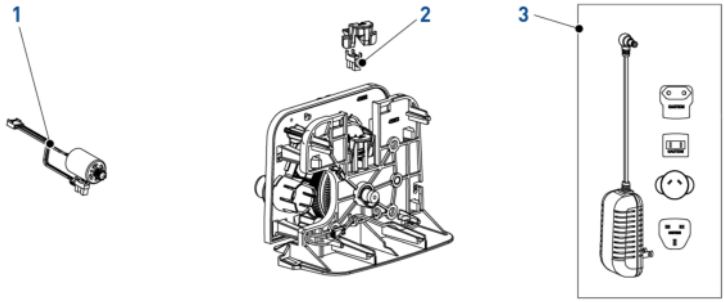
10.2.1 Valve body parts list



Item	Part number	Description	Package quantity
1	18261SP	Screw, hex washer head, #10-24 x 0.81"	10
2	BR61838	Piston and seal kit assembly, upflow 5800	1
3	60032	Brine valve 4600/5600	1
4	13333	Label, injector blank	1
5	18332-0.25	BLFC, 0.25 gpm, 5000/5600/9000	1
6	18272-000SP	Injector assy, 1650, #000, brown, for Evolio 10 and 15 models	10

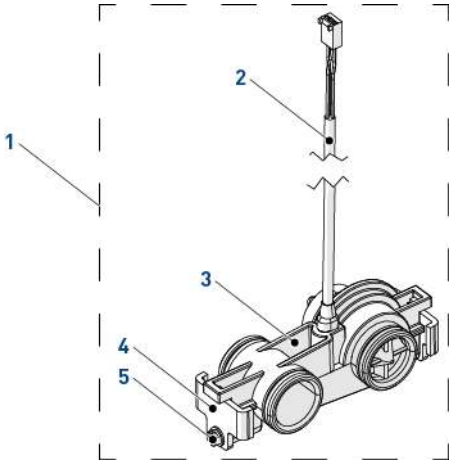
Item	Part number	Description	Package quantity
-	18272-00SP	Injector assy, 1650, #00, violet, for Evolio 22 and 30 models	10
7	10759	Label 0.5 gpm, 1.5 lbs salt/min	1
8	18271SP	Screen injector 5800	10
9	18301SP	Seal injector	10
10	18278-30	Injector cap assembly, 1650 regulated, 5800, 30 psi, upflow	1
11	18262SP	Screw, hex washer head, #10-24 × 1"	10
12	18276-01	Injector assy, plug with o-rings	1
13	BR61857-20	Valve body assembly 5800 w/mixing (includes items 14,15 16,17 and 18)	1
14	13030SP	Retainer, distributor tube o-ring	50
15	13304-01SP	O-ring-560CD	10
16	18303-01SP	O-ring top of the tank	10
17	18569	Retainer, tank seal	1
18	24509-01	Mixing assembly residential	1
19	12338	Drain elbow, hostaform, 90°, ½", HW, white	1
20	24078-EMPTY	DFLC, plastic, blank & hose barb bent	1
-	24078-1.2	DFLC, plastic, 1.2 gpm & hose barb bent, for 10 and 15 models	1
-	24078-2	DFLC, plastic, 2.0 gpm & hose barb bent, for 22 and 30 models	1
21	18312SP	Retaining clip	10

10.2.2 Power head parts list



Item	Part number	Description	Package quantity
1	BR61835	Motor assembly, 5800	1
2	1235373	Optical sensor, module photo interrupter sensor Logix	1
3	BR44162	Transformer, international, 230VAC-12VDC, 5800	1

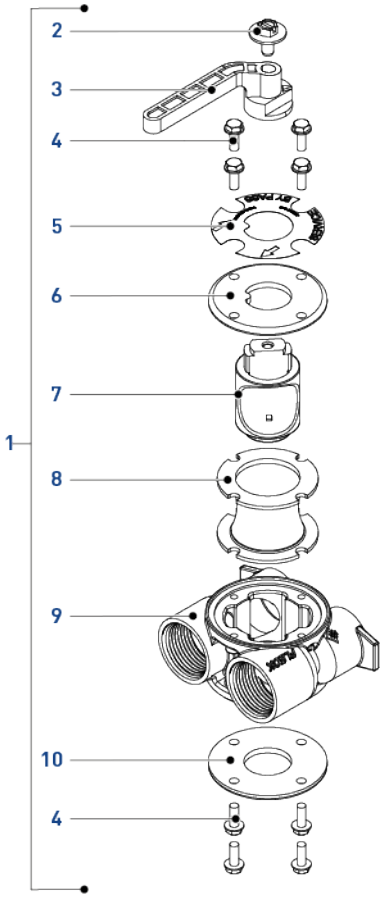
10.2.3 Plastic turbine meter assembly



Item	Part number	Description	Package quantity
1	60626-01	Meter turbine assembly ¾" electronic	1
2	BR19791-01	Meter cable turbine assembly	1
3	19797	Meter turbine assembly 5800	1
4	19569SP	Clip	12
5	13314SP	Screw	50

10.3 Piping

10.3.1 1" BSP female stainless steel bypass



Item	Part number	Description	Package quantity
1	BU28502	Bypass Stainless Steel 1" BSP	1
2	13386SP	Screw Hex Hd Mach 1/4-20 X 1 Or Slot Hex	10
3	N/A	Bypass handle red	10
4	N/A	Screw, Hex washer head 10-24 x 0.5"	8
5	N/A	Label bypass standard	1
6	N/A	Cover bypass, Top	1
7	N/A	Plug, bypass	1
8	14105SP	Seal, bypass, 560CD	5

Item	Part number	Description	Package quantity
9	40634-10	Bypass body, 1" BSP, stainless steel	1
10	11986	Cover bypass, Bottom	1

11 Disposal

The device must be scrapped in accordance with directive 2012/19/EU or the environmental standards in force in the country of installation. The components included in the system must be separated and recycled in a waste recycling center that conforms with the legislation in force in the country of installation. This will help to reduce the impact on the environment, health, safety and help to promote recycling. Pentair does not collect used product for recycling. Contact your local recycling center for more information.

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