

Imperial LXTI Upflow

Service Manual

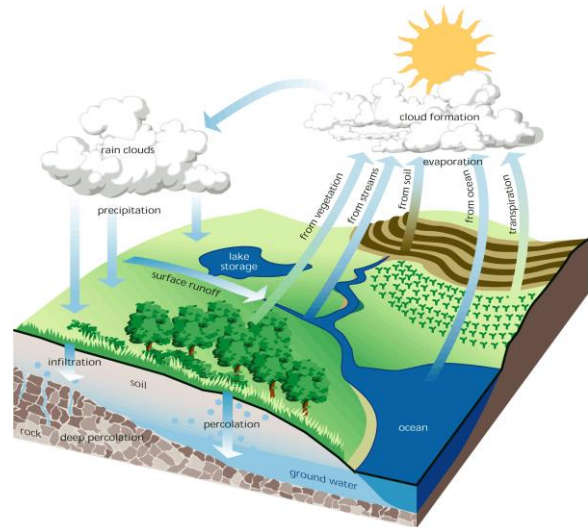


Every day, thousands of billions of tons of water evaporate from the earth's surface.

As the heat of the sun evaporates the water and draws it from the earth's surface into the atmosphere, many impurities are left behind. The water vapor eventually cools to form clouds and then falls back to earth as precipitation.

On its way from the clouds to your faucet, soft rain water dissolves and absorbs a part of almost everything it touches.

Falling rain cleans the air as it falls. Unfortunately the impurities that were removed from the air have not left; they have just been relocated through the water onto the ground.



These gases and other airborne contaminants can cause undesirable tastes, colors and odors in water.

Rain falls onto the ground, collecting sediments like rust, sand and even algae. The water eventually finds its way to a surface water supply or percolates downward and collects in an aquifer. As it percolates through the earth, the water can absorb hardness minerals, iron, heavy metals, radioactivity, organic contaminants, and many other complex elements and compounds.

Water can also collect numerous harmful man-made chemical impurities during this cycle. These synthetic chemicals are generally odorless, colorless, and tasteless; and can sometimes be life-threatening. The statement, "my parents drank this water for 75 years and it never hurt them", is no longer a valid excuse to not be concerned with water quality. There has been a massive global increase in harmful chemical waste over the last 50 years.

The scientific and medical community has not had the time or budget to study the long-term health effects of the more than 70,000 harmful chemicals that can be found in use today.

Approximately 1,000 new synthetic chemical compounds are entering the industrial marketplace each and every year. Precipitation falls upon commercial and municipal dumpsites, toxic waste sites, industrial refuse depots, military test sites, leach fields, mining operations, farmer's fields etc... Where it dissolves minute amounts of the toxic chemicals present and carries them along.

The United States Government estimated in 1986 that close to two percent of the nation's ground water supplies were moderately polluted by sources such as hazardous waste dumps and leaking landfills.

Industrial wastewater is also a major source of water contamination. When certain chemicals come in contact with others, they create new compounds. Chemicals that are considered generally acceptable in controlled amounts may react with other elements and/or chemicals to form new compounds that could be highly carcinogenic.

Chlorine is one of the best-publicized examples; it reacts with organic matter in water and forms deadly trihalomethanes.

Hard water is probably the single largest threat facing the American home in the 21st century. Hard water can coat your family, your home and your appliances with thousands of pounds of inorganic mineral rock-scale each and every year; hard water slowly destroys everything it touches. Left untreated, hard water costs you money, ruins your lifestyle and can even lower the value of your home.

No one needs to tell you that you're living with Hard Water though. Soap doesn't lather easily, glasses are cloudy after washing, a ring forms around the bathtub, faucets and shower heads are crusty, laundering results are poor and there are many other easily recognized signs.

There are several degrees of water hardness. Even moderately hard, can seriously damage the plumbing system in your home and, in time, cause inconvenient and expensive problems.

Hard water is a poor cleaner because it is loaded with a variety of impurities. These dissolved impurities react with certain chemicals found in soap to form a gummy, insoluble curd.

This soap curd clings stubbornly to everything it touches. The ring around your bathtub is curd. That same curd causes your hair to become dull and hard to manage.



Soap curd clogs skin pores and prevents your natural oils from moisturizing your skin. This dryness causes itching and also aggravates skin conditions like psoriasis, eczema and acne.

Soap curd is especially noticeable by the scummy film it forms on dishes, glassware, walls and floors. Hardness and other dissolved solids combine to form the residue you see as spots on glasses, crockery, cutlery and shower enclosures.

Hard water harms fabrics

Laundry washed in hard water takes on a gray color and wears out faster than expected. With hard water in your washing machine, it's almost impossible to wash clothes white - even when you use large amounts of detergent and bleach. Minerals and insoluble particles in hard water trap dirt and soap curd in the fabric of your clothes and linens. These deposits give fabric a dull gray "washed-out" look and cause the clothing fibers to be brittle. Your clothes and linens then feel harsh and rough - they deteriorate faster.

Hard water harms foods

Some vegetables such as peas and beans become tough and unpalatable when cooked in hard water.

Baking with hard water imparts an undesirable taste from the hardness minerals into your food. Tea, Coffee and other beverages prepared with hard water taste awful and often contain flakes of hardness.

Hard water affects your house plumbing

Perhaps the greatest damage done by hard water is the damage that you can't easily see. Water heaters, humidifiers, boilers and household pipes become lined with an increasingly thick layer of calcium and magnesium scale.

As this scale builds up, the water flow in your pipes diminishes to such a point that new piping is usually the only realistic option to remedy the situation.

Hard water scale inside a water heater forms an insulating layer that prevents the burners or heating elements from heating the water efficiently. Just 1/8" of scale inside the tank can require up to 30% more fuel to heat the water to the desired temperature.

How water hardness is measured

Water hardness is measured in imperial Grains per Gallon (gpg). A grain, in this case, is the weight of an average dry grain of wheat, approximately 1/7000th of a pound. The water treatment industry generally uses the following standards to classify water hardness.

Soft Water	0 - 0.5 gpg
Slightly Hard Water	.5 - 3.5 gpg
Moderately Hard Water	3.5 - 7 gpg
Very Hard Water	7 - 10.5 gpg
Extremely Hard Water	10.5 gpg and greater

THE CRIMES OF HARD WATER, METALS & CHLORINE

Increased Water Heating Costs

Damaged Clothing

Excessive Soap Consumption

Pipe Scaling

Faucet and Fixture Damage

Skin Problems

Unpalatable Food

Undesirable Tastes and Odors

Premature Appliance Failure

Unsatisfactory Laundry Results

Unpleasant Tastes & Odors in Water

Staining on Faucets, Fixtures & Appliances

START-UP INSTRUCTIONS IMPERIAL LXTI

The water softener should be installed with the inlet, outlet, and drain connections made in accordance with the manufacturer's recommendations, and to meet applicable plumbing codes.

1. Program the valve control according to instructions shown in this manual.
2. Start an immediate regeneration by holding the Extra Cycle button for 5 seconds. Position the valve to backwash. Ensure the drain line flow remains steady for 10 minutes or until the water runs clear.
3. Position the valve to the brine / slow rinse position. Ensure the unit is drawing water from the brine tank (this step may need to be repeated).
4. Position the valve to the rapid rinse position. Check the drain line flow, and run for 5 minutes or until the water runs clear.
5. Position the valve to the start of the brine tank fill cycle. Ensure water goes into the brine tank at the desired rate. The brine valve drive cam will hold the valve in this position to fill the brine tank for the first regeneration.
6. Replace control cover.
7. Put salt in the brine tank.

NOTE: Do not use granulated or rock salt.

TIMER FEATURES IMPERIAL LXTI

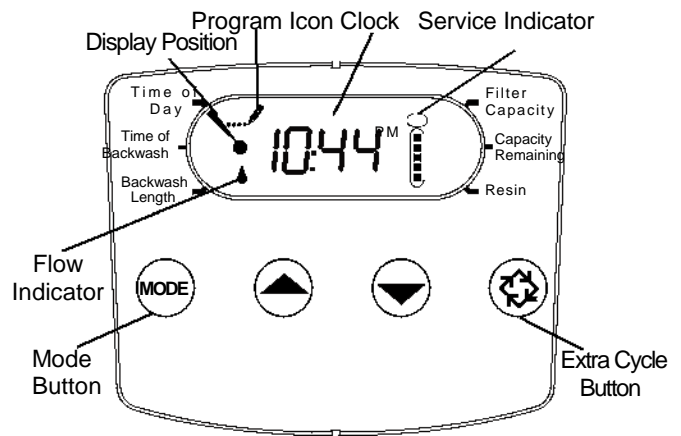


Figure 2

Features of the Imperial LXTI:

- Power backup that continues to keep time and the passage of days for a minimum of 12 hours in the event of power failure. During a power outage, the control goes into a power-saving mode. It does not monitor water usage during a power failure, but it does store the volume remaining at the time of power failure.
- Day of the week reserve calculates a reserve for each day based on the past 4 weeks.
- The Flow Indicator flashes when outlet flow is detected.
- The Service Icon flashes if a regeneration cycle has been queued.
- A Regeneration can be triggered immediately by pressing the Extra Cycle button for five seconds.
- During a regeneration, the display will show the cycle number followed by the time remaining in that cycle
- During regeneration, the user can force the control to advance to the next cycle step immediately by pressing the extra cycle button.

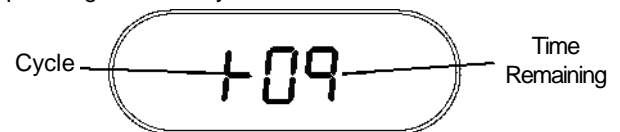


Figure 3

Setting the Time of Day

1. Press and hold either the Up or Down buttons until the Time of Day icon appears.
2. Adjust the displayed time with the Up and Down buttons.
3. When the desired time is set, press the Extra Cycle button to resume normal operation. The unit will also return to normal operation after 5 seconds if no buttons are pressed.



Figure 4

Queuing a Regeneration

1. Press the Extra Cycle button. The service icon will flash to indicate that a regeneration is queued.
2. To cancel a queued regeneration, press the Extra Cycle button.

Regenerating Immediately

Press and hold the Extra Cycle button for five seconds.

TIMER OPERATION IMPERIAL LXTI

Meter Delayed Control

A Meter Delayed Control measures water usage. The system regenerates at the programmed regeneration time after the calculated system capacity is depleted. The control calculates the system capacity by dividing the unit capacity by the feed water hardness and subtracting the reserve. The reserve should be set to insure that the system delivers treated water between the time the system capacity is depleted and the actual regeneration time. A Meter Delayed control will also start a regeneration cycle at the programmed regeneration time if a number of days equal to the regeneration day override pass before water usage depletes the calculated system capacity.

Control Operation During Regeneration

During regeneration, the control displays a special regeneration display. In this display, the control shows the current regeneration step number the valve is advancing to, or has reached, and the time remaining in that step. The step number that displays flashes until the valve completes driving to this regeneration step position. Once all regeneration steps are complete the valve returns to service and resumes normal operation.

The meter and time clock controls will use and display cycles:

1. Backwash
2. Brine/Slow Rinse
3. Rapid Rinse
4. Brine Tank Refill

The filter controls will use and display cycles:

1. Backwash
2. Rapid Rinse

Pressing the Extra Cycle button during a regeneration cycle immediately advances the valve to the next cycle step position and resumes normal step timing.

Control Operation During Programming

The control only enters the Program Mode with the valve in service. While in the Program Mode, the control continues to operate normally monitoring water usage and keeping all displays up to date. Control programming is stored in memory permanently, and does not rely on battery backup power.

Manually Initiating a Regeneration

1. When timer is in service, press the Extra Cycle button for 5 seconds on the main screen.
2. The timer advances to Regeneration Cycle Step #1 (backwash), and begins programmed time count down.
3. Press the Extra Cycle button once to advance valve to Regeneration Cycle Step #2 (brine draw & slow rinse).
4. Press the Extra Cycle button once to advance valve to Regeneration Cycle Step #3 (rapid rinse).
5. Press the Extra Cycle button once to advance valve to Regeneration Cycle Step #4 (brine refill).
6. Press the Extra Cycle button once more to advance the valve back to in service.

NOTE: If the unit is a filter or upflow, the cycle step order may change.

NOTE: A queued regeneration can be initiated by pressing the Extra Cycle button. To clear a queued regeneration, press the Extra Cycle button again to cancel. If regeneration occurs for any reason prior to the delayed regeneration time, the manual regeneration request will be cleared.

Control Operation During A Power Failure

The Imperial LXTI includes integral power backup. In the event of power failure, the control shifts into a power-saving mode. The control stops monitoring water usage. The display and motor shut down, but it continues to keep track of the time and day for a minimum of 12 hours.

The system configuration settings are stored in a non-volatile memory and are stored indefinitely with or without line power.

If power fails while the unit is in regeneration, the control will save the current valve position before it shuts down. When power is restored, the control will resume the regeneration cycle from the point where power failed.

CAUTION If power fails during a regeneration cycle, the valve will remain in its current position until power is restored. The valve system should include all required safety components to prevent overflows resulting from a power failure during regeneration.

The control will not start a new regeneration cycle without line power. If the valve misses a scheduled regeneration due to a power failure, it will queue a regeneration. Once power is restored, the control will initiate a regeneration cycle the next time that the Time of Day equals the programmed regeneration time. Typically, this means that the valve will regenerate one day after it was originally scheduled. If the treated water output is important and power interruptions are expected, the system should be setup with a sufficient reserve capacity to compensate for regeneration delays.

Master Programming Mode Imperial LXTI

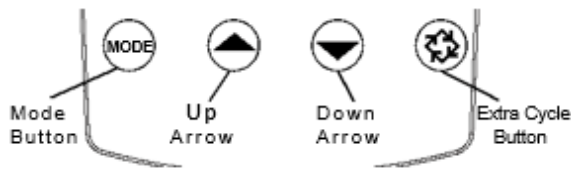


Figure 7

Press Mode button to cycle through programming options. When timer is powered up, the display position will point to Time of Day. Set time of day by holding the Up or Down arrow. Hold the Extra Cycle button until the Program icon disappears to save the current time.

Imperial LXTI Meter Upflow

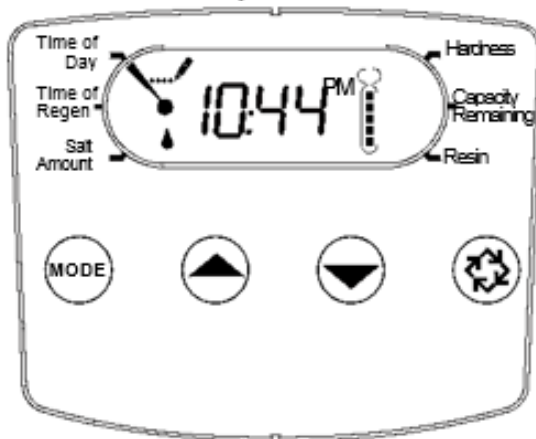


Figure 8

1. Press the Mode button to advance to Time of Regen. Push the Up or Down arrow to adjust the time of regeneration.
2. Press the Mode button again to advance to Salt Amount. Press the Up or Down arrow to adjust your salt dosage. English timer range is 3-18 lbs. Metric timer range is 50-290 grams per liter.
3. Press the Mode button again to advance to Hardness. Press the Up or Down arrow to adjust the setting to your hardness. English timer range is 3 to 200 gpg. Metric timer range is 30-200 mg/l.
4. Press the Mode button again to advance to Capacity Remaining. This is the amount of gallons the unit can treat. This is not adjustable.
5. Press the Mode button again to advance to Resin. Use the Up or Down arrow to adjust the amount of CuFt resin in your tank. English timer range is 0.25-3.0 CuFt. Metric timer range is 5-100 liters.
6. Hold the Extra Cycle button until the Program icon disappears to save your programming.

7. If you are just changing one program step, hold the Extra Cycle button until the Program icon disappears to save your changes. If you do not hold the Extra Cycle button until the Program icon disappears your changes will not be saved.

NOTE: This unit has a day of the week reserve. It calculates a reserve for each day of the week based on the past 4 weeks.

Imperial LXTI Filter Meter

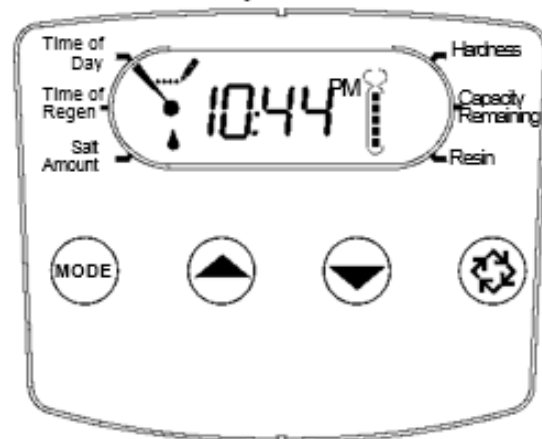


Figure 9

1. Press the Mode button to advance to Time of Backwash. Push the Up or Down arrow to adjust the time of backwash.
2. Press the Mode button again to advance to Backwash Length. Press the Up or Down arrow to adjust your backwash length. Range is 1-30 minutes.
3. Press the Mode button again to advance to Filter Capacity. Press the Up or Down arrow to adjust the setting for filter capacity. English timer range is 100-90,000 gallons. Metric timer range is 1-900 cubic meters.
4. Press the Mode button again to advance to Capacity Remaining. This is not adjustable.
5. Press the Mode button again to advance to Resin. Use the Up or Down arrow to adjust the amount of CuFt resin in your tank. English timer range is 0.25-3.0 CuFt. Metric timer range is 5-100 liters.
6. Hold the Extra Cycle button until the Program icon disappears to save your programming.
7. If you are just changing one program step, hold the Extra Cycle button until the Program icon disappears to save your changes. If you do not hold the Extra Cycle button until the Program icon disappears your changes will not be saved.

NOTE: This unit has a day of the week reserve. It calculates a reserve for each day of the week based on the past 4 weeks.

DIAGNOSTIC PROGRAMMING MODE IMPERIAL LXTI

Demand - US Units	
Diagnostic Code	Description
H1	Displays the days since last regeneration, 0-30.
H2	Displays the current flow rate, gallons per minute.
H3	Displays the current day of week, 1-7.
H4	Displays the total volume of water treated by the unit for the current day in gallons.
H5	Displays the total volume of water used since the last regeneration in gallons.
H6	Displays the software version. Version number of software. D = Downflow U = Upflow
A1	Displays the average water usage for day 1, in gallons.
A2	Displays the average water usage for day 2, in gallons.
A3	Displays the average water usage for day 3, in gallons.
A4	Displays the average water usage for day 4, in gallons.
A5	Displays the average water usage for day 5, in gallons.
A6	Displays the average water usage for day 6, in gallons.
A7	Displays the average water usage for day 7, in gallons.

Demand - Metric Units	
Diagnostic Code	Description
H1	Displays the days since last regeneration, 0-30.
H2	Displays the current flow rate, liters per minute.
H3	Displays the current day of week.
H4	Displays the total volume of water treated by the unit for the current day, in cubic meters.
H5	Displays the total volume of water used since the last regeneration, in cubic meters.
H6	Displays the software version. Version number of software. D = Downflow U = Upflow
A1	Displays the average water usage for day 1, in cubic meters.
A2	Displays the average water usage for day 2, in cubic meters.
A3	Displays the average water usage for day 3, in cubic meters.
A4	Displays the average water usage for day 4, in cubic meters.
A5	Displays the average water usage for day 5, in cubic meters.
A6	Displays the average water usage for day 6, in cubic meters.
A7	Displays the average water usage for day 7, in cubic meters.

Time Clock	
Diagnostic Code	Description
H1	Displays the days since last regeneration, 1-7.
H6	Displays the software version. Version number of software. D = Downflow U = Upflow

NOTE: The English timer will be in gallons. The Metric timer will be in liters for all flow rates.

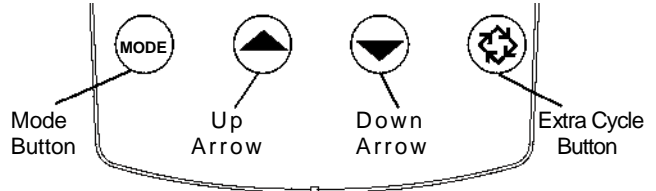


Figure 12

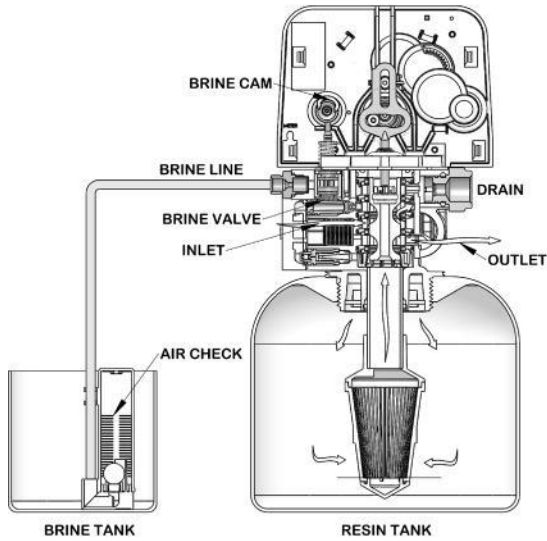
1. To enter the Diagnostic Programming Mode, press and hold the Mode button and the Up arrow.
2. The display will show the first diagnostic. Press the Up arrow to view the value.
3. Press the Mode button twice to move to the next diagnostic.
4. Press the Up arrow to view the value. Continue in this manner until you have viewed all the diagnostics. The table above shows all the diagnostics.
5. To exit Diagnostic Programming Mode, hold the Extra Cycle button for one minute. It will also exit after 30 seconds if no button is pushed.

WATER CONDITIONER FLOW DIAGRAMS

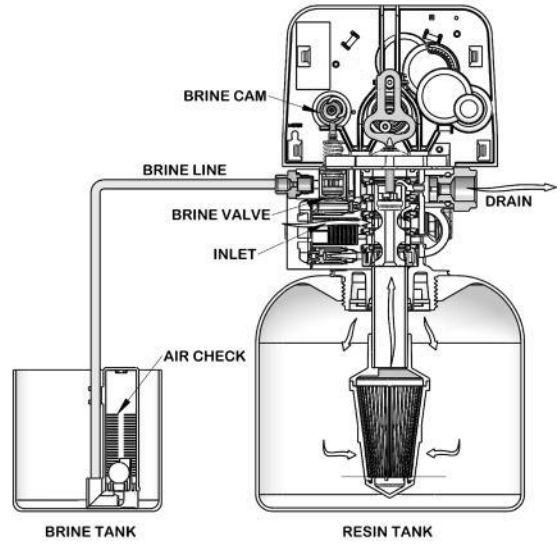
Upflow

1. Service Position

2.

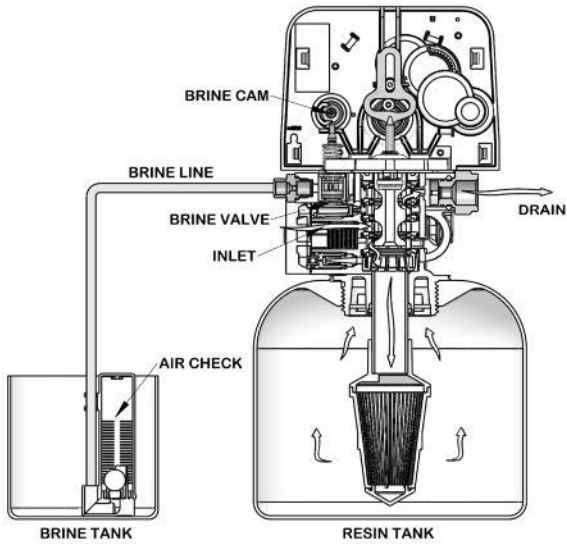


4. Rapid Rinse Position

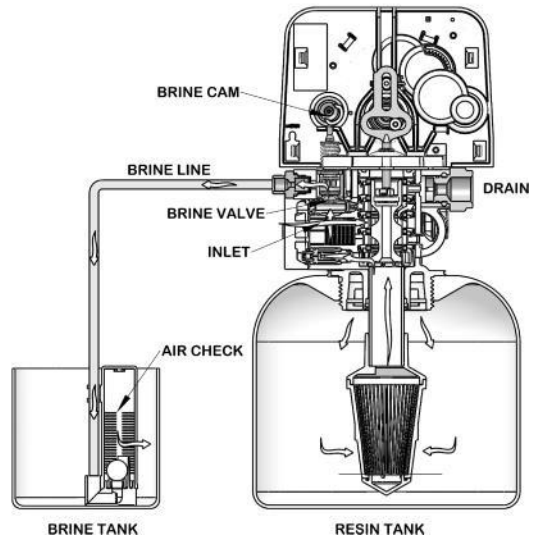


Backwash Position

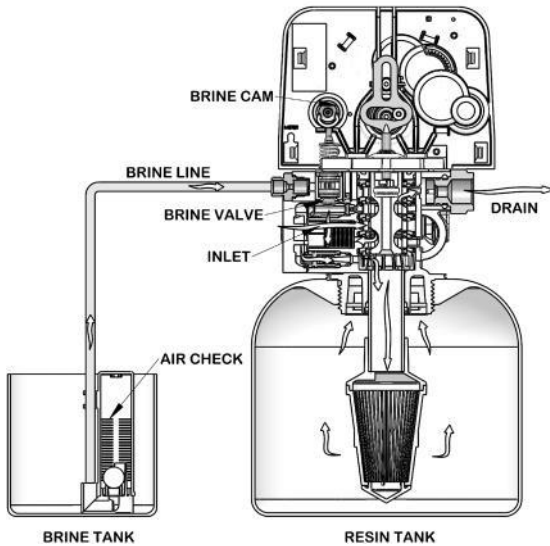
3.



5. Brine Tank Refill Position



Brine/Slow Rinse Position



Understanding how your system operates

Water softening process

Your system is designed to remove hardness and certain metals from your water through the processes of ion exchange.

The smallest units that make up chemical compounds and still retain the properties of those compounds are called molecules. Molecules are made up of atoms or groups of atoms. Electrically charged atoms are called ions. The charge of a single ion can be either positive or negative - Ions of metals and of hydrogen are usually positively charged and are called cations. Ions such as chlorine, nitrate, phosphate, fluoride and sulfates are negatively charged and called anions.

Certain insoluble materials are made up of large ions forming a skeletal structure containing oppositely charged ions. These ions can be exchanged with other similar ions in an ion exchange.

The first commercial application of ion exchange was water softening in 1905. Since then, ion exchange has been the most reliable method of softening and conditioning water in homes and industry.

The Conditioning of water by ion exchange relies on the replacement of the calcium and magnesium ions in the water by an equivalent number of sodium ions.

The Conditioning process may be illustrated by the following equation:-

R2. Na +	Ca(HCO3)2 =	R2 . Ca +	2NaHCO3
Sodium Ion Exchange Resin	Calcium Bicarbonate in water	Calcium Ion Exchange Resin	Sodium Bicarbonate in Water

Obviously, the system can only exchange a certain amount of hardness and other contaminants. This is referred to as the capacity of the resin. The capacity of the resin is referred to as grains of calcium carbonate hardness removed per cubic foot of resin or Milliequivalents per liter. When the capacity has been exhausted, the resin needs to be regenerated with a solution of sodium chloride (brine) as follows:-

R2.Ca +	2NaCl =	2 R.Na +	CaCl2
Calcium Ion Exchange Resin	Sodium Chloride Brine	Sodium Ion Exchange Resin	Calcium Chloride Waste

Your Simple Soft Plus System can be regenerated with Potassium Chloride if desired.

Over the years the composition of ion exchange media has advanced, reflecting sophisticated global technological advances.

Ion exchange resins used in your Simple Soft Plus System are made in the USA, without harmful toxic solvents. This media is designed to be physically and chemically strong while making water that feels good, tastes great and works hard for you.

Your responsibilities as an equipment owner

Your Simple Soft Deluxe System is manufactured to be efficient and reliable. To ensure continued performance while keeping your system operating within manufacturer's specifications, the following operating conditions must be ensured by you, the equipment owner/operator:

Water Pressure Regulator

The influent water pressure into this water system must be regulated by a code-compliant pressure-regulating device not to exceed 75psi.

Power Protection

Power to this system must be supplied by an unswitched 110VAC supply. Surge protection is mandatory and is to be supplied by you, the equipment owner. The use of a UPS (Uninterruptible Power Supply) is encouraged.

Salt

This water system uses either sodium or potassium salt to clean itself. The brine tank must be filled with a high quality pellet or cubed salt to ensure system operation. Rock salt is usually not suitable for this system, as it can contain higher levels of impurities that can require more frequent disinfection and can possibly even compromise system functionality. Consult with your local water professional to decide on the best salt for your application.

Pur-Gard

The Pur-Gard injection feeder should be kept full to ensure proper system operation and maximum efficiency. Check the level of your Pur-Gard feeder each time you fill your brine tank with salt.

Annual Cleaning and Disinfection

Bacteria can colonize water softeners through safe city water, salt, or even ambient air. While weekly antibacterial rinses and supplementation with Pur-Gard help to minimize bacterial growth, your system should be cleaned and disinfected on a regular schedule to ensure peak performance and protect the safety of you family. We can perform the cleaning and disinfection service for you or you can purchase a comprehensive cleaning and disinfection kit to perform this task yourself.

Periodic replacement of media

While built to the highest standards, certain media in your Simple Soft Deluxe System will need to be replaced periodically. Replacement intervals vary depending on your water chemistry and water consumption habits. Consult with your water specialist during your annual inspection/tune-up service to ensure that you enjoy the very best water quality.

Your system should only be used on water that is microbiologically safe. For optimum performance, the Simple Soft Plus System should only be installed when the following operating criteria are met:-

	Minimum	Maximum
Water Temperature	40 F	75 F
Water Pressure	40psi	75psi
Influent Water Hardness	0gpg	90gpg
Influent pH	6.7	8.7
Influent TDS	10 ppm	900 ppm
Pathogenic Bacteria	0 CFU	0 CFU
Chlorine	0 ppm	3 ppm
Chloramine	0 ppm	2 ppm
Ambient Temperature	40 F	90 F

Pur-Gard

The Pur-Gard™ system incorporated into every Simple Soft Deluxe System ensures that you have the best water quality all year long. This simple injection system is specially engineered to work in all climates to easily introduce Pur-Gard into your brine tank while the system is waiting to clean itself.

Your Simple Soft Deluxe System will use varying amounts of Pur-Gard, depending on your water consumption habits; always maximizing efficiency and performance while providing you with the water quality that you deserve.

Pur-Gard is designed to:-

- Clean ion-exchange resin without damaging structured matrix media
- Create an inert protective coating on metallic moving parts
- Clean and lubricate all moving components
- Create an unhealthy environment for bacteria in the system
- Activate Purafeel™ technology on compatible systems
- Enhance self-sanitization process on compatible systems

Always keep your Pur-Gard reservoir full to ensure proper system performance, longevity & efficiency.



Cleaning and Disinfection

Your Simple Soft Deluxe System is probably the hardest working appliance in your home, processing millions of gallons of water over its service life and in turn protecting you from countless amounts of inorganic calcium, magnesium, lead, copper, zinc, iron, manganese, and other contaminants that could be in your water.

In addition to capturing inorganic contaminants, your softener also accumulates sediment bacteria, algae, mold, and fungus that can enter the system through safe city water, salt, or even from the air. These additional contaminants slowly accumulate in your softener and can even colonize it with a biofilm of Heterotrophic Plate Count bacteria (HPC). These bacteria are usually benign, but they can create a food base as safe refuge for potentially harmful pathogens and seriously compromise the longevity and performance of your system.

Your system should be periodically cleaned and disinfected according to established protocol to ensure that it is working to the best of its ability and to protect the safety of your family.

Recommended Cleaning & Disinfection Interval (months)

Gallons Per Day

		50	75	100	125	150	175	200	225	250	275	300	325	350	375	400
Water Hardness (gpg)	1	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
	3	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
	5	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
	7	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
	10	12	12	12	12	12	12	12	12	12	12	12	11	11	10	9
	14	12	12	12	12	12	12	12	12	12	11	10	9	9	8	8
	18	12	12	12	12	12	12	12	11	10	9	9	8	7	7	6
	23	12	12	12	12	12	12	11	10	9	8	7	7	6	6	6
	27	12	12	12	12	12	11	10	9	8	7	7	6	6	5	5
	32	12	12	12	12	11	10	8	7	7	6	6	5	5	4	4
	35	12	12	12	12	10	8	7	6	6	5	5	4	4	4	4



TROUBLESHOOTING IMPERIAL LXTI

Error Codes

NOTE: Error codes appear on the In Service display.

Error Code	Error Type	Cause	Reset and Recovery
---0	Motor Stall /Cam Sense Error	No state changes in the optical sensor are detected for 6 seconds.	<p>Unplug the unit a plug back in. Allow the control to attempt to find position again.</p> <p>Verify the optical sensor is in place with the wires connected to the circuit board. Verify the motor and drive train components are in good condition and assembled properly. Check the valve and verify that the piston travels freely. Replace/reassemble the various components as necessary.</p> <p>Plug the unit back in and observe its behavior. If the error reoccurs, unplug the unit, put it into bypass and contact technical support.</p>
---1	Motor Run-On Error /Cycle Sense Error	An undesired optical sensor state change occurred.	Non-critical error. Extra optical sensor pulse detected. Press any button to clear the error. Press extra cycle button to advance motor to clear error.
---2	Regen Failure	The system has not regenerated in 30 days.	<p>Perform a Manual Regeneration to reset the error code.</p> <p>If the system is metered, verify that it is measuring flow by running service water and watching for the flow indicator on the display. If the unit does not measure flow, verify that the meter cable is connected properly and that the meter is functioning properly.</p> <p>Enter Master Programming Mode and verify that the unit is configured as appropriate for the valve configuration. Check that the correct system capacity and meter size has been selected.</p>
---4	Fail Safe Error	Valve has failed to find position in one minute.	Unplug the unit and plug it back in. If error continues, call technical support.

Hard (untreated) water to service

Cause	Solution
Open or defective bypass	Close or verify bypass
Loss of resin	Refer to problem "Loss of resin"
System fails to regenerate	Refer to problem "System fails to clean"
Valve fails to draw brine	Refer to problem "Valve fails to draw brine"
Decreasing exchange capacity of resin	Clean, augment, or replace resin bed
No salt in brine tank	Add salt
Leak at riser tube	Verify that riser tube is seated correctly and is not damaged by heat or high water pressure
Pur-Gard supply exhausted	Refill Pur-Gard feeder

System fails to clean

Cause	Solution
Faulty electrical supply	Verify electrical service – Confirm unswitched power outlet
Obstructed flow meter	Clean and/or replace flow meter
Damaged PCB	Replace PCB
Damaged drain motor	Replace drain motor

Softener fails to draw brine

Cause	Solution
Low operating pressure	Verify operating pressure; must exceed 30 psi static
Plugged injector	Clean injector
Plugged injector screen	Clean injector screen
Piston stuck in incorrect position	Inspect drivetrain and perform remedial action
Restricted/Obstructed drain line	Check drain line for kinks, restrictions or obstructions
Restricted/Obstructed brine line	Check brine line for kinks, restrictions or obstructions
Leak in brine line	Verify brine line and connections for air leakage
Insufficient water in brine tank	Refer to problem “Valve fails to refill brine tank”

Excessive water in brine tank

Cause	Solution
Valve fails to draw brine	Refer to problem “Softener fails to draw brine”
Improper brine refill time setting	Verify that brine refill time corresponds to the proper salt level and amount of hydrolyte resin

Missing brine refill flow control	Verify that flow control is installed and properly sized
Leak from valve to brine tank	Clean or replace brine valve
Brine Valve damaged	Replace Brine Valve

Valve fails to refill brine tank

Cause	Solution
Improper brine refill time setting	Verify that refill time corresponds to salt level and amount of resin
Plugged refill flow control	Clean flow control

System uses too much salt

Cause	Solution
Excessive water in brine tank	Refer to problem "Excessive water in brine tank"
Unit regenerates too frequently	Check household for excessive or unexpected water usage—leaky toilet fill valves, T&P Relief drainage, Reverse Osmosis processors, humidifiers, plumbing leaks etc...

Salty water to service

Cause	Solution
Excessive water in brine tank	Refer to problem "Excessive water in brine tank"
Injector undersized	Verify injector selection
Improper brine/slow rinse time setting	Verify that brine/slow rinse time corresponds to the proper salt level and amount of resin
Improper fast rinse time setting	Verify that fast rinse time corresponds to the proper salt level and amount of resin

Loss of resin through drain line

Cause	Solution
Lower and/or upper distributor damaged	Replace distributor(s)
Leak between riser tube and upper distributor	Verify that riser tube is seated correctly and is not cracked
Heat and/or Pressure Damage	Inspect pressure regulating valve and hot water backup protection devices. Perform appropriate remedial action.

Loss of water pressure

Cause	Solution
Mineral or iron build-up in resin tank	Clean resin bed and control valve; increase regeneration frequency. Increase Pur-Gard dosage rate
Plugged lower and/or upper distributor	Verify that distributors are free of debris
Crushed lower and/or upper distributor	Replace distributor(s)
Resin damaged due to natural attrition or chlorine/chloramine oxidation	Replace Resin

Drain flows continuously

Cause	Solution
Piston stuck in brine/rinse or backwash position	Inspect drivetrain and perform remedial action
Damaged Seals/Spacers	Inspect Seals/Spacers and perform remedial action
Damaged Piston	Inspect drivetrain and perform remedial action

Power-Failure Handling

In the event of a power failure, your system's integrated Snapshot memory system will retain all programmed data for an indefinite period of time. The system will maintain the correct time of day during a period of several hours; in the case of a prolonged power failure, the time of day might not be maintained; if this happens, the time of day indication will, when the power supply is re-established, be *flashing*, indicating that the time of day needs to be set. All other programming is unaffected.

If a power failure occurs during the execution of an automatic cleaning, the control valve will immediately return to the service position; when the power supply is re-established, the control valve will stay in the service position for 60 sec. and restart a complete cleaning cycle to ensure that your quality is returned to normal as quickly as possible.

STATEMENT OF LIMITED PRODUCT WARRANTY

1st year of ownership

This residential water system is warranted as to workmanship and material for a period of one year from date of original installation at the original installation site, if properly installed by an Intermountain Soft Water Certified Installer. Should any component in your system prove defective in the first year, it will be repaired, rebuilt or replaced at our option, provided it is returned directly to us.

After the 1st year of ownership, should any component in your system prove defective, it will be repaired, rebuilt or replaced at our option for a maximum charge of \$50.00, provided it is returned directly to us. Labor, transportation, shipping or other charges incurred in the diagnosis, replacement or repair of defective components are not covered by this warranty. If you choose not to send a defective component back to us, repairs to your system can be conducted in your home by a factory authorized service technician if your home is within the operating radius of an Intermountain authorized repair center. This warranty does not cover transportation, shipping, diagnosis, replacement and repair charges resulting from your in-home repair request. Intermountain Soft Water or its subsidiaries will not be held responsible for loss or damage caused by any defective component.

Conditions

This warranty must be presented at time of claim and all claims must be presented within 30 days of occurrence.

This warranty is void if your water system is not installed in compliance with prevailing plumbing codes, according to Intermountain Soft Water's installation protocol, or if the influent water temperature is hotter than 90°F or where the static water pressure is less than 40psi, or more than 80psi. Intentional/malicious damage, misuse, neglect, unauthorized modifications or accidental damage to the system is not covered by this warranty. This warranty does not cover damage caused by pressure surges, water hammer, power surges or sags, lightning, fire, flood, freezing, earthquake, acts of God or other casualty.

Wear and Tear

Your water system is subject to normal wear and tear during its usable service life.

Wear and tear is not regarded as a product defect and is not covered by this warranty.

No Liability for Consequential Damages

Unless otherwise required by applicable law, Intermountain Soft Water shall not be liable for any damages whatsoever (including without limitation, loss time, inconvenience, expenses such as telephone calls, labor or material charges incurred in connection with the removal or replacement of the part(s) or product(s), special, incidental, consequential, or indirect damages for personal injury, loss of business profits, business interruption, loss of business information, or any other pecuniary loss) arising out of the use of or inability to use the defective part(s) or product(s), even if Intermountain Soft Water has been advised of the possibility of such damages. Intermountain Soft Water's entire liability under any provision of this Limited Warranty shall be limited to the amount actually paid for the part(s) or product(s).

No Other Warranties:

Intermountain Soft Water specifically disclaims all other warranties, either express or implied, including, but not limited to implied warranties of merchantability and fitness for a particular purpose, with regard to the part(s), product(s) and/or any accompanying written materials. This limited warranty gives you specific legal rights. You may have other rights that vary from state/jurisdiction to state/jurisdiction.

Pur-Gard

Your water system includes a Pur-gard/Pur-Gard Plus dispensing system. The Pur-gard/Pur-Gard Plus performance-enhancing additive is essential to proper functioning of your system. If Pur-gard is not added to the dispensing system at the prescribed interval in your owner's manual, this warranty will be void.

Periodic replacement of media

While built to the highest standards, certain media in your Water System will need to be replaced periodically by your local authorized service agent. Replacement intervals vary depending on your water chemistry and water consumption habits. Consult with your water specialist during your annual cleaning and disinfection service to ensure that you enjoy the very best water quality. Media replacement is not covered under this warranty.

In order for this limited lifetime warranty to be valid, you must:

Be the original consumer purchaser, and have purchased the water equipment directly from Intermountain Soft Water, and Provide a copy of the original purchase receipt with proof of date and purchase price

This limited lifetime warranty is only valid if registered within 10 days of initial installation.

If unregistered, this warranty is only valid for 1 year from the date of original manufacture.

Register your warranty now: www.intermountainsoftwater.com