

Automatic Water Softener
Installation, Operation and Maintenance

User Manual



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1. Components

Automatic Control Valve

- Noryl plastic approved by FDA;
- Strong corrosion resistance; stainless;
- Innovative design; refined structure;

Media

- High-grade Anion Exchange Resin (Food Grade)

FRP Vessel

- Polyethylene material manufactured for the Food & Beverage industries;
- Light; high pressure resistance;
- Strong corrosion resistance; stainless;

Brine Valve

- Reasonable structure, safe and reliable;
- High pressure resistance;

2. Functions & Features

1). Automatic Valve Control

- 24 hours control and monitoring with a timer; automatically regenerate the medial bed at the system's set time of regeneration according to the set regeneration frequency.
- Automatically calculate and design more scientific cycle plan according to the quality of supply water and the user's actual water use.
- Cycle process:
IN SERV.: Supply water with suitable pressure and flow rate flows into softener, and the cations concerns to water hardness (Ca^{2+} , Mg^{2+} , etc.) in the water will be replaced by Na^+ in regenerants, then the softening system supply softened water through its outlet.

Backwash: When the ion exchange resins are out of effect, the resin bed needs to be regenerated. And before the

regeneration of resin bed, a backwash step is absolutely necessarily for two main purposes: remove the residuals and resin shatters in the resin bed, and loose the impacted resin bed for a better regeneration efficiency.

Brine: Under certain concentration and flow rate conditions, brine flow through entire resin bed, then the saturated resins will resume their softening capacity.

Rinse: Rinse the resin bed to remove the residual regenerant (salt) in it after Brine step until the water from outlet contains no regenerant; rinse could also impact the resin bed for a better softening effect.

Fill: Refill water to brine tank to dissolve salt for the next regeneration.

2). PE brine tank

■ Refill water and salt meet each other in the brine tank, and the salt will dissolve continuously to water through natural convection until the water is saturated by salts.

3. Operation

This product should be able to put in normal use right after the complete installation and a regeneration test; any other operations are not necessary unless power supply is cut off accidentally;

1. The soften unit should be installed and prepared by qualified person, any other operations are not necessary while keeping power on all the time and remaining enough salt in brine tank. The only requirements for installation are three water pipe ports (inlet, outlet, drain) and power supply.

2. Fill resin tank with water (Initial)

■ Set the control into the backwash position, then open water supply valve very slowly to approximately the 1/4 open position and let water flow slowly into the resin tank (If open too rapidly or too far, resin may be lost). When all of the air has been purged from the tank (water begins to flow steadily from the drain), open the main supply valve to the full position.

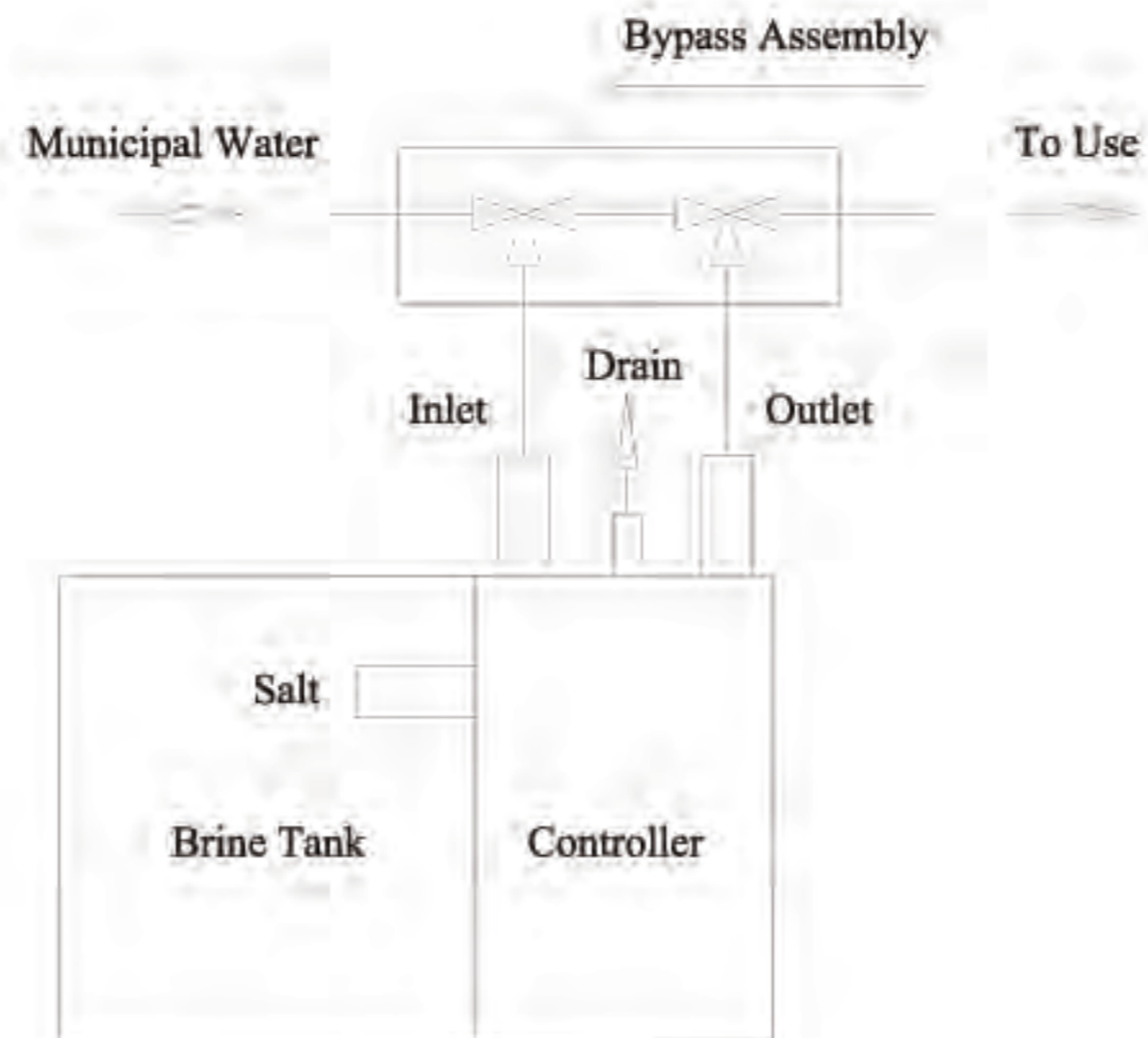
■ Drain until the drain water is clear.

■ Shut off water supply and let the unit stand for about five minutes to escape all trapped air from the tank.

3. Refill brine tank

- Manually initiate a whole regeneration cycles after resin tank filling (see Appendix) to fill appropriate water to brine tank.
- Salt level should be higher than water level at first time. There should be enough solid salt at anytime.

4. It is recommended to install a bypass system to ensure water supply in any special cases, such as softener failure, maintenance, etc.



Bypass Assembly Installation Schematic Figure

4. Cautions

- 1) Without reading and truly understanding the contents of this user manual, please DO NOT perform any operations on the control valve;
- 2) Strictly prohibit leaning position when shipping, installing and using this product. Otherwise, it will be damaged inside.
- 3) During regeneration time, water from tap will NOT be softened. It is NOT recommended to use water during regeneration; otherwise, a negative effect on the regeneration result will occur;
- 4) Initial a regenerate cycle after being inactivated in a long period of time, and then turn on the tap for several minutes before resuming normal use;
- 5) DO NOT disconnect power during service time to keep the timer run normal that controls the regeneration function;
- 6) If water usage or hardness of raw water dramatically increases (comparing to the normal usage), the frequency of regeneration should correspondingly increase;
- 7) Hot water could cause severe damage to the softener system; for water boiler and water heater users, ensure the total-run of the piping between the softener and the boiler is not less than 3 meters; it is recommended to install a check valve between the filter and the boiler if unable to meet the required piping length;
- 8) The input water pressure must be between 0.15 to 0.35 MPa , no negative water pressure allowed.
- 9) No chemical allowed at the inlet and outlet connecting sectors. No excessive force which can damage the plastic conjunction parts should be applied by any tools . Besides the machine, spare part connection material doesn't include in scope of manufacture's warranty.
- 10) The required environmental temperature for softener is 33.8--102.2 °F. Please protect the softener from frozen.
- 11) Please set up a waterspout on the floor nearby the softener in case of any leaking accidents.
- 12) DO NOT apply any pressure on the softener; avoid exposure to direct sun light and radiation from other heating sources;
- 13) Please select regeneration salt pill as regenerant.

5. Troubleshooting

Problem	Possible Cause	Solution
Controller does not work	<ol style="list-style-type: none"> 1. Transformer is not plugged in 2. Defective power cord 3. Power off 4. Defective transformer 	<ol style="list-style-type: none"> 1. Connect to constant power source 2. Replace cord 3. Just wait for power on 4. Replace the transformer
Incorrect Time of Regeneration	Power outage causes inaccurate timing	According to the User Manual to reset the timer
Leaking	Loose connecting	Tighten joints
Noisy	Air exists in the system	Re-backwash the system to vent air
Milk-white water	Air exists in the system	Turn on the tap to vent air
Unsatisfied water hardness	<ol style="list-style-type: none"> 1. Poor raw water quality 2. Time of regeneration is too long 3. Resin disabled 	<ol style="list-style-type: none"> 1. Call your dealer 2. Reset time of regeneration 3. Re-regeneration or use new resin
Softener fails to use salt	<ol style="list-style-type: none"> 1. Water pressure is too low; 2. Brine line plugged; 3. Injector is plugged; 4. Internal control leak. 	<ol style="list-style-type: none"> 1. Line pressure must be at least 20 psi; 2. Clean brine line; 3. Clean or replace injector and screen; 4. Check piston, seals and spacers
Brine container overflow	Refill time disordered	Call your dealer

Water hardness remains	<ol style="list-style-type: none"> 1. Fail to regenerate automatically 2. Brine concentration is poor 3. Injector is plugged 	<ol style="list-style-type: none"> 1. Check power of controller 2. Keep brine tank full of salt 3. Disassemble the injector and clear it by washing with water
Control backwashes at excessively low or high rate	<ol style="list-style-type: none"> 1. Incorrect backwash controller used. 2. Foreign matter affecting controller operation. 	<ol style="list-style-type: none"> 1. Replace with correct size controller. 2. Remove controller and ball. Flush with water.
Untreated water leakage during service	<ol style="list-style-type: none"> 1. Improper regeneration. 2. Leaking of bypass valve. 3. O-ring around riser tube damaged. 4. Incorrect regeneration cycle setting 	<ol style="list-style-type: none"> 1. Repeat regeneration making certain that the correct salt dosage is set. 2. 3. Replace O-ring. 4. Reset regeneration cycle.

6. Important Notices

The controlling components are driven by an electric circuit. Some programmed parameters will be lost as a power outage over 8 hours, and water softener systems will carry out the regeneration process at the incorrect time. We strongly recommend that after a power outage, users should check the timer or adjust it according to the Appendix.