

*Hellenbrand*<sup>®</sup>

**E<sup>3</sup>**



## **Consumer's Manual**

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*Manufactured by:*  
**HELLENBRAND, INC.**

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This owner's manual is designed to assist owners with the operation and maintenance of your new water softener. It is our sincere hope that this manual is clear, concise and helpful. We have included information and instructions relating to the basics of soft water, general operating conditions, start-up, and meter & timer programming. Also included are parts diagrams and a troubleshooting guide.

**In the event that you need professional assistance for servicing your water softener, please contact the dealer who installed this system.**

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# SOFT WATER BASICS

## Water Hardness

Excess amounts of calcium and magnesium in water produce hardness. A water softener removes the majority of calcium and magnesium to produce softened water.

Hardness is measured in terms of grains. (This grain weight is derived from the average weight of a dry grain of wheat.) When your water is tested the grain hardness is calculated and expressed as grains per gallon (gpg). This calculation, as well as the number of people in your household will help determine what type and size of water softener will most efficiently soften your water.

Your water softener contains an ion exchange media (often called resin) which removes the hardness from water as it flows through the softener tank. Eventually so much hardness collects on the exchange media that the softener can no longer soften water. At this point it is considered "exhausted". Regeneration is now necessary.

## Water Softener Regeneration

To regenerate the exchange media, it must be rinsed with a brine (salt) solution. This removes the hardness from the exchange media and replaces it with sodium. The exchange media is then ready to remove hardness from water. The hardness minerals and excess brine solution are rinsed down the drain.

During the regeneration cycle the softening media is also backwashed. This reversing of the normal flow of water serves to remove sediment which may have accumulated during the softening process due to the filtering action of the exchange media. Backwashing also loosens and fluffs up the bed of exchange media to insure that during regeneration the brine solution will come into contact with all the media.

## Prefill Option

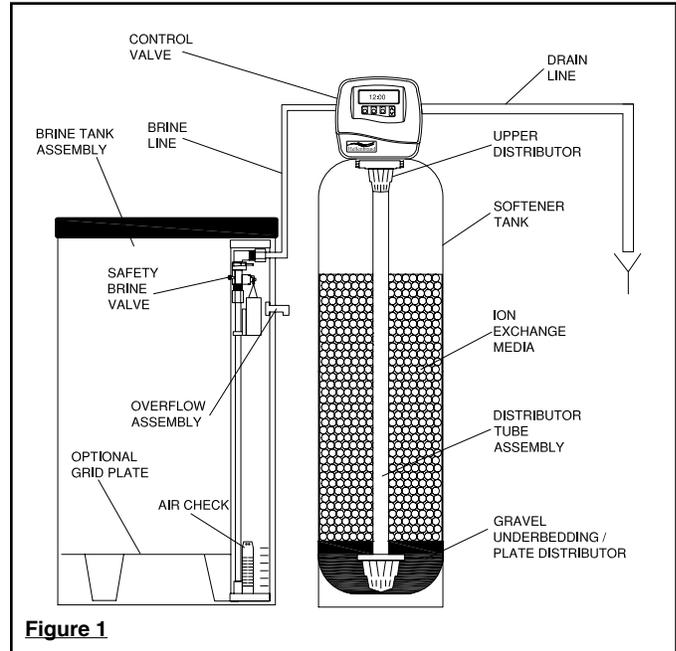
Your softener is factory programmed with the Prefill option. The prefill option puts water into the brine tank 2 hours prior to a scheduled regeneration and provides the best environment for maintenance and salt storage in your brine tank. When programmed as Prefill, you will typically not see water in the brine tank unless salt supply is low and needing to be replenished.

## Maintaining Salt Level

**Salt:** Salt to a softener is what gasoline is to a car. Not only must a softener have salt, but it should be the proper type to insure efficient recharging of the unit. Ask your dealer what type of salt may best suit your needs. Always have an adequate supply of salt on hand. Check the salt level of your brine tank every couple of weeks initially to determine how much salt you use - this will depend on how much water you use. As a rule of thumb, with 20 gpg hard water, about a 1/2 lb. of salt per person per day is used. In other words, a family of four uses 60 lbs. of salt a month. **Fill the tank approximately three-fourths full, with a minimum of 12" of salt.** If your household does not use much water, do not fill your brine tank over 1/2 full, salt bridging may occur in the brine tank. This may result in hard water due to ineffective regeneration. **DO NOT USE Block Salt** when the E3 control is programmed with a brine tank prefill. Block salt does not dissolve quickly enough to provide a good regeneration.

**Cleaning the Brine Tank:** The brine tank may require periodic cleaning. Inspect the brine tank at least once a year for buildup of insoluble materials. It is recommended to periodically clean the brine tank no matter what kind of salt you are using. See page 8, Maintenance #2 for details on cleaning.

**REMEMBER:** Salt is the fuel to run your water softener. Buy the **best clean salt available.**



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## FREQUENTLY ASKED QUESTIONS

- 1. Do I still use the same amount of soap in the dishwasher and clothes washer and showers now that I have a water softener?** No, the Water Quality Association states soft water can save up to 55% on detergent use. Start with using half the amount of detergent previously used, this can be adjusted up or down based on preference.
- 2. What is the health impact of drinking soft water?** The sodium added to water by a softener is a non-issue most of the time, even for people on a sodium-restricted diet. One could soften up to 75 grains per gallon water with sodium chloride and still be well within the US Food and Drug Administration's guidelines for a "Low Sodium" beverage. People on a sodium-restricted diet should consult their physician.
- 3. Should I use soft water for my plants?** Some plants may be sensitive to even minute amounts of sodium. Suggest using hard water for watering plants, often a kitchen cold faucet is plumbed for hard water or the outside faucets are usually plumbed for hard water. If not, you can place your softener on bypass and fill water containers at the closest sink. Water from a reverse osmosis system can always be used to water plants.
- 4. Will water spots disappear now that I have soft water?** Water spots caused by hardness scale will disappear with a functioning water softener. However, other natural minerals dissolved in the water may cause spotting in high enough concentrations. These mineral spots will be much easier to wipe away compared to hardness spotting.
- 5. Will soft water cause my water or ice cubes to look or taste different?** Most people can tell the difference in taste between hard and soft water, it is a personal preference. Ice cubes will appear the same, they may look cloudy due to air in water or dissolved minerals, and this will not change because they are made with softened water. A reverse osmosis drinking water system will provide clearer ice cubes.

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## OPERATING CONDITIONS

Your water conditioner has been designed to adequately handle up to 100 grains per gallon of hardness as well as up to 2 ppm of ferrous bicarbonate iron. This is iron that is dissolved in water and not visible to the eye in a freshly drawn sample. Upon standing in contact with air, the ferrous iron will become oxidized to the ferric state and start to precipitate as a reddish brown floc. It can be seen and may cause discolored water. In order for your softener to remove the iron, air (oxygen) must be kept from coming in contact with water until after it has been

passed through the water conditioner. In some cases, additional equipment may be required to treat water supplies having special characteristics, such as: ferric hydroxide iron, iron bacteria, low pH, taste and odors, etc. If any question should exist, contact your dealer.

**This water softener is not intended to be used for treating water that is microbiologically unsafe or of unknown quality without adequate disinfection before or after treatment.**

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## PRE-INSTALLATION CHECK LIST

(All electrical & plumbing should be done in accordance to all local codes)

**Water Pressure:** A minimum of 25 pounds of water pressure (psi) is required for regeneration. Maximum 125 psi.

**Water Quality:** On rural water supplies there is often a problem with sand or sediment in the water. (This problem occasionally occurs in public water supplies.) If the water is not filtered before being softened, the sand and sediment may plug up the water softener restricting the flow through the resin bed. This problem often requires rebedding of the mineral tank. **Note:** *Well and/or pump problems affecting the operation of the softener are repairs that are not covered under warranty. To prevent these unnecessary, and expensive repairs that are not covered under warranty, we recommend the installation of an in-line filter system ahead of a water softener.*

**Electrical:** A continuous 110 volt 60 cycle current supply is required. *Make certain the current supply is uninterrupted and cannot be turned off with another switch. All electrical connections must be connected per local codes. Surge protection is recommended with all electric controls.*

**Existing Plumbing:** Condition of existing plumbing must be free from lime and iron build-up. Piping that is built-up heavily

with lime and/or iron must be replaced. If piping is blocked with iron, additional equipment must be installed ahead of the water conditioner to correct the problem.

**Drain Line:** The softener should be located close to a drain. Avoid overhead drain lines if possible to prevent back pressure on the brine injector. Overhead drains are not to exceed 8 feet above the floor and no more than 20 feet in length. The pipe size for the drain line should be a minimum of 3/4". Backwash flow rates in excess of 7 gpm or length in excess of 20' require 1" drain line.

**Bypass Valves:** Always provide for the installation of a bypass valve.

**Softening:** It is recommended that the conditioner be installed to soften both the hot and cold water supply. A separate hard water faucet may be plumbed for drinking purposes if desired. Outside faucets should be left on hard water.

**Caution:** Water temperature is not to exceed 110°F; the conditioner cannot be subject to freezing conditions, or to a vacuum due to loss of pressure (such as a water main break).

# PROGRAMMING LEVEL 1

## GENERAL INFORMATION

The E3 control valve is the “brain” of your water softener. It consists of the valve body and powerhead with solid state microprocessor.

The display panel (see Figure 2) consists of the LCD display and five push buttons which are used in displaying and programming the water softener settings.

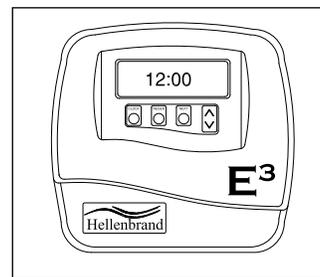
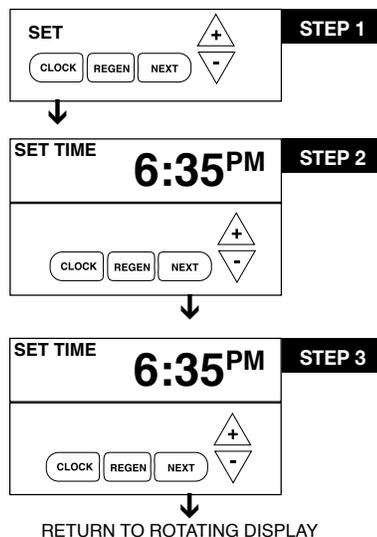


Figure 2

## SET TIME OF DAY



△ = ▲ Up Arrow    ▽ = ▼ Down Arrow

**Step 1** - Press SET CLOCK.

**Step 2** - Current Time (hour): Set the hour of the day using ▲ or ▼ buttons. AM/PM toggles after 12. Press NEXT to go to step 3.

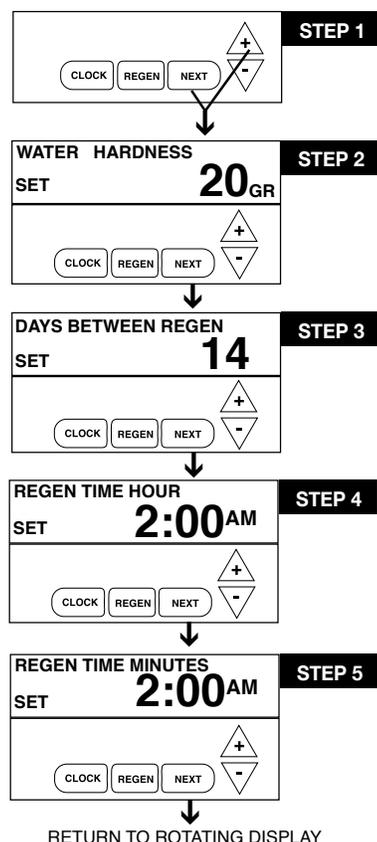
**Step 3** - Current Time (minutes): Set the minutes of day using ▲ or ▼ buttons. Press NEXT to exit Set Clock. Press REGEN to return to previous step.

**Power Loss** - Lithium battery on circuit board provides up to 2 years of time clock backup during power outages. If the power is out when battery is depleted, only time of day needs to be reset, all other values are stored in non-volatile memory. When time of day is flashing, replace lithium coin type 2032 battery.

Battery back-up feature will be activated after 24 hours of power.

Do not forget to reset for daylight savings time.

## SETTINGS - HARDNESS, DAY OVERRIDE, REGENERATION TIME



**Step 1** - Press NEXT and ▲ simultaneously for 3 seconds.

**Step 2 - HARDNESS:** Set the amount of total compensated hardness in grains (hardness as calcium carbonate) per gallon using ▲ or ▼ buttons. **The factory setting is 20** with value ranges from 1 to 150 in 1 grain increments. Note: The grains per gallon should be increased if soluble iron needs to be reduced. Add 3 grains of hardness for each ppm of iron present. If this display shows nA -, then system is set-up in “filter” mode or “AUTO” is not selected in softener system setup. Press NEXT to go to Step 3. Press REGEN to exit Settings.

**Step 3 - DAY OVERRIDE:** This sets the number of days between regenerations. If value set to “oFF” regeneration initiation is based solely on gallons used. If value is set as a number (allowable range from 1 to 28) a regeneration initiation will be called for on that day even if sufficient number of gallons were not used to call for a regeneration. Set Day Override using ▲ or ▼ buttons: **Factory setting is 14 days.**

- number of days between regeneration (1 to 28); or
- “oFF”

**Step 4 - REGENERATION TIME (hour):** Set the hour of day for regeneration using ▲ or ▼ buttons. AM/PM toggles after 12. The factory setting time is 2:00 a.m. Press NEXT to go to step 5. Press REGEN to return to previous step.

**NOTE:** When installing this unit as part of a multi unit parallel system the regen time of day must be adjusted to prevent multiple units from regenerating at the same time.

**Step 5 - REGENERATION TIME (minutes):** Set the minutes of day for regeneration using ▲ or ▼ buttons. This display will not be shown if system is set for immediate regeneration. Press NEXT to exit Installer Displays/Settings. Press REGEN to return to previous step.

# START-UP

## BYPASS VALVE OPERATION

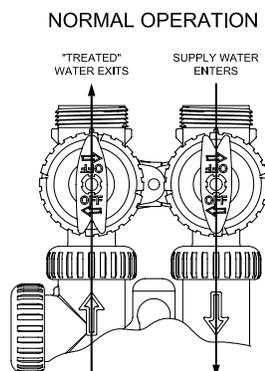


Figure 3

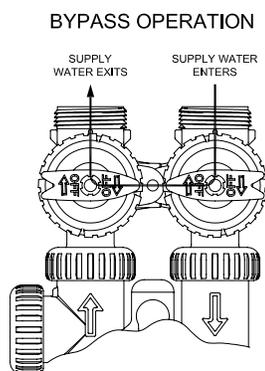


Figure 4

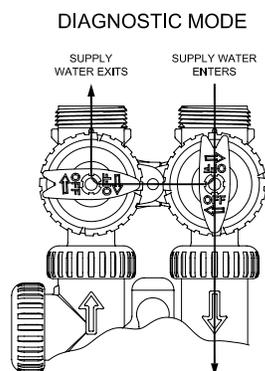


Figure 5

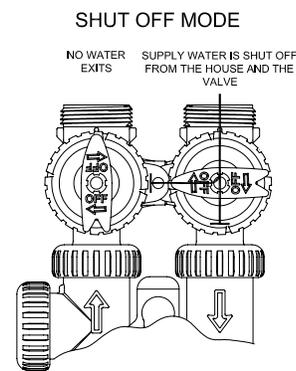


Figure 6

## INITIAL START-UP

The initial start up will probably be done by the technician installing the softener system. If not, the following instructions will step you through the process.

1. Complete all plumbing connections: inlet, outlet, drain line and brine line. Do not add salt at this time.
2. Place the bypass valve in the bypass position. (See figure 4 above) Turn on the main water supply. Open a cold soft water faucet to flush the piping of any air and/or foreign material. Run until the water is clear.
3. Manually add 6 inches of water to the brine tank.
4. Now plug the transformer into a 110-volt receptacle. (Be certain the outlet is uninterrupted.) Within 5 seconds the control will automatically align itself into the softening mode and display will automatically alternate between time of day, gal/min and gallons remaining. (Figure 7, page 7).
5. Set the time of day by pushing clock button (page 5) and using ▲ and ▼ buttons.
6. Push REGEN button and hold it down for 3 seconds. The system will advance to the "First" position. (Note: Depending on how the system is programmed it could read backwash, rinse, brine or fill). Pushing REGEN button until "Rinse" shows in the left upper hand corner of display. Slowly place the bypass into the "diagnostic mode" (see fig 5, above). Run water to the drain until it runs clear. Return the bypass valve to the by-pass position (fig 4, above). Push REGEN button until unit is back to softening mode.
7. Once again, push REGEN button and hold down for 3 seconds. Keep pressing REGEN button until "Back-

wash" appears. Slowly place the bypass valve into the "Diagnostic Mode" 1/2 way. Allow water to slowly fill the mineral tank. When a solid stream of water starts coming out of the drain line, open the bypass inlet valve all the way and allow to run out the drain until water clears. Then slowly place the by-pass into the "normal operation" mode by opening the outlet side of bypass valve (figure 3, above).

8. Press the REGEN button until LCD display says "REGENERANT DRAW DN". Open the brine tank and confirm that the 6" of water you added in Step 3 is now being drawn out through the softener and to the drain. If water is not being drawn out contact your installer for assistance. Allow softener to draw water down to the bottom of the air check, (item 13, page 10).
9. Press REGEN button again until LCD once again displays "BACKWASH". Keep in backwash until water once again runs clear at the drain.
10. Press REGEN button again until "RINSE" is displayed. Allow rinse cycle to run its full course. While the rinse cycle is finishing, load brine tank with salt. If utilizing brine reclaim, manually add full volume of water to brine tank for first regeneration.
11. Once the rinse cycle has finished the softener control will return to the softening cycle. The LCD screen will scroll between "TIME/GPM/GALLONS REMAINING".
12. Next set your softeners water hardness, days override and regeneration time settings (page 5).

Your programming is now complete.

# GENERAL OPERATING INFORMATION

## WATER SOFTENER DISINFECTION

The construction materials of your water softener will not support bacterial growth nor will these materials contaminate a water supply. However, the normal conditions existing during shipping, storage, and installation indicate the advisability of disinfecting a softener after installation, before the softener is used to treat potable water. In addition, during normal use a softener may become fouled with organic matter or in some cases, with bacteria from the water supply.

Therefore, every water softener should be disinfected after installation, some will require periodic disinfection during their normal life. You have two choices for disinfection as follows:

- A. SODIUM HYPOCHLORITE (household bleach)
  - 5.25% SODIUM HYPOCHLORITE solutions are available under such trade names such as Clorox, Linco, Bo Peep,

White Sail and Eagle Brand Bleach. If stronger solutions are used, such as those sold for commercial laundries, adjust the dosage accordingly.

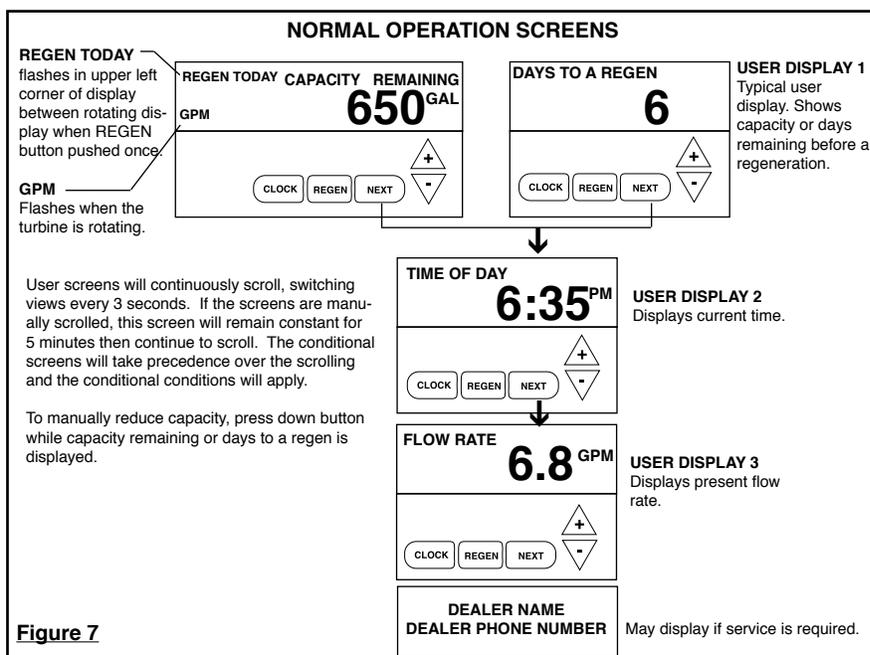
1. Dosage:
    - a. Softening resin; 1.2 fluid ounce per cubic foot of resin.
  2. Add the required amount of hypochlorite solution to the brine well of the brine tank.
    - a. Proceed with the normal regeneration. Press REGEN and allow the water softener to go through a normal regeneration.
- B. EPA and NSF approved Sani-System by Pro Products. This can be purchased from your water treatment provider or at: <http://proproducts.com/products/sani-system>.

## USER DISPLAYS/SETTINGS

### General Operation

When the system is operating, one of several displays may be shown. Pressing NEXT will alternate between the displays. One of the displays is the current time of day. The second display is the following: days to a regen/gallons remaining. Capacity remaining is the number of gallons that will be treated before the system goes through a regeneration cycle. The third display is current flow in gal/min. The user can scroll between the displays as desired by pushing NEXT or display will scroll automatically.

When water is being treated (i.e. water is flowing through the system) the word "GPM" flashes on left side of display when other than flow rate is displayed.



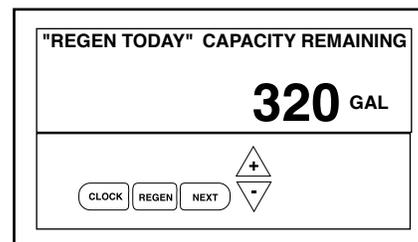
## MANUAL REGENERATION

Sometimes there is a need to regenerate the system sooner than when the system calls for it, usually referred to as manual regeneration. There may be a period of heavy water usage because of guests or a heavy laundry day.

To initiate a manual regeneration at the preset delayed regeneration time, press and release "REGEN". The words "REGEN TODAY" will flash in left corner of display as it scrolls through displays to indicate that the system will regenerate at the preset delayed regeneration time. If you pressed the "REGEN" button in error, pressing the button again will cancel the request.

To initiate a manual regeneration immediately, press and hold the "REGEN" button for five seconds. The system will begin to regenerate immediately. The request cannot be cancelled. You must cycle all the way through the cycles to make it stop. PLEASE NOTE: This will reset the meter.

**Note:** If the salt tank does not contain salt, fill with salt and wait at least two hours before regenerating. If two regenerations are desired within 24 hour period, press /release REGEN button. REGEN TODAY will flash on screen. Press and hold REGEN button until valve initiates regeneration.



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## MAINTENANCE

1. Salt Usage: See your water conditioning professional for a recommendation on the best type of salt for your application. See page 3 - Maintaining Salt Level.
2. Brine Tank Cleaning:
  - a. Remove brine tank cover.
  - b. Scoop out as much old salt as possible.
  - c. Disconnect brine tubing from safety brine valve at brine well.
  - d. Remove safety brine valve from brine well.
  - e. Place one hand in brine well to hold overflow nut and remove 2-piece overflow.
  - f. Remove brine well and optional grid plate, if used, from brine tank.
  - g. Remove any remaining salt and/or impurities from brine tank.
  - h. Using clean water and a brush or rag, wipe and rinse inside of brine tank. Wipe and rinse the grid plate and brine well.
  - i. Reassemble brine tank reversing steps c - f. Note: If grid plate is used and it is damaged or cracked, replace with new one.
  - j. Put brine tank in place making sure there is no debris or foreign material beneath it.
  - k. Reconnect brine tubing to safety brine valve.
  - l. Manually add 6 inches of water to the brine tank (or to approximately 1" above the grid plate, if used).
  - m. Add new salt. Important: Do not add the old salt which was removed earlier unless it is clean and not mushy. We recommend using new salt.
  - n. Follow the disinfection instructions found on page 7.
  - o. Put on brine tank cover.

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## WATER SOFTENER DRAINING PROCEDURE

In cold weather climates it is common for plumbing systems that are not in use to be "winterized" or drained of all water to prevent any damage that may be caused by the excessive expansion of water when it freezes. To prevent damage to a water softener it must be **properly** drained also. A simple way to properly drain or winterize a water softener is to use compressed air to force all of the water out of the softener mineral tank. The following procedure will explain the process:

- 1) Initiate the softener into a manual regeneration cycle. After the refill cycle, advance control to backwash by pressing the NEXT button until backwash appears on the screen. Allow it to complete the backwash cycle (this will clean the media) and start into the brine-draw cycle. Allow the regeneration to continue in the brine draw cycle until the brine is drawn out of the brine tank and the air check at the bottom of the brine pick-up tube shuts off. **NOTE: Be sure you have salt in the brine tank and allow 1 hour minimum to make a saturated brine. It is important that any liquid left in the softener tank when you finished blowing out system be saturated brine solution to prevent any damage to the softener.** At this time no more brine is introduced into the softener and the slow rinse process begins.
- 2) Turn the water supply inlet and outlet valves off to the water softener as soon as the air check shuts off and no more brine is being drawn into the softener (at the beginning of the slow rinse process).
- 3) Unplug the electric power leaving the softener control valve in the brine draw cycle.
- 4) Remove the brine refill elbow assembly from the control valve. Remove the refill flow control retainer assembly from the elbow. Reinstall the elbow assembly and secure with the locking clip. Disconnect the brine tube at the top of the brine tank and force air into the brine tube toward the softener mineral tank and control valve. The air will force the brine/water solution that was drawn into the mineral tank out to drain through the control valve drain line. (An air compressor blow gun attachment with a portable air compressor works well.) Reinstall the brine line flow control retainer in side of the refill elbow assembly. Reinstall the brine refill elbow assembly and secure with locking clip.

**CAUTION:** You do not want to apply any more pressure than necessary to force the brine/water out of the mineral tank.

The small amount of brine/water that may be left in the mineral tank will not expand enough to cause any damage to the softener when it freezes.

If your softener is equipped with an optional bottom drain on the mineral tank, you will have to follow all of the same procedures with the exception of the need for compressed air. With the brine tube disconnected from the brine tank, raise it to a level above the softener control valve and temporarily secure it in this position. Now open the drain valve at the bottom of the mineral tank and allow all brine/water to drain from the mineral tank.

**CAUTION:** If a hose is connected to the drain valve to direct the brine/water to a floor drain be sure it runs downward and is unobstructed. When brine/water quits running at the drain, be sure to leave the drain valve open until you start the system up again.

- 5) At this time the brine tank has very little water left in it. What liquid is left in the brine tank is saturated brine, provided that there is still salt left in the tank. Saturated brine will not freeze solid and cause any damage and does not have to be drained any further from the brine tank.

If there is no salt left in the brine tank when the system is drained we recommend dumping all of the water out of the brine tank at this time. See brine tank cleaning instructions. (#2 in Maintenance section, page 7)

- 6) **CAUTION:** It is important at this time to be assured that the inlet/outlet water supply piping is properly drained. Depending on how the water supply piping was routed to the water softener control valve, a water loop or trap may have been created.

Sometimes drain valve(s) are installed at the bottom of the loop to assure all water can be drained out. If not it may be necessary to disconnect the control valve from the piping system and open the inlet/outlet valve(s) to allow all the water to drain from the piping. This should be done after the rest of the plumbing system is drained.

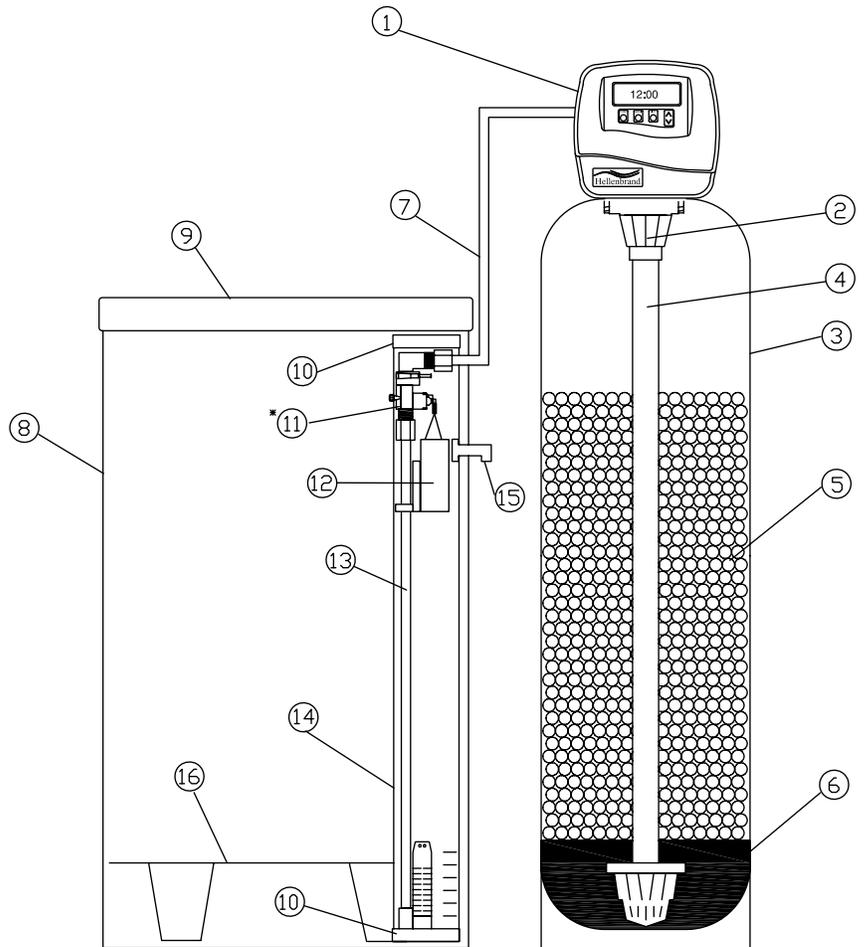
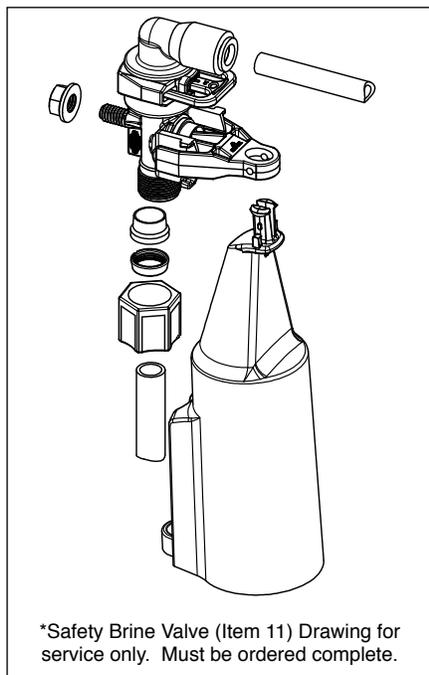
- 7) Draining or winterizing of your softener is complete. Refer to the start-up procedures on page 6 when you are ready to start your softener.

# TROUBLE SHOOTING

PROBLEM	CAUSE	CORRECTION
1. Control valve stalled in regeneration	A. Motor not operating	A1. Verify power supply at outlet A2. Contact your local Hellenbrand dealer for onsite service
2. Control valve does not regenerate automatically when REGEN button is depressed and held	A. Does display show an error code	A. Contact your local Hellenbrand dealer for onsite service
3. Control valve does not regenerate automatically but does when REGEN button is depressed	A. Bypass valve in bypass position	A. Put bypass valve in service position (See diagram on page 6)
4. Time of day flashes on and off	A. Battery back-up maintains time-of-day up to 2 years in event of power outage and battery is not depleted. Time of day flashes when battery is depleted. B. Prior to 2/2007, PC board did not have battery back-up - capacitor held time of day up to 2 hours. Power outage > 2 hours.	A. Reset time of day and replace battery on PC Board, Lithium coin type battery 2032 B. Reset time of day.
5. Softener delivers hard water.	A. Bypass valve is open or faulty. B. No salt or low salt level in brine tank.	A. Put bypass in service position B. Add salt to brine tank and maintain salt level above water level.
6. Unit uses too much salt.	A. Improper brine refill setting.	A. Contact your local Hellenbrand dealer for onsite service
7. Softener delivers salty water.	A. Low water pressure. B. Excessive water in brine tank.	A. Run extra regeneration B. If problem persists, contact your local Hellenbrand dealer for onsite service
8. Continuous flow to drain.	A. Piston position error.	A. Contact your local Hellenbrand dealer for onsite service
9. Loss of water pressure.	A. Iron build-up in resin, resin bed fouled.	A. Contact your local Hellenbrand dealer for onsite service
10. Iron in softened water.	A. Iron has fouled resin bed. B. Prefilter failure. C. Control fails to regenerate	A. Use iron reducing resin cleaner to clean resin bed, and increase salt dosage or regenerate more frequently or rebed softener. Install an Iron Curtain System ahead of the softener. B. Check prefilter if installed C. If problem persists contact your Hellenbrand dealer for onsite service.
11. Absent or incomplete LCD display	A. Transformer unplugged B. Battery depleted C. Defective transformer	A. Plug transformer into uninterrupted outlet B. Replace battery, Lithium coin type battery 2032 C. Contact your Hellenbrand dealer for onsite service
12. Control does not display correct time of day	A. Power outage > 2 years B. Power outage < 2 years, time of day flashing, battery depleted	A. Reset time of day B. Replace lithium coin type battery on circuit board Lithium coin type battery 2032
13. No "softening" or "filtering" display when water is flowing	A. Bypass valve in bypass position B. Meter connection disconnected	A. Put bypass valve in service position B. Connect meter to PC board If problem persists contact your Hellenbrand dealer for onsite service.
14. Control valve regenerates at wrong time of day	A. Power outages > 24 hours B. Time of day not set correctly	A. Reset control valve to correct time of day B. Reset to correct time of day If problem persists contact your Hellenbrand dealer for onsite service.

# SERIES CONDITIONER & BRINE TANK ASSEMBLIES

Item	Description	Qty	Part #	
1	Control Center-Metered	1	109370	Specify Size (see pages 13-17 for detailed components)
2	Top Diffuser	1	101539	
3&4	Mineral Tank Assembly			Item 3 only      Item 4 only
			<b>Mineral Tank</b>	<b>Distributor Assy</b>
	-024 8 x 44	1	109290	101505
	-032 9 x 48	1	109291	101508
	-032 10 x 44	1	109292	101505
	-048 10 x 54	1	109293	101512
	-064 12 x 52	1	109846	101510
5	Ion Exchange Resin	*	101123	*See Specifications for amount
6	Underbedding	*	100983	*See Specifications for amount
7	3/8" x 6" Brine Line	1	102671	
8 a	Brine Tank Assy (18x33) No Grid-Black	1	104409	
8 b	Brine Tank Assy (18x40) No Grid-Black	1	104415	
9 a,b	Brine Tank Cover 18"	1	Included with 8 a,b	
10-14a	Safety Brine Valve Assy 33"	1	101302	
10 b,c	Safety Brine Valve Assy 40"	1	101305	
10	Cap, Brine Well	2	101365	
11*	Safety Brine Valve	1	101274	
12	Float Assembly	1	101660	
13	Air Check	1	101181	
14 a	Brine Well 33"	1	102876	
14 b,c	Brine Well 40"	1	102877	
15	2-Piece Overflow	1	102217	
-	Owners Manual	1	800540	



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## GENERAL SPECIFICATIONS

### OPERATING PRESSURES

Minimum/Maximum .....25 psi-120 psi

### OPERATING TEMPERATURES

Minimum/Maximum .....40° - 110° F

### METER

Accuracy.....±5%

Flow Rate Range.....0.25 - 27 GPM

Gallon Range .....20 - 50,000

### DIMENSIONS

Drain Line .....3/4" or 1" NPT

Brine Line .....3/8" Poly Tube

**ELECTRICAL CURRENT DRAW AND VOLTAGE**.....0.5A 110v

Compatible with the following regenerants or chemicals: Sodium chloride, potassium permanganate, sodium bisulfite, sodium hydroxide, hydroxide, hydrochloric acid, chlorine and chloramines.

## FRONT COVER AND DRIVE ASSEMBLY

ITEM NO.	ORDER NO.	DESCRIPTION	QTY.
1	109380	Black Cover Assy w/ Label	1
2-6	101610	Drive Assy.	*
2	102096	Motor	1
3	101262	Drive Bracket & Spring Clip	1
4	109379	PC Board	1
5	101746	Drive Gear 12x36	3
6	101459	Drive Gear Cover	1
Not Shown	102653	Transformer 110V-12V	1

After completing any valve maintenance involving the drive assembly or the drive cap assembly and pistons, press and hold NEXT and REGEN buttons for 3 seconds or unplug power source jack from the printed circuit board (black wire) and plug back in. This resets the electronics and establishes the service piston position. The display should flash all wording, then flash the software version (ex: 154) and then reset the valve to the service position.

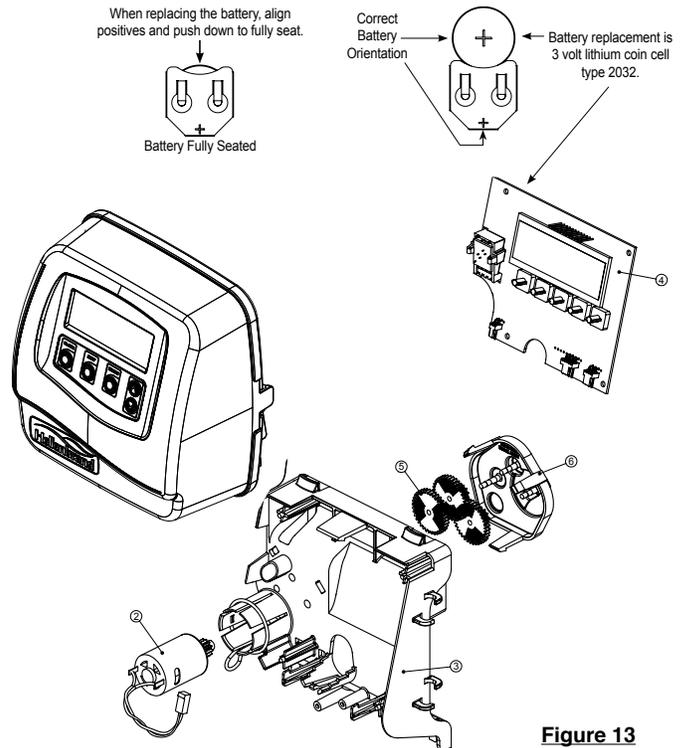


Figure 13

## DRIVE CAP ASSEMBLY, DOWNFLOW PISTON, REGENERANT PISTON AND SPACER STACK ASSEMBLY

ITEM NO.	ORDER NO.	DESCRIPTION	QTY.
1	102548	Spacer Stack Assy	1
2	101613	Drive Cap Assy.	1
3	102167	O-Ring 228	1
4a	102292	Piston Downflow Assy.	1**
4b	102297	Piston Upflow Assy.	1
5	102296	Regenerant Piston	1
6	102192	O-ring 337-tank	1
7	102165	O-ring distributor tube	1
Not Shown	102892	Service Wrench	1

\*102292 is labeled with DN and 102297 is labeled with UP.  
 Note: The regenerant piston is not used in backwash only applications.  
 \*\*Standard Option.

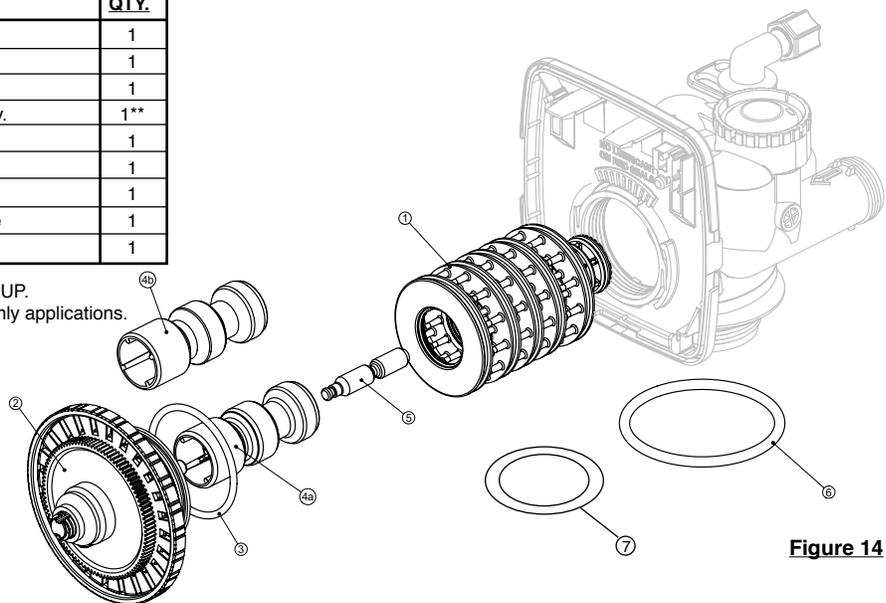


Figure 14

Do not use vaseline, oils, other hydrocarbon lubricants or spray silicone anywhere. A silicon lubricant may be used on black o-rings but is not necessary. **Avoid any type of lubricants, including silicone, on red or clear lip seals.**

After completing any valve maintenance involving the drive assembly or the drive cap assembly and pistons, press and hold NEXT and REGEN buttons for 3 seconds or unplug power source jack from the printed circuit board (black wire) and plug back in. This resets the electronics and establishes the service piston position. The display should flash all wording, then flash the software version (ex: 154) and then reset the valve to the service position.

# INJECTOR CAP, INJECTOR SCREEN, INJECTOR, PLUG AND O-RING

ITEM NO.	ORDER NO.	DESCRIPTION	QTY.
1	101375	Injector Cap	1
2	102159	O-ring 135	1
3	102457	Injector Screen	1
4	102319	Injector Assy. Z Plug-Filter	1
5	101825	Injector Assy. A Black	1
	101826	Injector Assy. B Brown	
	101827	Injector Assy. C Violet	
	101828	Injector Assy. D Red	
	101829	Injector Assy. E White	
	101830	Injector Assy. F Blue	
	101831	Injector Assy. G Yellow	
	101832	Injector Assy. H Green	
	101833	Injector Assy. I Orange	
	101834	Injector Assy. J Light Blue	
	101835	Injector Assy. K Light Green	
Not Shown	106767	O-ring 011	*
Not Shown	106768	O-ring 013	*

\* The injector plug and the injector each contain one 011 (lower) and 013 (upper) o-ring.

See system specification, injector color on page 18 for current injector.

Note: For upflow position, injector is located in the up hole and injector plug in the down hole. For a filter that only backwashes injector plugs are located in both holes.

The nuts and caps are designed to be unscrewed or tightened by hand or with the special plastic wrench. If necessary a pliers can be used to unscrew the nut or cap. Do not use a pipe wrench to tighten or loosen nuts or caps. Do not place screwdriver in slots on caps and/or tap with a hammer.

Do not use pipe dope or other sealants on threads. Teflon tape must be used on threads of the 1" NPT connection and on the threads for the drain line connection. Teflon tape is not necessary on the nut connection nor caps because of o-rings seals.

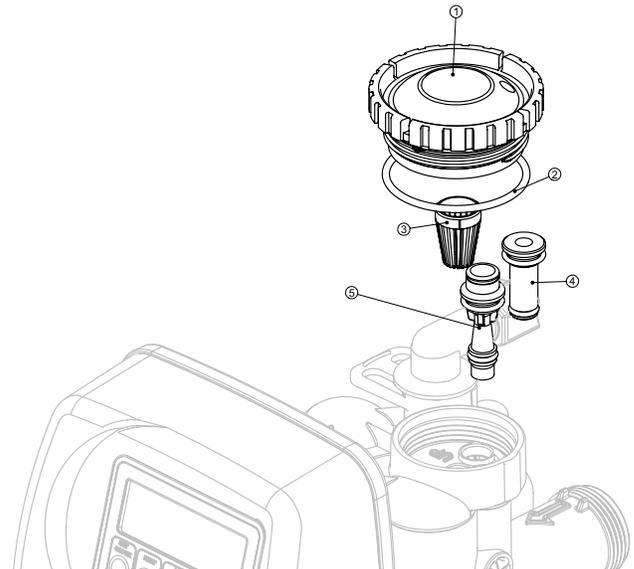
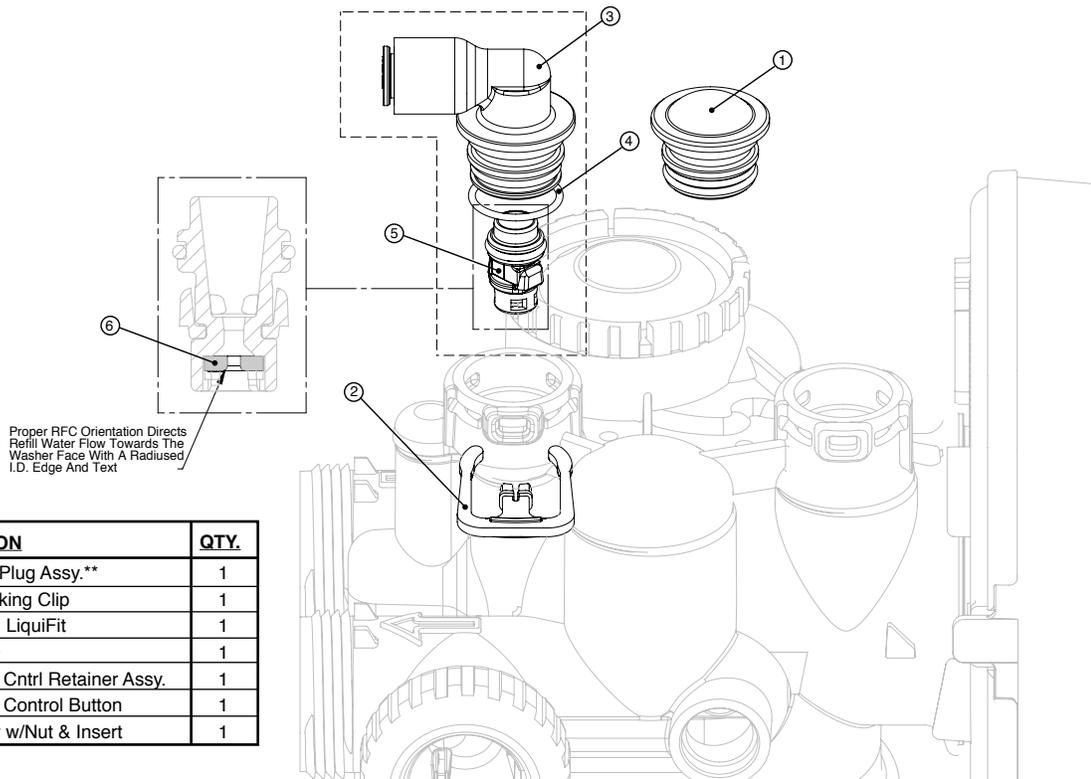


Figure 15

# REFILL AND REFILL PORT PLUG



ITEM NO.	ORDER NO.	DESCRIPTION	QTY.
1	102322	Refill Port Plug Assy.**	1
2	101414	Elbow Locking Clip	1
3	111389	Elbow 3/8" LiquiFit	1
4	102153	O-ring 019	1
5	102418*	Refill Flow Cntrl Retainer Assy.	1
6	102421	Refill Flow Control Button	1
Not Shown	101617	1/2" Elbow w/Nut & Insert	1

\*Assembly includes item #6.

\*\*This part is required for backwash only systems.

Figure 16

## DRAIN LINE - 3/4"

ITEM NO.	ORDER NO.	DESCRIPTION	QTY.
1	101414	Elbow Locking Clip	1
2	101871	Polytube Insert, 5/8"	Optional
3	102131	Nut, 3/4" Drain Elbow	Optional
4-5	101618	Drain Elbow 3/4" Male Assy-Vent	Optional
4-5	<b>101619</b>	<b>Drain Elbow 3/4" Male Assy-No Vent</b>	<b>1</b>
5	102153	O-ring 019	1
6	102406	DLFC Retainer Assy.	1
7	101551	DLFC 0.7 gpm for 3/4"	One DLFC must be used if 3/4" fitting is used
	101552	DLFC 1.0 gpm for 3/4"	
	101556	DLFC 1.3 gpm for 3/4"	
	101559	DLFC 1.7 gpm for 3/4"	
	101574	DLFC 2.2 gpm for 3/4"	
	101577	DLFC 2.7 gpm for 3/4"	
	101583	DLFC 3.2 gpm for 3/4"	
	101588	DLFC 4.2 gpm for 3/4"	
	101591	DLFC 5.3 gpm for 3/4"	
	101593	DLFC 6.5 gpm for 3/4"	
	101595	DLFC 7.5 gpm for 3/4"	
	101598	DLFC 9.0 gpm for 3/4"	
	101561	DLFC 10.0 gpm for 3/4"	

Systems are shipped without 3/4" nut for drain elbow (polytube installation only) and 5/8" polytube insert (polytube installation only).

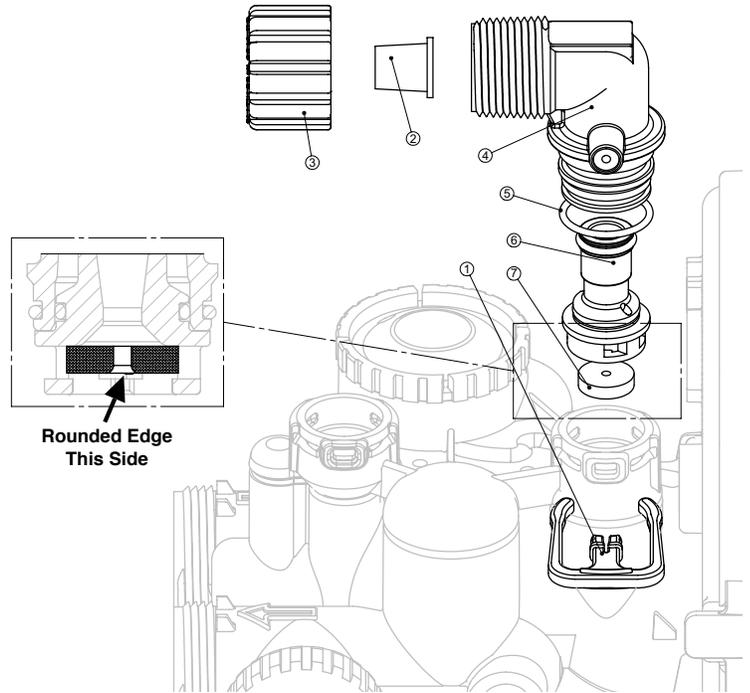


Figure 17

## DRAIN LINE - 1"

ITEM NO.	ORDER NO.	DESCRIPTION	QTY.
1	101414	Elbow Locking Clip	1
2-8	<b>101636</b>	<b>Drain Ftg, 1" Straight Asy-No Vent</b>	<b>1</b>
3*	101244	Drain Ftg Body, 1"	1
4*	101160	Drain Ftg Adapter, 1"	1
5*	102153	O-ring 019	1
6*	102437	Split Ring	1
7*	102141	Nut, 1" QC	1
8*	102165	O-ring 215	1
9	101599	DLFC 9.0 gpm for 1"	One DLFC must be used if 1" fitting is used
	101562	DLFC 10.0 gpm for 1"	
	101564	DLFC 11.0 gpm for 1"	
	101567	DLFC 13.0 gpm for 1"	
	101568	DLFC 15.0 gpm for 1"	
	101571	DLFC 17.0 gpm for 1"	
	101578	DLFC 20.0 gpm for 1"	
	101580	DLFC 25.0 gpm for 1"	

The nuts and caps are designed to be unscrewed or tightened by hand or with the special plastic wrench. If necessary a pliers can be used to unscrew the nut or cap. Do not use a pipe wrench to tighten or loosen nuts or caps. Do not place screwdriver in slots on caps and/or tap with a hammer.

Do not use pipe dope or other sealants on threads. Teflon tape must be used on threads of the 1" NPT connection and on the threads for the drain line connection. Teflon tape is not necessary on the nut connection nor caps because of o-rings seals.

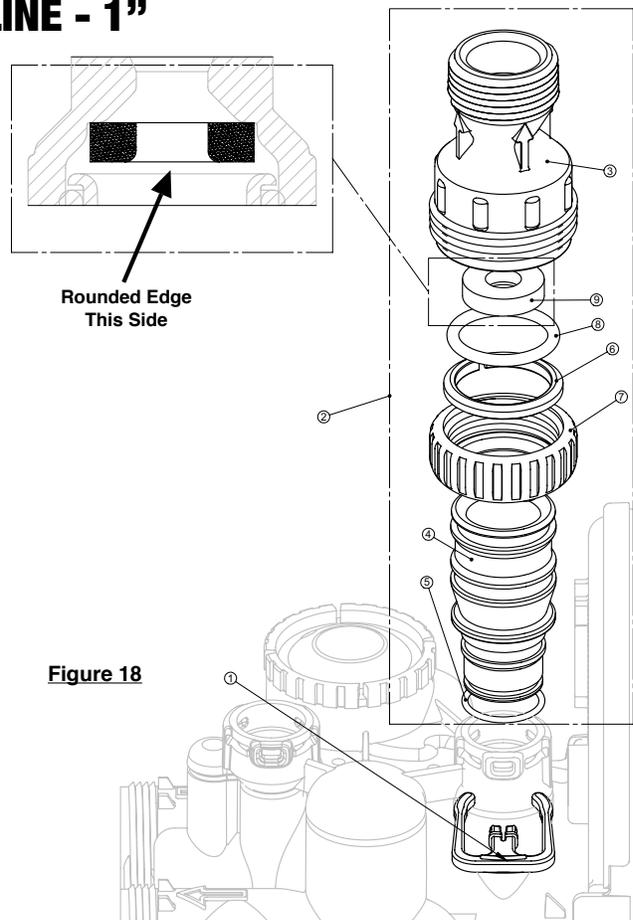


Figure 18

## WATER METER AND METER PLUG

ITEM NO.	ORDER NO.	DESCRIPTION	QTY.
1	102141	Nut 1" QC	1
2-4	102051*	Meter Assy.	1
3	102687	Turbine Assy.	1
4	102165	O-ring 215	1
5	102321	Meter Plug Assy.**	1

\*Order number 102051 includes 102687 and 102165, which are item numbers 3 & 4.

\*\*Only used if metering is not to be done (time clock units)

The nuts and caps are designed to be unscrewed or tightened by hand or with the special plastic wrench. If necessary a pliers can be used to unscrew the nut or cap. Do not use a pipe wrench to tighten or loosen nuts or caps. Do not place screwdriver in slots on caps and/or tap with a hammer.

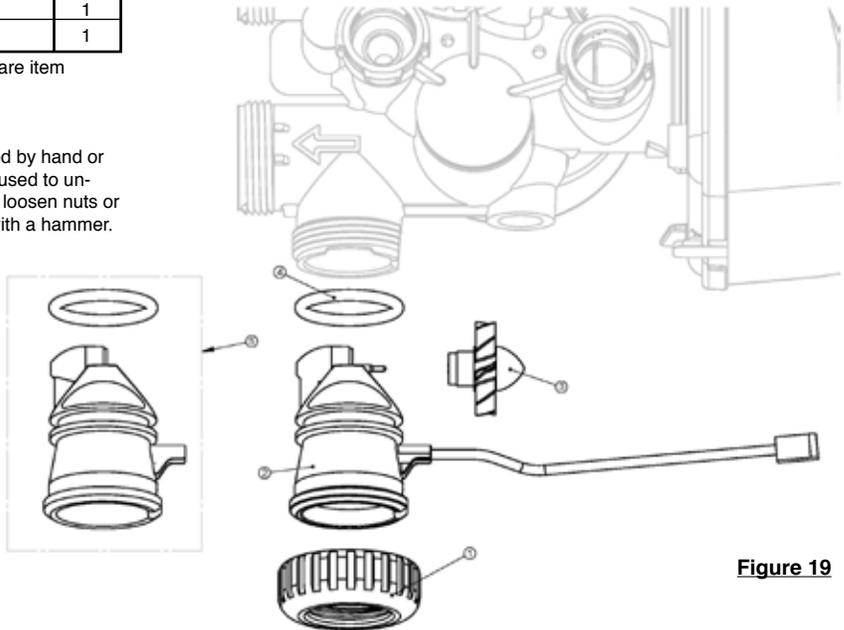


Figure 19

## BYPASS VALVE

ITEM NO.	ORDER NO.	DESCRIPTION	QTY.
1	101325	Complete Bypass Assembly	

**NOTE: Individual Bypass Components Are Not Available, Must Order Complete Bypass Assembly.**

ITEM NO.	ORDER NO.	DESCRIPTION	QTY.
Not Shown	101172	Bypass 90° Vert. Assy.	
1	102141	Nut 1" Quick Connect	2
2	102437	Split Ring	2
3	102165	O-Ring 215	2
11*	101172	Bypass Vertical Adpt. Assy.	2

\*11 (Not Shown)

The nuts and caps are designed to be unscrewed or tightened by hand or with the special plastic wrench. If necessary a pliers can be used to unscrew the nut or cap. Do not use a pipe wrench to tighten or loosen nuts or caps. Do not place screwdriver in slots on caps and/or tap with a hammer.

Do not use pipe dope or other sealants on threads. Teflon tape must be used on threads of the 1" NPT connection and on the threads for the drain line connection. Teflon tape is not necessary on the nut connection nor caps because of o-rings seals.

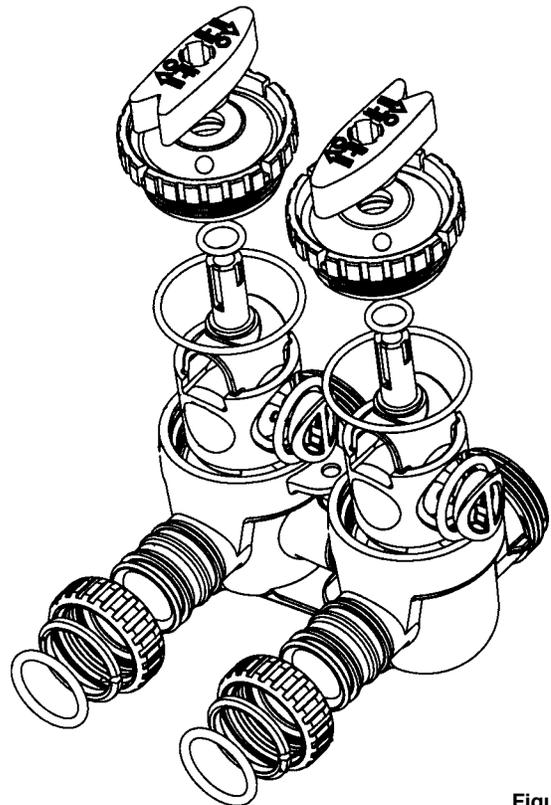


Figure 20

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# **RESIDENTIAL WATER SOFTENER & FILTER WARRANTY**

## **INCLUDES – E3, H100, WaterMate-1, WaterMate-2, WaterMate-3, WaterMate-3.2**

## **EXCLUDES – Striker Filter Systems**

**(Warranty Updated 8/14)**

Hellenbrand, Inc. (“Hellenbrand”) warrants to the original consumer purchaser that the System and the parts listed below will be free from defects in material and/or workmanship from the date of the original installation for the following time periods:

For a Period of FIVE YEARS: The filter control valve electrical parts including the motor and board, control valve body, and internal parts.

For a Period of TEN YEARS: Mineral tanks, 6” Diameter - 13” Diameter.

For a Period of FIVE YEARS: Mineral tanks, 14” Diameter - Up.

For a Period of FIVE YEARS: The salt storage/cabinet tank.

For a Period of ONE YEAR: The entire water conditioner system (“System”).

Any parts used for replacement are warranted for the remainder of the original warranty period for the applicable part.

THIS WARRANTY IS EFFECTIVE TO THE ORIGINAL CONSUMER PURCHASER ONLY, AND ONLY FOR AS LONG AS THE SYSTEM REMAINS AT THE ORIGINAL INSTALLATION SITE. COVERAGE TERMINATES IF YOU SELL OR OTHERWISE TRANSFER THE SYSTEM OR IF THE SYSTEM IS MOVED FROM THE ORIGINAL INSTALLATION SITE.

No sales representative, distributor, agent, dealer, reseller, authorized seller or any other person or entity is authorized to make any other warranty, or modify or expand the warranty provided herein on behalf of Hellenbrand. Upon expiration of the applicable warranty period, Hellenbrand shall have no further liability related to the System/parts to which the warranty period applies, except with respect to valid warranty claims asserted during the appropriate warranty period.

If the System or any part described above becomes defective within the specified warranty period, you should notify your local authorized seller of Hellenbrand products, and arrange a time during normal business hours for the inspection of the System at the original installation site. You may also contact Hellenbrand and we will provide you with the contact information for your local authorized seller of Hellenbrand products. Hellenbrand, at its option, will repair or replace the System or any part found defective within the terms of this warranty. You are responsible for freight from our factory and any service fees charged by the local authorized seller of Hellenbrand products for installation, repair, removal, replacement, service, etc., of any System or parts. This warranty does not include any labor charges. This paragraph sets forth the exclusive remedy for any valid warranty claims against Hellenbrand.

THIS WARRANTY DOES NOT COVER defects caused by sand, sediment or bacteria fouling, accident, fire, flood, Act of God, misuse, misapplication, neglect, alteration, installation or operation contrary to Hellenbrand’s printed instructions, or installation, repair or service by anyone other than Hellenbrand or an authorized seller of Hellenbrand products.

IN ADDITION, THIS WARRANTY DOES NOT COVER UNPROTECTED OUTDOOR INSTALLATIONS. This System, including all of the electrical components, must be protected against windblown dust, falling and windblown rain, freezing temperatures and the formation of ice, with an appropriate enclosure consisting of a floor, roof, walls, ventilation and heat.

As a manufacturer, we do not know the characteristics of your water supply or the purpose for which you are purchasing this system. You should be aware that the quality of water supplies may vary seasonally or over a period of time, and that your water usage rate may vary as well. Water characteristics may change considerably if this System is moved to a new location. For these reasons, Hellenbrand assumes no liability for the determination of the proper equipment necessary to meet your needs; and Hellenbrand does not authorize others to assume such obligations for Hellenbrand.

TO THE EXTENT PERMITTED BY APPLICABLE LAW, REMEDIES FOR DEFECTS OR FAILURES ARE LIMITED TO THE REMEDIES PROVIDED IN THIS WARRANTY. THERE ARE NO EXPRESS WARRANTIES OTHER THAN THOSE SET FORTH HEREIN. ANY IMPLIED WARRANTIES, INCLUDING WITHOUT LIMITATION WARRANTIES OF MERCHANTABILITY, FITNESS FOR PARTICULAR PURPOSE, NON-INFRINGEMENT, OR ANY WARRANTIES ARISING FROM COURSE OF PERFORMANCE, COURSE OF DEALING, OR FROM USAGES OF TRADE, ARE LIMITED IN DURATION TO THE APPLICABLE WARRANTY PERIOD SET FORTH ABOVE.

UNDER NO CIRCUMSTANCES SHALL HELLENBRAND BE LIABLE TO THE ORIGINAL CONSUMER PURCHASER OR TO ANY OTHER PERSON FOR ANY INCIDENTAL, INDIRECT, SPECIAL OR CONSEQUENTIAL DAMAGES OR FOR ANY OTHER LOSS, DAMAGE, OR EXPENSE OF ANY KIND, INCLUDING LOSS OF PROFITS, WHETHER ARISING OUT OF BREACH OF WARRANTY, BREACH OF CONTRACT, IN TORT OR OTHERWISE, AND REGARDLESS OF WHETHER HELLENBRAND WAS AWARE OF THE POSSIBILITY OF SUCH LOSS. THESE LIMITATIONS WILL APPLY REGARDLESS OF ANY FAILURE OF ESSENTIAL PURPOSE OF ANY LIMITED REMEDY.

Some states do not allow limitations on how long an implied warranty lasts, so the above limitations may not apply to you. Similarly, some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.