

*Hellenbrand*<sup>®</sup>

**ProMate<sup>®</sup> 6.0**  
WATER CONDITIONING SYSTEM



## Owner's Manual

p/n 800198 Rev. B  
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©2016-2017

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This owner's manual is designed to assist owners and installers with the operation, maintenance and installation of your new water softener. It is our sincere hope that this manual is clear, concise and helpful to both owner and installer. We have included detailed instructions on general operating conditions, pre-installation and installation instructions, start-up, and timer and meter programming. We have included a troubleshooting guide, service instructions and parts diagrams to assist you.

Owners will appreciate the simplified, illustrated format for operation, programming and troubleshooting. **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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# JOB SPECIFICATION SHEET

MODEL NO. \_\_\_\_\_

## \*WATER TEST AT TIME OF INSTALLATION

\_\_\_\_\_ Hardness CaCo<sub>3</sub> (gpg)                      \_\_\_\_\_ Other \_\_\_\_\_  
\_\_\_\_\_ Iron (ppm)                                      \_\_\_\_\_ Other \_\_\_\_\_  
\_\_\_\_\_ pH    \_\_\_\_\_ Other \_\_\_\_\_

## OPTIONAL RELAY SETTINGS

\_\_\_\_\_ Off

## ALT MAV

\_\_\_\_\_ Alternator system enabled  
\_\_\_\_\_ Reclamation mode enabled  
\_\_\_\_\_ No Hard By-pass enabled  
\_\_\_\_\_ Separate Source enabled  
\_\_\_\_\_ System Board

## AUX MAV

\_\_\_\_\_ Brine Reclaim Enabled  
\_\_\_\_\_ Separate Source Enabled

## Relay 1 Trigger

\_\_\_\_\_ **On Time**  
\_\_\_\_\_ Start Time, Minutes into Regeneration  
\_\_\_\_\_ Run Time

\_\_\_\_\_ **On Gallons**  
Pulse per \_\_\_\_\_ Gallons  
\_\_\_\_\_ Time Relay Closed

\_\_\_\_\_ **On Regen Gallons**  
(Relay activated by flow through meter during service & regeneration)  
Pulse per \_\_\_\_\_ Gallons  
\_\_\_\_\_ Time Relay Closed

\_\_\_\_\_ **On Service Alarm**  
\_\_\_\_\_ Years  
\_\_\_\_\_ Gallons

## Relay 2 Trigger

\_\_\_\_\_ **On Time**  
\_\_\_\_\_ Start Time, Minutes into Regeneration  
\_\_\_\_\_ Run Time

\_\_\_\_\_ **On Gallons**  
Pulse per \_\_\_\_\_ Gallons  
\_\_\_\_\_ Time Relay Closed

\_\_\_\_\_ **On Regen Gallons**  
(Relay activated by flow through meter during service & regeneration)  
Pulse per \_\_\_\_\_ Gallons  
\_\_\_\_\_ Time Relay Closed

\_\_\_\_\_ **On Service Alarm**  
\_\_\_\_\_ Years  
\_\_\_\_\_ Gallons  
\_\_\_\_\_ **Error**

## \*SIZING INFORMATION

All Water is Softened Except:

\_\_\_\_\_ Rear Hose Bib    \_\_\_\_\_ Front Hose Bib    \_\_\_\_\_ Kitchen Cold    \_\_\_\_\_ Toilets    \_\_\_\_\_ All Cold  
\_\_\_\_\_ Other \_\_\_\_\_

The average family uses 75 gallons per person daily for all water uses in the home, about 50 gallons per person daily if soft water is not supplied to the toilets, and about 30 gallons per person daily if only hot water is softened.

\_\_\_\_\_ Daily Water Usage (Gallons/Person)  
x \_\_\_\_\_ Family Size (Number of people in family)  
= \_\_\_\_\_ Total Gallons Per Day  
x \_\_\_\_\_ Grains Per Gallon of Hardness  
(Note: Add 3 grains per gallon of hardness for each ppm iron for total compensated hardness)  
= \_\_\_\_\_ Total Grains Per Day

\*INSTALLATION DATE \_\_\_\_\_

\*SERIAL NUMBER \_\_\_\_\_

NOTES \_\_\_\_\_

# SOFT WATER BASICS

## 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.

## 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.

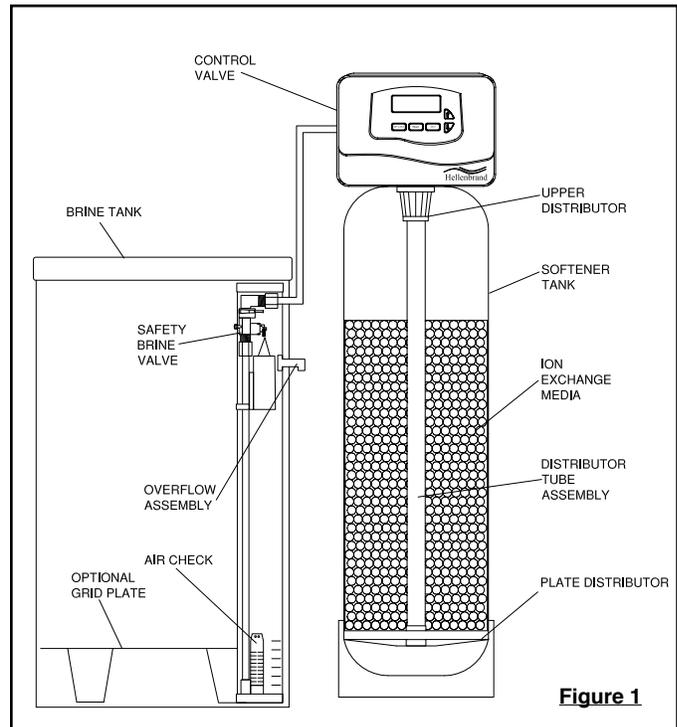
During the regeneration cycle the softening media is also backwashed. This reversing of the normal flow of water serves to remove sediment which may have accumulated during the softening process due to the filtering action of the exchange media. Backwashing also loosens and fluffs up the bed of exchange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

## Maintenance of Your Softener

**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 salt keeper 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 ProMate control is programmed with a brine tank prefill. Block salt does not dissolve quickly enough to provide a good regeneration.

**Cleaning Salt Tank:** The salt tank may require periodic cleaning. Inspect the salt tank at least once a year for buildup of insoluble materials. It is recommended to periodically clean the salt tank no matter what kind of salt you are using. See page 20, Miscellaneous #2 for details on cleaning.

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



## 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.**

# 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).

## BYPASS VALVE OPERATION

NORMAL OPERATION

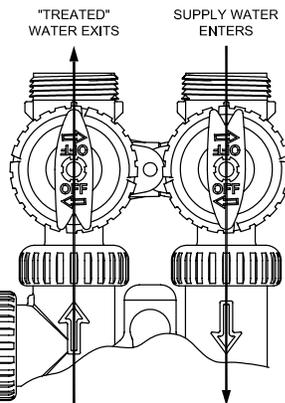


Figure 2

BYPASS OPERATION

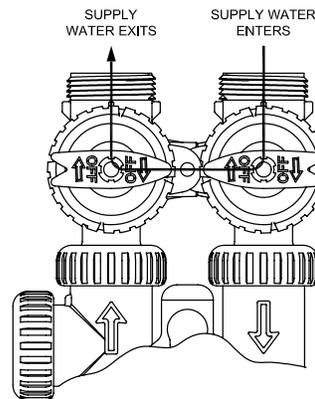


Figure 3

DIAGNOSTIC MODE

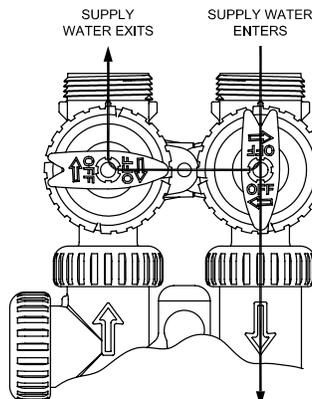


Figure 4

SHUT OFF MODE

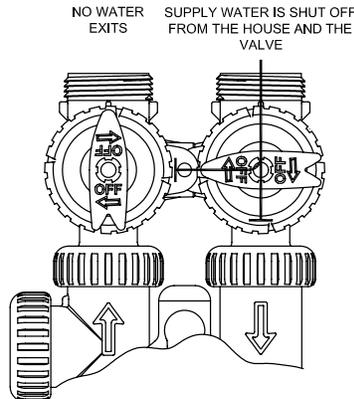


Figure 5

# INSTALLATION INSTRUCTIONS

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

## CAUTION:

- Do not use vaseline, oils or 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.**
  - Do not use pipe dope or other sealants on threads. Only teflon tape may be used on threads. Teflon tape is not necessary on the nut connection or caps because of o-ring seals.
  - 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.
1. Place the conditioner where you want to install it, making sure it is on a clean, level and firm base.
  2. Do all necessary plumbing (inlet to inlet, outlet to outlet and drain line to drain). The control valve, fittings and/or bypass are designed to accommodate minor plumbing misalignments but are not designed to support the weight of a system or the plumbing.
  3. When assembling the installation fitting package (inlet and outlet), connect the fitting to the plumbing system first and then attach the nut, split ring and o-ring. Heat from soldering or solvent cements may damage the nut, split ring or o-ring. Solder joints should be cool and solvent cements should be set before installing the nut, split ring and o-ring. Avoid getting primer and solvent cement on any part of the o-rings, split rings, bypass valve or control valve.
  4. **A jumper ground wire should be installed between the inlet and outlet pipe whenever the metallic continuity of a water distribution piping system is interrupted. Install grounding strap on metal pipes.**

5. The drain connection may be made using either 5/8" polytube (See figure 6a, page 6) or a 3/4" female adapter. If soldering, joints near the drain must be done prior to connecting the drain line flow control fitting. Leave at least 6" between the drain line control fitting and solder joints when soldering pipes that are connected on the drain line control fitting. Failure to do this could cause interior damage to the drain line flow control fitting.
6. The brine refill flow control assembly is installed in an easy to access refill elbow located on top of the control valve. The refill flow control assembly is attached to the control valve with a locking clip. The locking clip allows the elbow to rotate 270 degrees so the outlet can be orientated towards the salt tank.
7. Connect the brine line found in the brine tank to the brine connection on the control valve. The control valve has a standard refill elbow to which a 3/8" flexible tube can be connected, see figure 6a, page 6. (An optional elbow can be ordered which accommodates a 1/2" flexible tube for a high regenerant draw rate situation). Both elbows use the same refill flow control and retainer. Make sure the floor is clean beneath the salt tank and that it is level and smooth.
8. A 1/2" (inside diameter) gravity drain line may be connected to the overflow fitting on the side of the brine tank. This overflow is in case of a malfunction in the brine shut off. If the unit is installed where water may flow in the event of an overflow and cause water damage, connect a length of flexible tubing and run to a drain below the level of the overflow. **(Do not connect the tubing to the drain line on the control valve. Do not run tubing above overflow height at any point.)**

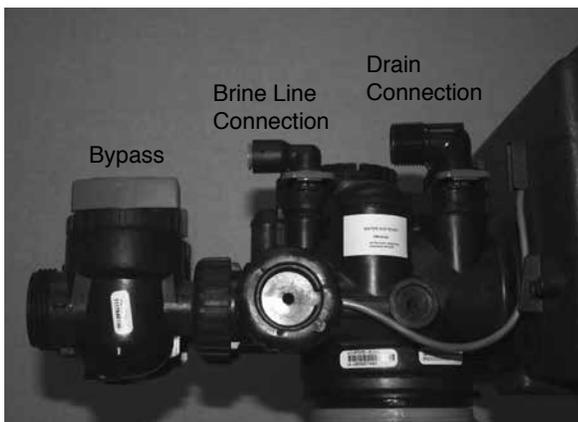


Figure 6a

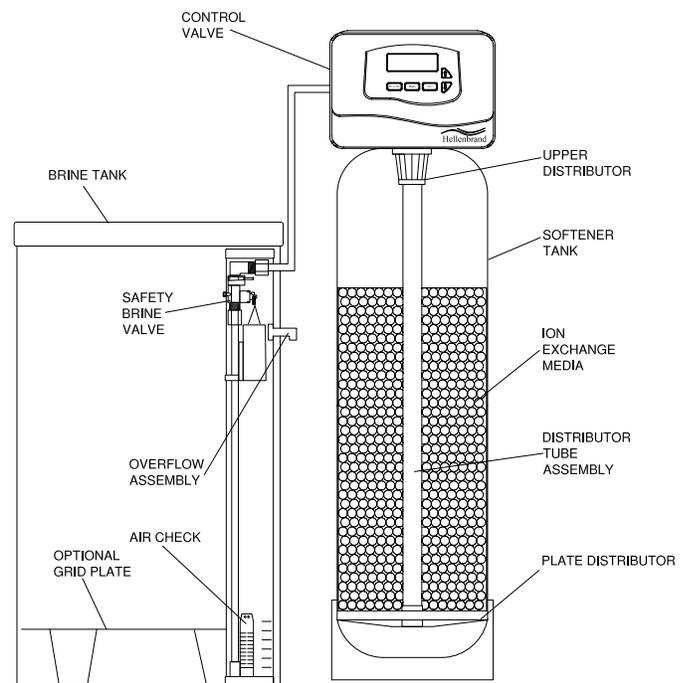


Figure 6b

# PROGRAMMING

## General Information

The ProMate-6.0 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 7) consists of the LCD display and five push buttons which are used in displaying and programming the water softener settings.

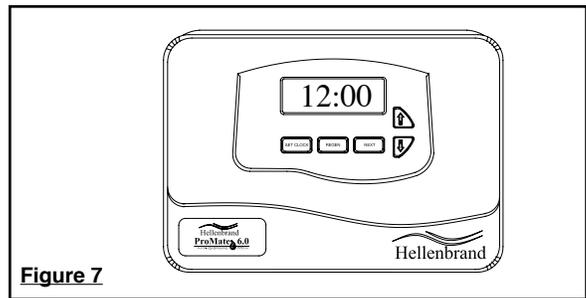


Figure 7

## 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 3 page 5) 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 8, page 7).
5. Set the time of day by pushing clock button (figure 9, page 8) 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 4, page 5). Run water to the drain until it runs clear. Return the bypass valve to the by-pass position (fig 3, page 5). 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 2, page 5.

8. Press the REGEN button until LCD display says “REGENERANT DRAWN”. Loosen the brine line from the elbow on control valve in the brine tank. Place finger over the end of the elbow to check for suction. If no suction, see trouble-shooting guide. (See #10, Page 22) If proper suction, reattach brine tube and allow it to draw water down to the bottom of the air check, (figure 6b, page 6).
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 (see figure 10a, page 8).

Your programming is now complete.

## 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. Days To A Regen is the number of days left before the system goes through a regeneration cycle. 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.

## USER DISPLAYS/SETTINGS

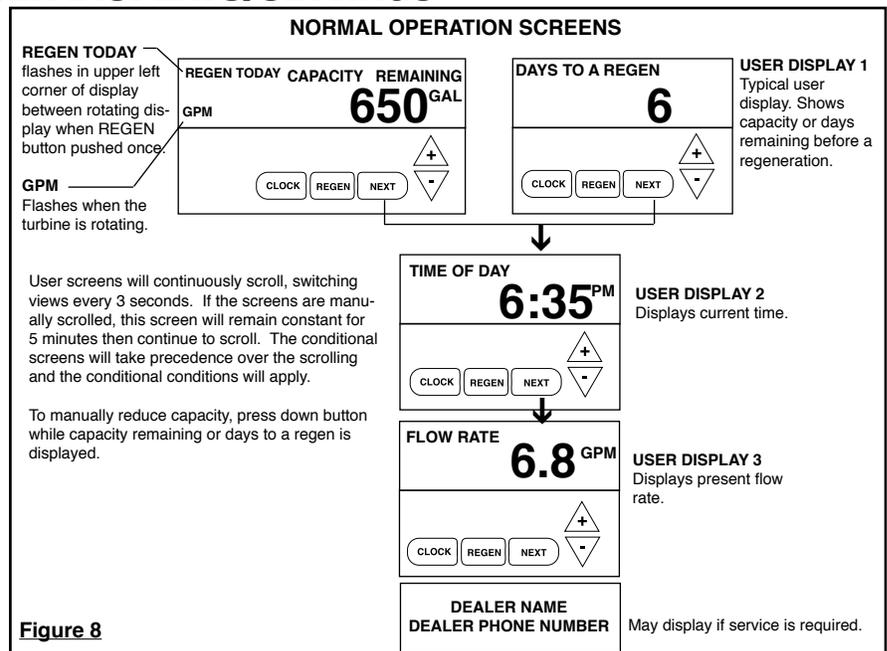
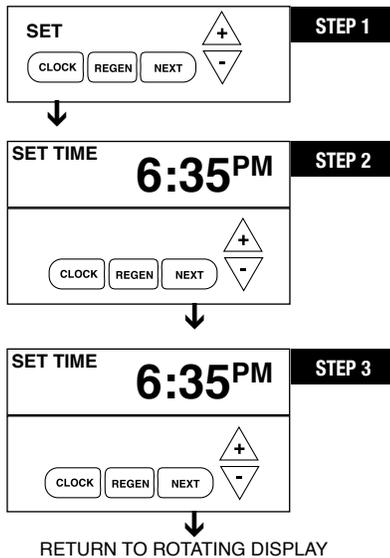


Figure 8

## 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.

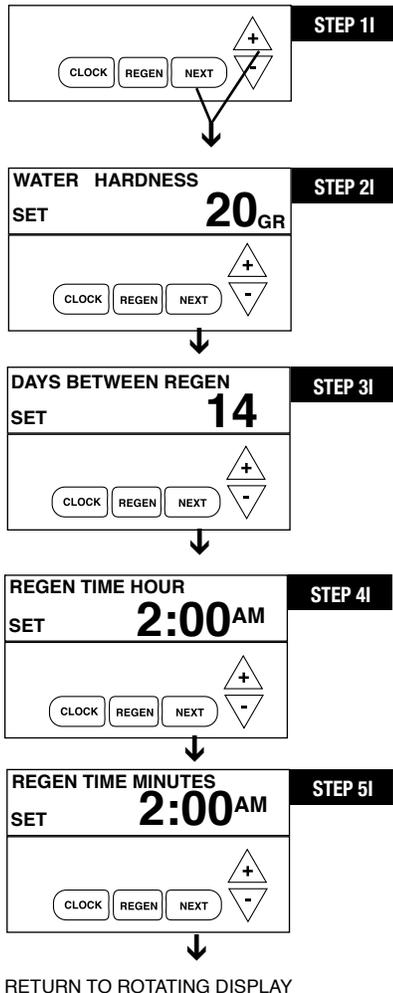
Battery back-up feature will be activated after 24 hours of power.

Do not forget to reset for daylight savings time.

Figure 9

## INSTALLER DISPLAYS/SETTINGS

▲ = ▲ Up Arrow    ▼ = ▼ Down Arrow



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

**Step 2I - 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. (See page 32). Press NEXT to go to Step 3. Press REGEN to exit Installer Displays/Settings.

**Step 3I - 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"

See pages 9-12, for more detail on softener setup. Press NEXT to go to step 4. Press REGEN to return to previous step.

**Step 4I - 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. This display will show "REGEN" "IMMEDIATE ON ZERO GAL" if "Immediate" is selected on Step 12 of softener set-up. See page 32. 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.

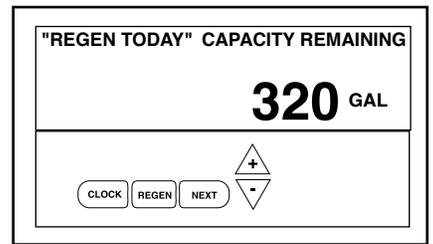
**Step 5I - Regeneration Time (minutes):** Set the minutes of day for regeneration using ▲ or ▼ buttons. This display will not be shown if system is set for immediate regeneration. Press NEXT to exit Installer Displays/Settings. Press REGEN to return to previous step.

Figure 10a

## 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.**

## Regeneration Mode

Typically a system is set to regenerate at a time of low water usage. An example of a time with low water usage is when the household is asleep. If there is a demand for water when the system is regenerating, untreated water will be supplied.

Regeneration Step  
(shows time remaining in regen step  
is 8 minutes, 22 seconds)

When the system begins to regenerate, the display will change to include information about the step of the regeneration process and the time remaining for that step to be completed (see figure 11). The system runs through the steps automatically and will reset itself to provide treated water when the regeneration has been completed.



Figure 11

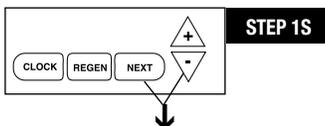
## CYCLE TIME ADJUSTMENTS

Normally it is not recommended to adjust the lengths of the cycle times. However, certain water conditions may dictate adjustments. This should only be done from the recommendation of a water conditioning professional. The following chart shows the upper and lower limits of each cycle.

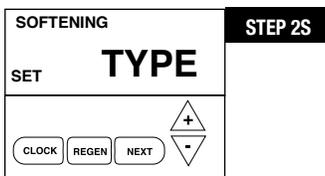
Cycle Options	Units	Lower/Upper Limit	Factory Setting
Fill	Lbs.	0.1 to 200	See Page 30
Softening (Service)	Minutes	1 to 480	120
Backwash	Minutes	1 to 120	8
Regenerant Draw DN	Minutes	1 to 180	60
Rinse-Fast	Minutes	1 to 120	4

## SOFTENER SETUP

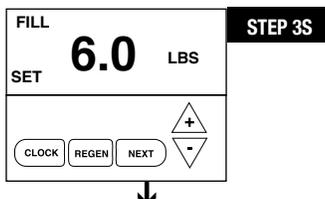
▲ = ▲ Up Arrow    ▼ = ▼ Down Arrow



**STEP 1S** – Press NEXT and ▼ simultaneously for 3 seconds. If screen in Step 2S does not appear in 5 seconds the lock on the valve is activated.



**STEP 2S** – Select between softening or filtering. A flashing "SOFTENING" or "FILTERING" will appear. Choose SOFTENING using ▼ or ▲ button. **Factory setting is Softening.** Press NEXT to go to Step 3S. Press REGEN to exit Softener System Setup.



**STEP 3S** – Select the time for the first cycle (which in this example is FILL, setting is changed by lbs. of salt entered) using the ▼ or ▲ button. **Factory setting is Low Salting,** See page 30. Press NEXT to go to Step 4S. Press REGEN to return to previous step.

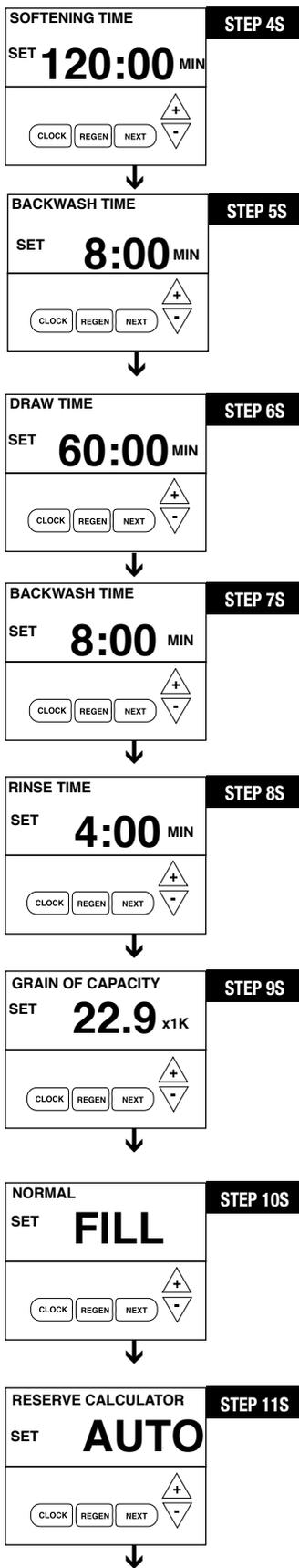


Figure 12a

**STEP 4 S – Select the time for the second cycle** (which in this example is SOFTENING) using ▼ or ▲ button. Press NEXT to go to Step 5S. Press REGEN to return to the previous step.

**STEP 5 S – Select the time for the third cycle** (which in this example is BACKWASH) using the ▼ or ▲ button. Press NEXT to go to Step 6S. Press REGEN to return to the previous step.

**STEP 6 S – Select the time for the fourth cycle** (which in this example is BRINE DRAW) using the ▼ or ▲ button. Press NEXT to go to Step 7S. Press REGEN to return to the previous step.

**STEP 7 S – Select the time for the fifth cycle** (which in this example is SECOND BACKWASH) using the ▼ or ▲ button. Press NEXT to go to Step 8S. Press REGEN to return to the previous step.

**STEP 8 S – Select the time for the sixth cycle** (which in this example is RINSE) using the ▼ or ▲ button. Press NEXT to go to Step 9S. Press REGEN to return to the previous step.

**STEP 9 S - Set Grain Capacity** using the ▼ or ▲ button. The ion exchange capacity is in grains of hardness as calcium carbonate for the system based on the pounds of salt that will be used. The allowable grains capacity range varies from 5,000 to 3,000,000 grains. The increment increase is 500 for the range from 5000 to 30,000; 1000 for the range of 30,000 to 100,000; and 2000 for the range of 100,000 to 3,000,000. Grains capacity is affected by the fill time. The grains capacity for the selected lbs. salting should be confirmed by testing. The capacity and hardness levels entered are used to automatically calculate reserve capacity when gallon capacity is set to AUTO. **Factory setting is the capacity of the softener at low salting.** See Page 30. Press NEXT to go to Step 10S. Press REGEN to return to previous step.

**STEP 10 S – Select between proportional or normal brining.** Use ▼ or ▲ buttons to select. **Proportional brining is only available if configured as prefill/upflow softener or screen will not appear.** Proportional brining will divide the actual gallons used by calculated volumetric capacity then multiply fill volume by this percentage. This option requires a functioning meter. **Factory Setting = Normal brining.** Press NEXT to go to Step 11S. Press REGEN to return to previous step.

**STEP 11 S – Set Gallons Capacity** using ▼ or ▲ button. If value is set to:

- “AUTO” gallon capacity will be automatically calculated and reserve capacity will be automatically estimated;
- “oFF” regeneration will be based solely on the day override set (see Installer Display/Settings Step 3, page 9 / proportional brining will not function if OFF selected); or
- as a number of gallons (allowable range 20 to 1,500,000) regeneration will be based on the value specified.

Increment increase is 20 for the range 20 to 2000, 100 for the range of 2000 to 10,000 and 500 for the range of 10,000 to 50,000 and 2000 for range of 50,000 to 1,500,000.

If “oFF” or a number is used, hardness cannot be set in Installer Displays/Settings Step 2, page 9. See page 32 for more detail. **Factory Setting is AUTO.** Press NEXT to go to Step 12 S. Press REGEN to return to previous step.

**STEP 12S**

DELAY + IMMEDIATE  
SET **REGEN**

CLOCK REGEN NEXT

**STEP 12 S – Set Regeneration Time Options** using the ▼ or ▲ button. If value is set to:

- “DELAY” means regeneration will occur at the preset time; (page 8, step 4)
- “IMMEDIATE” means regeneration will occur immediately when the gallons capacity reaches 0 (zero); or
- “DELAY + IMMEDIATE” means regeneration will occur at one of the following:
  - the preset time when the gallons capacity falls below the reserve or the specified number of days between regenerations is reached, whichever comes first; or
  - immediately after 10 minutes of no water usage when the gallon capacity reaches 0 (zero).

-Delay + Immediate is NOT available if control is programmed as a twin alternating configuration. Selecting "DELAY" will result in an immediate alternation upon capacity depletion but regeneration is delayed to preset time.

See page 32 for more options. **Factory Setting is DELAY + IMMEDIATE.** Press NEXT to go to Step 13S. Press REGEN to return to previous step.

**STEP 13S**

RELAY 1 "TIME"  
SET **TRIGGER**

CLOCK REGEN NEXT

**STEP 13 S – Set Relay to activate by Time, Gallons, Regen Gallons, Lockout, Off or Service Alarm** by using ▼ or ▲ buttons. A relay can be used to operate a chemical feed pump or solenoid, etc. The choices are:

- Relay Triggered on Time - Relay activates after set number of minutes after start of regeneration. Start of regeneration is defined by first backwash cycle, dn brine or up brine, whichever is first. Relay deactivates after set time. Press NEXT for programming.
- Relay Triggered on Gallons - Relay activates every set number of gallons while in service and deactivates after set time. Press NEXT to go to 17S for programming.
- Relay Triggered on Regen Gallons - Relay activates after set number of gallons in service or gallons used during regeneration and de-activates after set time or when meter stops registering flow, whichever comes first. Press NEXT to go to 20S for programming.
- Service Alarm - Relay activates on service alarm setting: gallons, time or both, see step 22S.
- Relay Triggered for Lockout - Relay is activated at set number of minutes into regeneration including negative numbers to energize relay prior to regeneration starting. Selection of energizing relay for complete regeneration cycle is available by selecting REGEN for time setting, see step 23S.
- **Off** - If off is selected, Steps 14S – 22S will not be shown. **Factory setting = OFF.** Press NEXT to go to step 14S or other selection for relay settings, or 23S if OFF selected.

**STEP 14S**

RELAY 1 SET POINT  
SET **10** MIN

CLOCK REGEN NEXT

**STEP 14 S –** If off was selected in previous step, this screen does not appear. **Time chosen to Activate Relay**, use up and down arrows to set # of minutes AFTER START OF REGEN to activate relay. Start of regeneration is defined as first Backwash or Regenerant Draw mode. Time Range = 1 – 500 minutes. Press NEXT to go to Step 15S.

**STEP 15S**

RELAY 1 DURATION  
SET **3:00** MIN

CLOCK REGEN NEXT

**STEP 15 S –** Use Up and Down arrows to set duration of relay activation in minutes. Range is 0:01 (1 second) to 500:00 (500 minutes). Press NEXT to go to Step 26S. Press REGEN to return to previous step.

**STEP 16S**

RELAY 1 "GALLONS"  
SET **TRIGGER**

CLOCK REGEN NEXT

**STEP 16 S – Gallons chosen to activate relay.** If Off or Time was selected in previous steps, this screen does not appear. Press NEXT for trigger programming.

**STEP 17S**

RELAY 1 SETPOINT  
SET **1** GAL

CLOCK REGEN NEXT

**STEP 17 S –** Use up and down arrows to set # of gallons per relay activation. Range = 0.1 – 20,000 gallons. Press NEXT for Relay Duration. Press REGEN to return to previous step.

**STEP 18S**

RELAY 1 DURATION  
SET **0:01** MIN

CLOCK REGEN NEXT

**STEP 18 S –** Use up and down arrows to set duration of relay activation in minutes. Range = 0:01 (1 second) - 500:00 (500 minutes). Press NEXT to go to Step 26S. Press REGEN to return to previous step.

**STEP 19S**

RELAY 1 "REGEN GALLONS"  
SET **TRIGGER** GAL

CLOCK REGEN NEXT

**STEP 19 S – REGEN gallons chosen to activate relay.** Relay activates after set number of gallons have been used in service or during regeneration and then de-activates after set period of time or after flow stops, whichever comes first. Press NEXT to go to Step 20S.

RELAY 1 SET POINT	<b>STEP 20S</b>
SET 1 GAL	
CLOCK REGEN NEXT	▲ ▼

**STEP 20S** – Use up and down arrows to select number of gallons per relay activation of regen gallon setting. Range: 0.1 -20,000 gallons. Press NEXT to go to Step 21S.

RELAY 1 DURATION	<b>STEP 21S</b>
SET 0:01 MIN	
CLOCK REGEN NEXT	▲ ▼

**STEP 21S** – If Off or Time was selected in previous steps, this screen does not appear. Use up and down arrows to set duration of relay activation in minutes. Range = 0:01 (1 second) - 500:00 (500 minutes). Press NEXT to go to Step 26S. Press REGEN to return to previous step. Meter does not read during regeneration.

RELAY 1 SERV ALARM	<b>STEP 22S</b>
SET TRIGGER	
CLOCK REGEN NEXT	▲ ▼

**STEP 22S**  
**Service Alarm chosen to activate relay**, relay closes whenever Service Alarm has triggered. Programming for relay closure on service reminder is done on Step 26S. Relay opens when service alarm reset. Press NEXT to go to Step 24S to set Relay 2 Settings. If off selected for Relay 2, service reminder programming on Step 26S.

- Relay closes on Gallons
- Relay closes on Time
- Relay closes on Both
- Off, **Factory setting is off**

RELAY 1 LOCKOUT	<b>STEP 23S</b>
SET TRIGGER	
CLOCK REGEN NEXT	▲ ▼

**STEP 23S**

**Relay Triggered for Lockout**, relay is activated for set number of minutes into regeneration including negative numbers to activate prior to regeneration starting. Press NEXT to Set Start Time.

RELAY 1 SETPOINT	<b>STEP 24S</b>
SET -20 MIN	
CLOCK REGEN NEXT	▲ ▼

**STEP 24S**

Use up or down arrows to select minutes of relay activation. Range = -20 – 500 minutes. Press NEXT to select duration of relay activation. You may select REGEN if relay activation is desired for complete regeneration.

RELAY 1 DURATION	<b>STEP 25S</b>
SET 70:00 MIN	
CLOCK REGEN NEXT	▲ ▼

**STEP 25S**

Use up or down arrows to select duration of relay activation. Range = 0:01 (1 second) - 500:00 (500 minutes). Press NEXT to go to Relay 2 programming.

RELAY 2 TRIGGER	<b>STEP 26S</b>
SET REGEN GAL	
CLOCK REGEN NEXT	▲ ▼

**STEP 26S** – Relay 2 programming includes identical options as Relay 1 with the addition of the ability to trigger Relay 2 in Error Mode. Relay closes when ever control enters Error Mode and immediately deactivates when error resolved and control reset. Press NEXT to go to Step 27S.

## SERVICE REMINDER

SERVICE ALARM  
SET BOTH

CLOCK REGEN NEXT

▲  
▼

STEP 27S

**STEP 27S** – Set scheduled service display using ▲ or ▼ buttons. Available options are OFF, TIME, ON GAL or BOTH. Selecting OFF disables this feature. If OFF is selected, press NEXT to exit System Setup. If TIME, ON GAL or BOTH is selected press NEXT to select the TIME and/or ON GAL values. See Steps 28S and/or 29S. When days fall below 1 year, display shows "SCHEDULED SERVICE in XXX DAYS", so service technician can reprogram if desired. This can also activate relay if Service Alarm is selected on Step 22S. Press REGEN to return to the previous step.

SCHEDULED SERVICE  
SET 0.25 YR

CLOCK REGEN NEXT

▲  
▼

STEP 28S

**STEP 28S** – Service alarm for TIME ranges from 0.25 to 9.75 years. Press ▲ and ▼ buttons together until "set" appears to select value. Press NEXT to either exit System Setup or if BOTH was selected go to Step 29S. Press REGEN to return to the previous step. When time selected and # of days drops below 1 year, the display in OEM program will show "scheduled service in XXX days" right after screen where service reminder is programmed.

SCHEDULED SERVICE  
SET 80000 GAL

CLOCK REGEN NEXT

▲  
▼

STEP 29S

**STEP 29S** – Service alarm for ON GAL ranges from 100 to 9,999,900 gallons. Press ▲ and ▼ buttons together until "set" appears, use arrows to select value. Press NEXT to exit System Setup. Press REGEN to return to the previous step.

Reset service reminder by pressing up and down arrows together when reminder is displayed.

RETURN TO NORMAL MODE

## DIAGNOSTICS

▲ = ▲ Up Arrow    ▼ = ▼ Down Arrow

**Reset Diagnostic Values:** Hold   NEXT/DOWN buttons for 3 seconds, then hold  UP/DOWN buttons for 3 seconds.

CLOCK REGEN NEXT

▲  
▼

STEP 1D

**STEP 1D** – Press ▼ or ▲ simultaneously for three seconds. If screen in step 2D does not appear in 5 seconds the lock on the valve is activated.

DAYS SINCE REGEN  
2 DAY

CLOCK REGEN NEXT

▲  
▼

STEP 2D

**STEP 2D – Days, since last regeneration:** This display shows the days since the last regeneration occurred. Press the NEXT button to go to Step 3D. Press REGEN to exit Diagnostics.

SINCE LAST REGEN  
342 GAL

CLOCK REGEN NEXT

▲  
▼

STEP 3D

**STEP 3D – Volume, since last regeneration:** This display shows gallons of water that has been treated since the last regeneration. This display will equal zero if a water meter is not installed. Press the NEXT button to go to Step 4D. Press REGEN to return to previous step.

RESERVE HISTORY  
DAY 0 160 GAL

CLOCK REGEN NEXT

▲  
▼

STEP 4D

**STEP 4D – Volume of reserve capacity used for last 7 days:** If the unit is set up as a softener, a meter is installed and Set Volume Capacity is set to "Auto", this display shows 0 day (for today) and the reserve capacity. Pressing the ▲ button will show day 1 (which would be yesterday) and displays the reserve capacity. Pressing the ▲ button again will show day 2 (the day before yesterday) and the reserve capacity. Keep pressing the ▲ button to show the capacity for days 3, 4, 5 and 6. The ▼ button can be pressed to move backwards in the day series. Press NEXT button at any time to go to Step 5D. Press REGEN to return to previous step.

**STEP 5D**

USAGE HISTORY  
DAY 1 108 GAL

CLOCK REGEN NEXT

**STEP 5D – Volume of water used, 63-day usage history:** This display shows day 0 (for today) and 1 (for yesterday) will show day 2 (which would be the day before yesterday) and flashes the volume of water treated on that day. Continue to press the ▲ button to show the volume of water treated for the last 63 days. If a regeneration occurred on the day, the "letter R" will also be displayed. This display will show dashes if a water meter is not installed. Press the NEXT button at any time to go to Step 6D. Press REGEN to return to the previous step.

**STEP 6D**

MAX FLOW  
DAY 6 12.7 GAL

CLOCK REGEN NEXT

**STEP 6D – Flow rate, maximum of each of last seven days:** The maximum flow rate in gallons per minute that occurred in each of the last seven days will be displayed. Press ▲ arrow to display maximum flow rate today = 0, yesterday = 1. This display will equal zero if a water meter is not installed. Resettable by pressing ▲ & ▼ arrows for 5 seconds. Press the NEXT button to exit Diagnostics. Press REGEN to return to the previous step.

**STEP 7D**

ALT + FIRST CYC TTT  
CCC VVV

CLOCK REGEN NEXT

**STEP 7D – MAV Drive History –** Not displayed if MAV set to off.

- First - Average of 1st three drive times of MAV in that direction
- Last - Last drive time measured for that MAV in that direction
- Ave - Average drive time measured for MAV in that direction
- TTT - Drive time (1424 = 14.24 seconds)
- CCC - Total number of cycles for that MAV
- VVV - Relative drive voltage

MAV drives piston "in" is designated by (-) sign.  
MAV drives piston "out" is designated by (+) sign.

RETURN TO NORMAL MODE

Any time MAV is rebuilt or replaced, reset diagnostics to reflect new drive characteristics.

## VALVE HISTORY (Can not be reset)

**STEP 1VH**

CLOCK REGEN NEXT

**STEP 1VH –** Press ▼ and ▲ simultaneously for three seconds and release, then press ▼ and ▲ simultaneously and release. If screen in step 2VH does not appear in 5 seconds the lock on the valve is activated.

**STEP 2VH**

TOTAL DAYS 970

CLOCK REGEN NEXT

**STEP 2VH – Days, total since start-up:** This display shows the total days since startup. Press the NEXT button to go to Step 3VH. Press REGEN to return to previous step.

**STEP 3VH**

TOTAL REGENS 235

CLOCK REGEN NEXT

**STEP 3VH – Regenerations, total number since start-up:** This display shows the total number of regenerations that have occurred since startup. Press the NEXT button to go to Step 4VH. Press REGEN to return to previous step.

**STEP 4VH**

TOTAL GALLONS GAL x1K 175

CLOCK REGEN NEXT

**STEP 4VH – Volume, total used since start-up:** This display shows the total gallons treated since startup. This display will equal zero if a water meter is not installed. Press NEXT button to go to Step 5VH. Press REGEN to return to previous step.

**STEP 5VH**

ERROR LOG XXXX 1 - - -

CLOCK REGEN NEXT

**STEP 5VH – Error Log history:** up to 10 errors. Press ▼ and ▲ buttons to view each recorded error. If no errors have occurred " - - - - " is displayed. With STALL ERRORS 102, 107, 117, right upper corner of display indicates piston position at time of stall. Press NEXT to exit valve history.

# CYCLE SEQUENCE

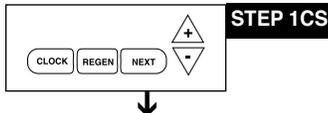
Anytime cycle sequence is modified, softener set-up will revert to manufacturer setting and must be reprogrammed as desired.

Cycle Sequence instructions allows the operator to set the order of the cycle. The Softener System Setup allows the operator to set how long the cycles will last. The operator may choose up to 9 cycles in any order.

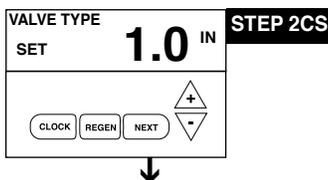
END must be used as the last cycle option. The SERVICE cycle should only be used in brine prefill applications to allow salt to dissolve.

The following is an example of how to set a valve so that when regeneration is initiated, BACKWASH occurs first, REGENERANT DRAW DN occurs second, RINSE occurs third, and FILL occurs fourth.

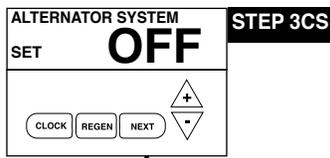
Cycle Options		
BACKWASH	REGENERANT DRAW-DN	FILL
RINSE	SOFTENING	END



**STEP 1CS** – Press NEXT and ▼ simultaneously until TYPE appears on screen and release. Then press NEXT and ▼ simultaneously again for 3 seconds and release. If screen in step 2CS does not appear in 5 seconds the lock on the valve is activated.

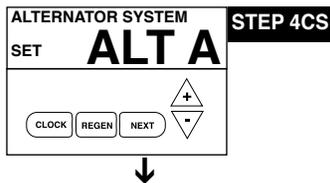


**STEP 2CS – Valve Type.** Use the ▲ or ▼ to select from 1.0", 1.25", 1.50", 2.0L", 2.0" valve. ProMate-6.0 is a 1.0" meter. Press NEXT to go to Step 3CS.



**STEP 3CS** – Use the ▲ or ▼ to select one of the following:

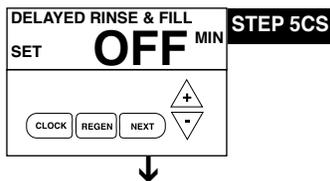
- Twin Alternating System – Select Alt A or Alt B, See instructions in Step 4CS; or
- System Board - Allows Demand Recall Programming – See instructions in Step 10CS.
- No Hard Water Bypass During Regeneration – See instructions in Step 7CS.
- Reclaim Enabled - Allows control to operate in Reclamation Mode See instructions in Step 9CS.
- Separate Source Enabled - Allows control to have a separate water source during the regeneration cycle. See instructions in Step 8CS.
- OFF; **Factory Setting is OFF** - Press NEXT to go to Step 11CS.



**STEP 4CS –Twin Alternating System** – Allows automatic alternation between two units to provide softened water 24 hours a day. Use ▲ or ▼ buttons to select ALT A or ALT B. Select ALT A for the control valve that has the two-pin connector labeled MAV DRIVE connected to the alternator valve. Select ALT B for the control valve that will be connected via three-prong connector labeled INTERCONNECT. Must use 3-wire interconnect cable. Press NEXT to go to Step 5CS.

For Alternating System, change programming:

- Set softener, with volume capacity in GALLONS and select Regeneration Time Option "IMMEDIATE" or "DELAYED" and select DAYS BETWEEN REGEN as desired.
- For complete programming, see Twin Alternating MAV manual.

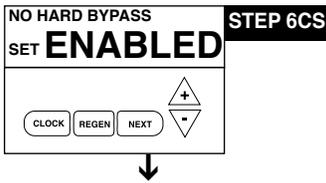


**STEP 5CS – Select Twin Alternating Option.**

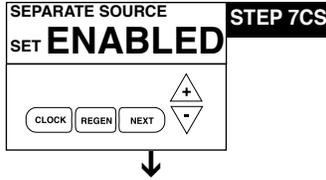
Use ▲ or ▼ buttons to select:

- Standard - Standard Alternating Function
- Refresh Rinse - Alternates every 6am & 6pm and runs programmable number of gallons to service prior to alternating back to online unit. Press NEXT to set number of gallons.
- Delayed Rinse and Fill- See below

This option delays the last two cycles of regeneration (only "Rinse" and "Fill"). This feature splits the regeneration into two portions. The first portion of the regeneration will start immediately and all programmed cycles before the "Rinse" and "Fill" cycles will be performed. After all programmed cycles before "Rinse" and "Fill" are completed the control valve will drive to the service position (displaying "Delayed Rinse + Fill Pending"). When the volume of the on-line unit is depleted to 10% of its programmed capacity, the control valve will be triggered to finish the second portion of the regeneration and complete the "Rinse" and "Fill" cycles and return to Service and be placed into Standby mode, and wait to come on-line for service. Must be programmed for post brine fill. Press NEXT to go to Step 10CS.



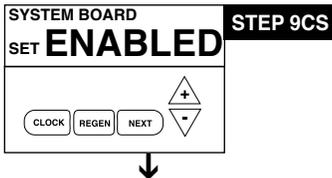
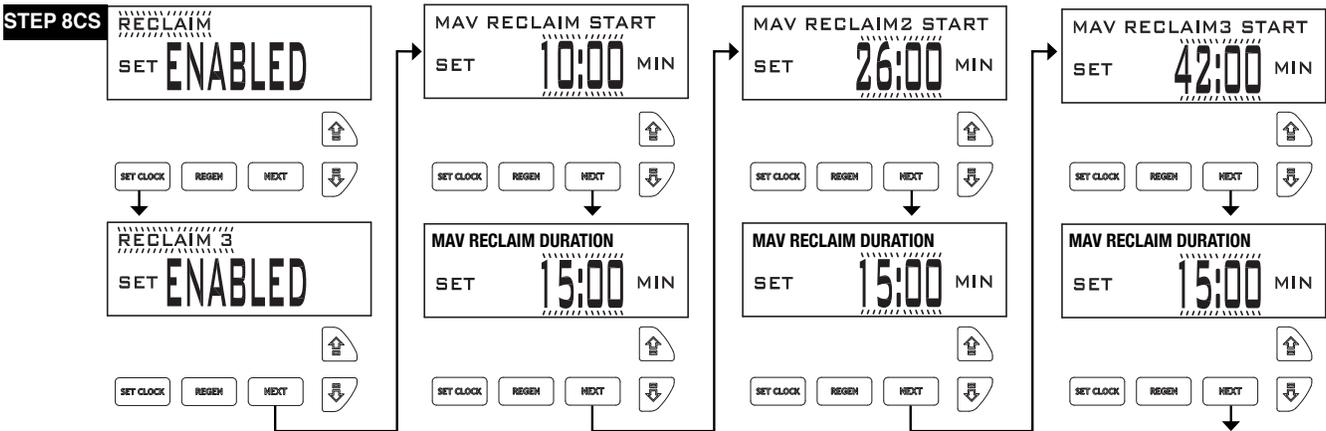
**STEP 6CS – No Hard Water Bypass Enabled** - Selection requires that a connection to a Motorized Alternating Valve (MAV) is made to the two pin-connector labeled ALTERNATOR MAV DRIVE located on the printed circuit board. The MAV will be driven closed before the first regeneration cycle that is not FILL or SOFTENING or FILTERING, and be driven open after the last regeneration cycle that is not FILL. NOTE: If the control valve enters into an error state during regeneration mode, the no hard water bypass valve will remain in its current state until the error is corrected and reset. Press NEXT to go to Step 10CS.



**STEP 7CS – Configuring the Control Valve for Separate Source Operation** - Select Separate Source Enabled for control operation. For separate source operation, the three wire connector is not used. Selection requires that a connection to a MAV is made to the two pin connector labeled ALTERNATOR MAV DRIVE located on the printed circuit board. The C port of the MAV must be connected to the valve inlet and the A port connected to the separate source used during regeneration. The B port must be connected to the feed water supply. When set to Separate Source Enabled the MAV will be driven closed before the first regeneration cycle, and be driven to open after the last regeneration cycle. NOTE: If the control valve enters into an error state during regeneration mode, the MAV will remain in its current state until the error is corrected and reset. Press NEXT to go to Step 10CS.

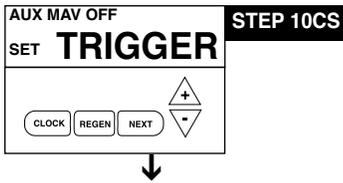
**STEP 8CS – Configuring the Control Valve for Water Reclamation Mode** - Select Reclaim Enabled for control operation. Motorized Alternating Valve will advance to Bypass at a set time after the beginning of regeneration, and return to Service after a set duration. This allows water to be diverted from drain for reuse. Up to three bypass events are possible. Select reclaim enabled for 1 reclaim event, reclaim 2x for two reclaim events, reclaim 3x for three reclaim events.

The Alternating MAV transitions to Bypass at the set time after the start of regeneration. The start of regeneration is defined as the first cycle that is not FILL, SOFTENING or FILTERING. The Alternating MAV will transition back to Service after the completion of the preset duration time.



**STEP 9CS – Configuring the Control Valve to operate with the Hellenbrand System Controller** - Select System Board Enabled to link the Control Valve to the SystemMate Controller. For communication between the Control Valve and the System Controller a three wire communication cable is required.

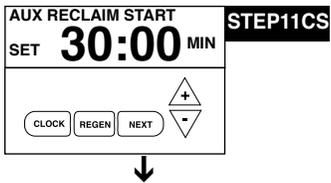
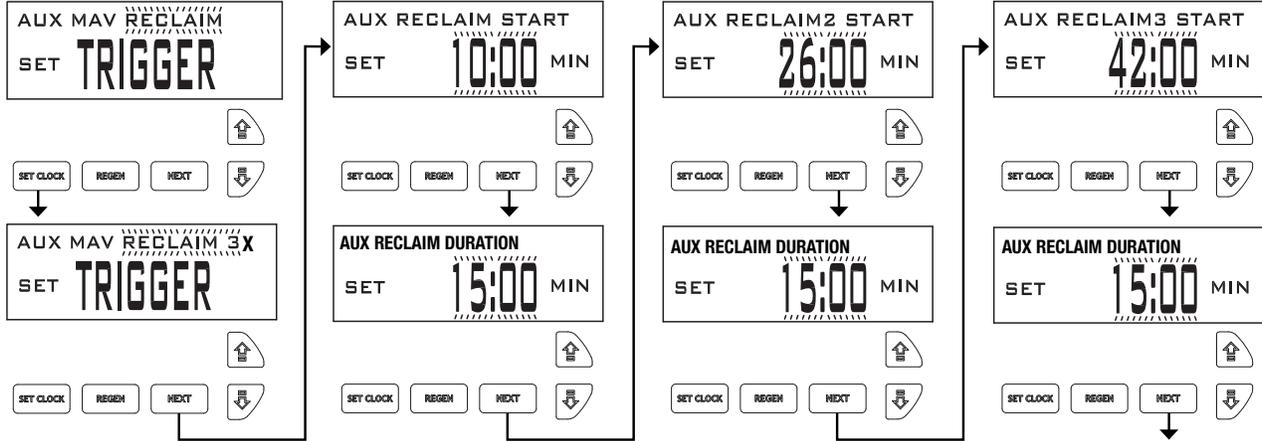
Press NEXT to go to Step 10CS. Press REGEN to return to previous step.



**STEP 10CS** – Use the ▲ or ▼ buttons to select one of the following:

- **Reclaim** – Allows brine reclamation. Select Reclaim for 1 Reclaim Event, Reclaim 2x for 2 reclaim events and Reclaim 3x for 3 reclaim events – See instructions ON PAGE 18.
- **Separate Source** – Allows Auxiliary MAV to switch positions before the start of regeneration and to switch back at the end of regeneration. See instructions in Step 13CS.
- **Off - Factory Setting is Off**

Press NEXT to go to Step 11CS when reclaim selected as trigger. Press REGEN to return to previous step.



**STEP 11CS** – Only displays if reclamation of brine is enabled in Step 11CS. Use the ▲ or ▼ buttons to select the number of minutes after the start of regeneration before the MAV will divert the brine waste water from the plumbing drain receptacle to the brine tank. Start of regeneration is defined as any mode that is not fill or softening. Use Table 1 on page 17 for settings.

Press NEXT to go to Step 12CS. Press REGEN to return to previous step.



**STEP 12CS** – Only displays if reclamation of brine is enabled in Step 11CS. Use the ▲ or ▼ buttons to select the number of minutes to divert the brine waste water to the brine tank. After the minutes count down to zero the waste water will once again be diverted to the plumbing drain receptacle.

Press NEXT to go to Step 13CS. Press REGEN to return to previous step.

**Brine Reclaim:** When Reclaim is selected as trigger for Auxiliary MAV Drive, a portion of the brine can be diverted after it has passed through the resin bed. Brine discharge contains unused salt that can be used for brine make-up for the next regeneration. A motorized alternator valve (MAV) must be connected to the two-pin connector labeled AUX DRIVE located on the circuit board or error code 106 will result. The MAV diverts the brine discharge to brine tank. A-Port discharges to brine tank. B-Port discharges to drain, remaining port connects to the valve drain fitting. Start time and duration settings are for specified pressures, if variation occurs on site, elution study can be done to provide settings that optimize salt savings without sacrificing capacity. For 15 lb. salt setting per cubic foot, see brine reclaim specification sheet in brine recovery manual (PN: 800199).

**PM6 Super HP Software REV (P101, P100.11 & >) defines start of regeneration as any mode that is not fill or softening and start time can be programmed directly from Table 1 if installed on specific pressures.**

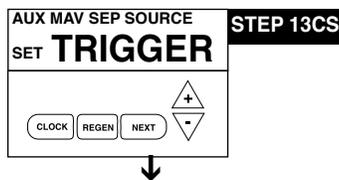
**PM6 HP Software REV (P200.25 & >) defines start of regeneration as the start of brine draw and backwash time must be subtracted from start time found in Table 1. See REV sticker on top of PC board to identify software,.**

**TABLE 1 – BRINE RECLAIM**

start time / stop = duration / salt setting - 10 lbs./ft <sup>3</sup>					
Water Pressure	PM6-24	PM6-32	PM6-32-10	PM6-48	PM6-64
35 PSI	46:00/9:40/1.5	48:00/10:00/2.0	48:00/10:00/2.0	48:00/12:00/3.3	54:00/11:00/4.2
45 PSI	42:00/7:45/1.5	44:00/8:45/2.0	44:00/8:45/2.0	46:00/11:00/3.3	52:00/11:00/4.3
55 PSI	39:00/7:20/1.5	41:00/8:30/2.0	41:00/8:30/2.0	44:00/11:00/3.3	49:00/8:30/4.0
65 PSI	38:00/6:40/1.5	40:00/7:45/2.0	40:00/7:45/2.0	43:00/9:45/3.0	48:00/7:40/4.0

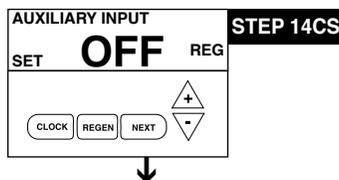
  

start time / stop = duration / salt setting - 10 lbs./ft <sup>3</sup>				
Water Pressure	PM6-96	PM6-128	PM6-160	PM6-192
35 PSI	54:00/13:00/6.0	56:00/12:00/8.0	58:00/12:00/10.3	58:00/10:00/12.0
45 PSI	52:00/11:00/6.5	54:00/11:00/8.0	56:00/10:00/10.3	56:00/9:30/12.0
55 PSI	49:00/10:40/6.0	51:00/9:45/8.0	53:00/9:40/10.0	53:00/8:30/12.0
65 PSI	48:00/10:00/6.0	50:00/8:55/8.0	52:00/8:55/10.0	52:00/7:50/12.0



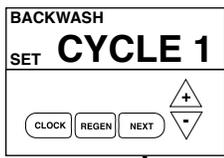
**STEP 13CS** – Separate source selection requires connection of motorized alternator valve (MAV) to Auxiliary Drive two-pin connection on board.

Auxiliary MAV Drive set to operate with a Separate Source trigger. Auxiliary MAV transitions to Bypass before the start of regen cycle #1, AFTER Alternator MAV motor transition. Auxiliary MAV transitions back to Service at the completion of the last programmed regen cycle, once the Valve Motor deactivates and BEFORE Alternator MAV transition (if scheduled). Auxiliary MAV will NOT automatically return to Service while manually stepping valve through regen, MAV will remain in Bypass until regen cycle end. Press NEXT to go to Step 14CS. Press REGEN to return to previous step.



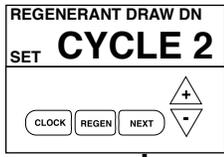
**STEP 14CS** – This display will be available to select the use of an outside signal to control the initiation of a regeneration. Selection only matters if a connection is made to the two pin connector labeled DP SWITCH located on the printed circuit board. Following is an explanation of the options:

- IMMED REGEN – If the dP switch is closed for an accumulative time of 2 minutes, a regeneration will occur immediately.
  - DELAY REGEN – If the dP switch is closed for an accumulative time of 2 minutes, a regeneration will occur at the schedule regeneration time.
  - HOLD REGEN – If the dP switch is closed a regeneration will be prevented from occurring.
  - OFF - Factory setting is off
- Press NEXT to go to Step 15CS. Press REGEN to return to previous step.



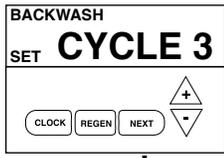
**STEP 15CS**

**STEP 15CS** – Press the ▲ or ▼ buttons until selection of first cycle appears in left upper corner, in this example BACKWASH is selected. Press NEXT to go to Step 16CS. Press REGEN to return to previous step.



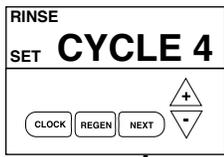
**STEP 16CS**

**STEP 16CS** – Press the ▲ or ▼ buttons until selection of second cycle appears in left upper corner, in this example Regenerant Draw DN is selected. For a H125 control valve: prior to selecting DN or UP or not selecting a regenerant flow cycle, verify the correct valve body, main piston, regenerant piston and stack are being used and the injector or injector plug(s) are in the correct location. On Calendar Day Override on upflow brining, may select 20% or preprogram amount for brining. Press NEXT to go to Step 17CS. Press REGEN to return to previous step.



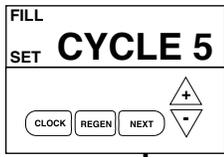
**STEP 17CS**

**STEP 17CS** – Press the ▲ or ▼ buttons until selection of third cycle appears in left upper corner, in this example BACKWASH is selected. A second backwash mode is recommended on iron applications > 1.0 ppm. Press NEXT to go to Step 18CS. Press REGEN to return to previous step.



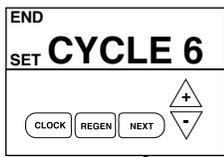
**STEP 18CS**

**STEP 18CS** – Press the ▲ or ▼ buttons until selection of fourth cycle appears in left upper corner, in this example RINSE is selected. Press NEXT to go to Step 19CS. Press REGEN to return to previous step.



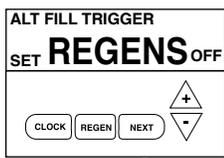
**STEP 19CS**

**STEP 19CS** – Press the ▲ or ▼ buttons until selection of fifth cycle appears in upper left corner. Press NEXT to go to Step 20CS. Press REGEN to return to previous step.



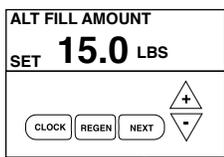
**STEP 20CS**

**STEP 20CS** – Press the ▲ or ▼ button until last regeneration cycle; END appears (up to 9 regeneration modes are possible). **End must be selected as last cycle.** Press NEXT to go to Step 21CS.



**STEP 21CS**

**STEP 21CS** – Press the ▲ or ▼ button to select number of standard regenerations which would trigger one alternate brine fill amount. Range: 1-99. **Factory setting is Off.** Press NEXT to go to Step 22CS.



**STEP 22CS**

**STEP 22CS** – Select amount of salt to be used when alternate regeneration requested. This screen is not displayed if off is selected in previous step. Softener Range 0.1–200 lbs. Filter Range 0.05–20.0 Gallons.

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## 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>.

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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 and 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 salt 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 salt keeper 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 salt keeper, 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 salt keeper has very little water left in it. What liquid is left in the salt keeper 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 salt keeper 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 Miscellaneous section, below)

- 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 8 when you are ready to start your softener.

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## MISCELLANEOUS

1. Salt Usage: See your water conditioning professional for a recommendation on the best type of salt for your application.
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 at top of page.
  - o. Put on brine tank cover.

# TROUBLE SHOOTING

## PROBLEM

## CAUSE

## CORRECTION

After resolving the cause of any error code or any service work on valve, press NEXT & REGEN simultaneously for 5 seconds or disconnect power supply for 5 seconds at PC board and reconnect to resynchronize software with piston position.

### VALVE ERROR CODES

**Error Code 101** - Unable to recognize start of regeneration

A. Control not reading piston position

- A1. Resynchronize software with piston position by pressing start of regeneration NEXT and REGEN buttons simultaneously for 5 seconds, until screen changes. Initiate regeneration to verify function by pressing and holding REGEN button until regeneration initiates, step through regeneration modes by pushing REGEN button each time motor stops.
- A2. Verify motor connection to PC board; motor wires intact and motor fully inserted to engage pinion.
- A3. Verify correct assembly; PC board snapped onto drive bracket and wires are in backplate guides and drive bracket snapped onto backplate. Verify three drive gears are in place on drive bracket.

**Error Code 102** - Unexpected stall

B1. Mechanical Binding

- B1a. Check for any foreign material in stack assembly impeding piston movement and remove; verify seals intact and in place in stack assembly, if not replace stack assembly.
- B1b. Check for incorrect assembly, drive bracket not snapped into place, motor pushed inside of barrel of drive bracket (black gear on motor end should be flush with end of shaft).
- B1c. Drive gears unable to rotate freely - replace gear(s) if not rotating freely.

B2. Improper voltage being delivered to board

- B2a. Motor unable to move piston, check voltage is present on 12V DC motor at start of regeneration modes. Transformer should provide 12 volts when plugged into outlet and not attached to board - if not replace transformer

**Error Code 103** - Motor ran too long, timed out trying to reach next position

C. High drive forces on piston

- C1. Loosen drive cap gear 1/4 turn
- C2. Address high drive forces
- C3. Motor failure during regeneration-replace motor

**Error Code 104** - Motor ran too long, timed out trying to reach home position

D. Piston unable to reach home position

- D1. Incorrect assembly; check drive bracket is correctly seated and snapped into place on backplate, wires outside of guides on backplate can impede drive bracket from correct position.
- D2. Check PC board is seated on posts and snapped into place on drive bracket
- D3. Drive gear labels dirty or missing, missing or broken gear, replace as needed

### MAV ERROR CODES

After resolving any MAV error or servicing MAV, resynchronize software with piston positioning by pressing NEXT and REGEN buttons simultaneously for 5 seconds or disconnecting power from PC board for 5 seconds and reconnecting.

### ALTERNATING MAV DRIVE - ERROR CODES 106 & 107

**Error Code 106** - Alternating MAV ran too long

- A1. Control valve is programmed for alternating or as NHWB without having MAV connected to board. Reprogram valve to proper setting or connect MAV to alternating MAV drive on PC board

**Error Code 107** - Alternating MAV stalled

Mechanical Binding

- A2. MAV motor not fully engaged with gears
- B1. Open MAV and check for foreign material on stack assembly, remove if present, verify seals intact and in place. If not, replace stack assembly
- B2. Drive gear should spin freely-replace if necessary

### AUXILIARY MAV DRIVE - ERROR CODES 116 & 117

**Error Code 116** - Auxiliary MAV ran too long

- A1. Control valve is programmed for auxiliary MAV without having MAV connected to board. Reprogram valve to proper setting or connect MAV to two-pin connection labeled auxiliary drive on PC board

**Error Code 117** - Auxiliary MAV stalled

Mechanical Binding

- A2. MAV motor not fully engaged with gears
- B1. Open MAV and check for foreign material on stack assembly, remove if present, verify seals intact and in place. If not, replace stack assembly
- B2. Drive gear and reducing gears should spin freely, replace if necessary

1. Control valve stalled in regeneration

- A. Motor not operating
- B. No electric power at outlet
- C. Defective transformer
- D. Defective PC board
- E. Broken drive gear or drive cap assembly
- F. Broken piston retainer
- G. Broken main or regenerant piston

- A. Replace Motor
- B. Repair outlet or use working outlet
- C. Replace transformer
- D. Replace PC board
- E. Replace drive gear or drive cap assembly
- F. Replace drive cap assembly
- G. Replace main or regenerant piston

# TROUBLE SHOOTING

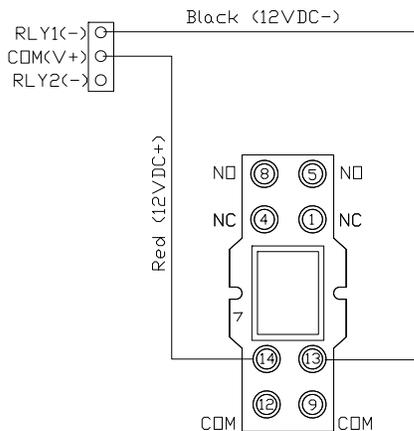
PROBLEM	CAUSE	CORRECTION
2. Control valve does not regenerate automatically when REGEN button is depressed and held	<ul style="list-style-type: none"> <li>A. Transformer unplugged</li> <li>B. No electric power at outlet</li> <li>C. Broken drive gear or drive cap assembly</li> <li>D. Defective PC board</li> </ul>	<ul style="list-style-type: none"> <li>A. Connect transformer</li> <li>B. Repair outlet or use working outlet</li> <li>C. Replace drive gear or drive cap assembly</li> <li>D. Replace PC board</li> </ul>
3. Control valve does not regenerate automatically but does when REGEN button is depressed	<ul style="list-style-type: none"> <li>A. Bypass valve in bypass position</li> <li>B. Meter connection disconnected</li> <li>C. Restricted/stalled meter turbine</li> <li>D. Defective meter</li> <li>E. Defective PC board</li> <li>F. Programming error</li> </ul>	<ul style="list-style-type: none"> <li>A. Put control valve in service position</li> <li>B. Connect meter to PC board</li> <li>C. Remove meter and check for free rotation or foreign matter</li> <li>D. Replace meter</li> <li>E. Replace PC board</li> <li>F. Check control valve set-up procedure</li> </ul>
4. Time of day flashes on and off	<ul style="list-style-type: none"> <li>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.</li> <li>B. Prior to 2/2007, PC board did not have battery back-up - capacitor held time of day up to 2 hours. Power outage &gt; 2 hours.</li> </ul>	<ul style="list-style-type: none"> <li>A. Reset time of day and replace battery on PC Board (Lithium coin type battery 2032)</li> <li>B. Reset time of day.</li> </ul>
5. Softener delivers hard water.	<ul style="list-style-type: none"> <li>A. Bypass valve is open or faulty.</li> <li>B. No salt or low salt level in brine tank.</li> <li>C. Softener fails to draw brine.</li> <li>D. Excessive water usage.</li> <li>E. Insufficient brine level in brine tank.</li> <li>F. Resin level inadequate.</li> <li>G. Meter faulty.</li> <li>H. Raw water hardness fluctuation.</li> </ul>	<ul style="list-style-type: none"> <li>A. Close bypass valve or replace.</li> <li>B. Add salt to brine tank and maintain salt level above water level.</li> <li>C. See problem #10.</li> <li>D. Check gallon capacity settings.</li> <li>E. Check brine refill setting and refill flow restrictor for blockage.</li> <li>F. See problem #7.</li> <li>G. Test meter and clean or replace meter.</li> <li>H. Test raw water hardness and adjust settings to highest known hardness.</li> </ul>
6. Unit uses too much salt.	<ul style="list-style-type: none"> <li>A. Improper brine refill setting.</li> <li>B. Improper settings.</li> <li>C. Excessive water in brine tank.</li> <li>D. Leaking faucets, toilets, etc...</li> <li>E. Brine line flow control out of place</li> </ul>	<ul style="list-style-type: none"> <li>A. Check brine refill setting for proper salt dosage</li> <li>B. Check water hardness and reevaluate capacity setting specification</li> <li>C. See problem #9.</li> <li>D. Repair or replace those items.</li> <li>E. Replace Brine line flow control.</li> </ul>
7. Loss of resin.	<ul style="list-style-type: none"> <li>A. Backwash controller missing.</li> <li>B. Faulty distributor tube assembly.</li> <li>C. Air being drawn in through brine system.</li> <li>D. Air in water supply system</li> </ul>	<ul style="list-style-type: none"> <li>A. Install backwash controller.</li> <li>B. Check distributor tube assembly for cracks or holes.</li> <li>C. Check for leaks in brine lines, fittings, or air check. Repair or replace.</li> <li>D. <ul style="list-style-type: none"> <li>1. Install upper distributor if missing.</li> <li>2. Ensure that water supply system has an air eliminator.</li> </ul> </li> </ul>
8. Softener delivers salty water.	<ul style="list-style-type: none"> <li>A. Low water pressure.</li> <li>B. Excessive water in brine tank.</li> <li>C. Wrong size injector.</li> </ul>	<ul style="list-style-type: none"> <li>A. Check incoming water pressure - Must remain at minimum of 25 psi.</li> <li>B. See problem #9.</li> <li>C. Install correct injector.</li> </ul>
9. Excessive water in brine tank.	<ul style="list-style-type: none"> <li>A. Plugged injector.</li> <li>B. Faulty piston/seal assembly.</li> <li>C. Plugged or kinked drain line.</li> <li>D. Backwash flow controller closed off.</li> <li>E. Defective brine line flow control.</li> </ul>	<ul style="list-style-type: none"> <li>A. Remove injector and clean ports.</li> <li>B. Replace piston/seal assembly.</li> <li>C. Correct any kinking or plugging of drain line.</li> <li>D. Check backwash flow controller.</li> <li>E. Replace brine refill flow control.</li> </ul>
10. Softener fails to draw brine.	<ul style="list-style-type: none"> <li>A. Injector is plugged, absent/missing oring(s)</li> <li>B. Faulty piston assembly.</li> <li>C. Brine line connection leak.</li> <li>D. Drain line plugged creating excess back pressure.</li> <li>E. Drain line too long or too high.</li> <li>F. Low inlet pressure.</li> </ul>	<ul style="list-style-type: none"> <li>A. Remove injector and clean ports/replace if necessary</li> <li>B. Check piston assembly.</li> <li>C. Inspect brine line during refill cycle for leaks.</li> <li>D. Inspect drain line for blockage.</li> <li>E. Refer to drain line specifications.</li> <li>F. Increase inlet pressure to a minimum of 25 psi.</li> </ul>
11. Continuous flow to drain.	<ul style="list-style-type: none"> <li>A. Piston assembly failure.</li> <li>B. Motor failure.</li> <li>C. Circuit board failure.</li> </ul>	<ul style="list-style-type: none"> <li>A. Replace piston assembly.</li> <li>B. Replace motor.</li> <li>C. Replace circuit board.</li> </ul>
12. Loss of water pressure.	<ul style="list-style-type: none"> <li>A. Iron build-up in resin.</li> <li>B. Resin bed fouled with sand or sediment.</li> <li>C. Resin bed mushing due to high amount of oxidizers in water supply (chlorine).</li> </ul>	<ul style="list-style-type: none"> <li>A. See problem #13, page 23.</li> <li>B. Rebed softener and install sediment filter ahead of softener.</li> <li>C. Rebed softener. Install dechlorination system ahead of softener</li> </ul>

# TROUBLE SHOOTING

PROBLEM	CAUSE	CORRECTION
13. Iron in softened water.	<ul style="list-style-type: none"> <li>A. Iron has fouled resin bed.</li> <li>B. Iron is not in a soluble state.</li> <li>C. Prefilter failure.</li> <li>D. Iron level excessive.</li> <li>E. Control fails to regenerate.</li> </ul>	<ul style="list-style-type: none"> <li>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.</li> <li>B. Test water to determine type of iron, install iron reduction system.</li> <li>C. Check prefilter.</li> <li>D. Install iron reduction system.</li> <li>E. See problem #3, page 22.</li> </ul>
14. Absent or incomplete LCD display	<ul style="list-style-type: none"> <li>A. Transformer unplugged</li> <li>B. No electric power at outlet</li> <li>C. Defective transformer</li> <li>D. Short in meter</li> <li>E. Defective PC board</li> </ul>	<ul style="list-style-type: none"> <li>A. Plug transformer into uninterrupted outlet</li> <li>B. Repair outlet or use working outlet</li> <li>C. Replace transformer</li> <li>D. Unplug meter from PC board, if LED display lights appropriately, replace meter</li> <li>E. Replace PC board</li> </ul>
15. Control does not display correct time of day	<ul style="list-style-type: none"> <li>A. Power outage &gt; 2 years</li> <li>B. Power outage &lt; 2 years, time of day flashing, battery depleted</li> </ul>	<ul style="list-style-type: none"> <li>A. Reset time of day</li> <li>B. Replace lithium coin type battery on circuit board Model 2032 battery</li> </ul>
16. No "softening" or "filtering" display when water is flowing	<ul style="list-style-type: none"> <li>A. Bypass valve in bypass position</li> <li>B. Meter connection disconnected</li> <li>C. Restricted/stalled meter turbine</li> <li>D. Defective meter</li> <li>E. Defective PC board</li> </ul>	<ul style="list-style-type: none"> <li>A. Put bypass valve in service position</li> <li>B. Connect meter to PC board</li> <li>C. Remove meter and check for free rotation, clean foreign material</li> <li>D. Replace meter</li> <li>E. Replace PC board</li> </ul>
17. Control valve regenerates at wrong time of day	<ul style="list-style-type: none"> <li>A. Power outages &gt; 24 hours</li> <li>B. Time of day not set correctly</li> <li>C. Time of regeneration incorrect</li> <li>D. Control valve set at "on 0" (immediate regeneration)</li> <li>E. Control valve set at NORMAL + on 0</li> </ul>	<ul style="list-style-type: none"> <li>A. Reset control valve to correct time of day</li> <li>B. Reset to correct time of day</li> <li>C. Reset regeneration time</li> <li>D. Check control valve set-up procedure regeneration time option</li> <li>E. Check control valve set-up procedure regeneration time option</li> </ul>

# RELAY TROUBLESHOOTING

PROBLEM	CAUSE	CORRECTION
18. Relay does not energize	<ul style="list-style-type: none"> <li>A. Relay driver programmed on "Time"</li> <li>B. Relay driver programmed on "Gallons"</li> </ul>	<ul style="list-style-type: none"> <li>A. Programmed incorrectly</li> <li>B. Defective relay, See figure below</li> <li>C. Defective PC Board</li> <li>D. Faulty wire connections between PC board and relay</li> </ul>
19. Relay energized during regeneration	<ul style="list-style-type: none"> <li>A. Relay programmed as "on REGEN gallons"</li> </ul>	<ul style="list-style-type: none"> <li>A. Reprogram, see pages 11 &amp; 12</li> <li>B. Replace Relay</li> <li>C. Replace PC Board</li> <li>D. Check and repair wire connections</li> <li>E. Reprogram, see pages 11 &amp; 12</li> <li>F. Repair or replace meter assembly</li> <li>G. Replace Relay</li> <li>H. Replace PC Board</li> <li>I. Check and repair wire connections</li> <li>J. Reprogram, see pages 11 &amp; 12</li> </ul>



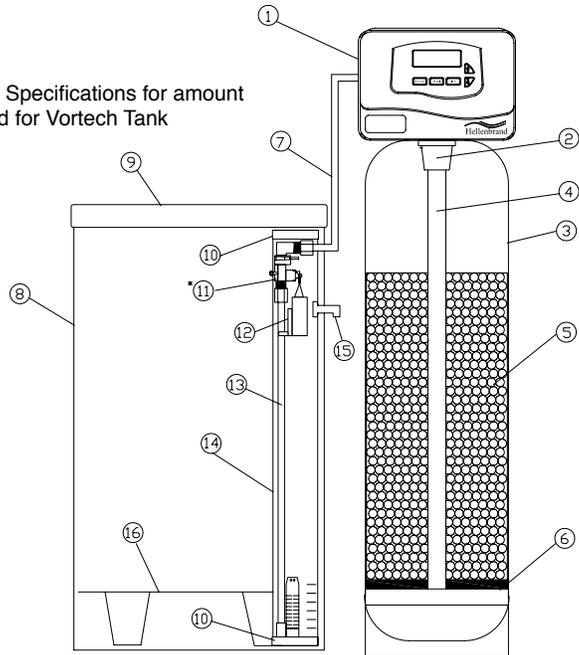
### Relay operation while in error modes

1. Relays should turn off immediately whenever a Valve Error occurs.
2. Relays should remain on and continue to operate as programmed if a MAV Error (106/107 or 116/117) occurs and the valve has already entered regen.
3. Relays should remain off, and not operate as programmed, if a MAV Error (106/107 or 116/117) occurs and the valve has not entered regen.
4. Lockout - Relay remains active during error, power outage and manual advance through regeneration cycles.

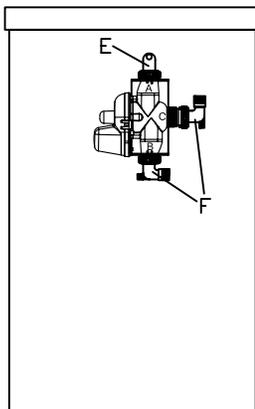
# PROMATE-6.0 CONDITIONER & BRINE TANK ASSEMBLIES

Item	Description	Qty	Part #
1	Metered Control Valve	1	106934 PM6-32 (see page 26 for detailed components) Specify Model - ie 24, 32, 48
2	Top Diffuser	1	101539
3&4	Mineral Tank Assembly		Item 3 & 4 <b>Mineral Tank</b> <b>Not Shown</b> <b>Granite Tank Jacket</b>
	PM6-024 8 x 44	1	110560
	PM6-032 9 x 48	1	110561
	PM6-032-10 10 x 44	1	110562
	PM6-048 10 x 54	1	110563
	PM6-064 13 x 54	1	110565
	PM6-096 14 x 65	1	110566
	PM6-128 16 x 65	1	110567
	PM6-160 18 x 65	1	110568 (Hub & Lateral)
	PM6-192 21 x 62	1	110569 (Hub & Lateral)
5	Ion Exchange Resin	*	101113 *See Specifications for amount
6	Underbedding		No underbedding required for Vortech Tank
7-15a	Brine Tank Assy (18x40)-Granite	1	104449
b	Brine Tank Assy (24x41)		104424
b	24x50 Salt Keeper Tank-Black	1	104497
9a	Salt Keeper Cvr 18x40	1	101448
b	Salt Keeper Cvr 24x41		Included with 8b
c	Salt Keeper Cvr 24x50		Included with 8c
10-14 a	Safety Brine Valve Assy 41"		104172
b	Safety Brine Valve Assy 50"		104173
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 40"-41"	1	102877
b	Brine Well 50"		102878
15	2-Piece Overflow	1	102217
16 a	Grid Plate 18" (optional)	1	101758
b	Grid Plate 24" (optional)	1	101754
-	Owners Manual (Not Shown)	1	800198

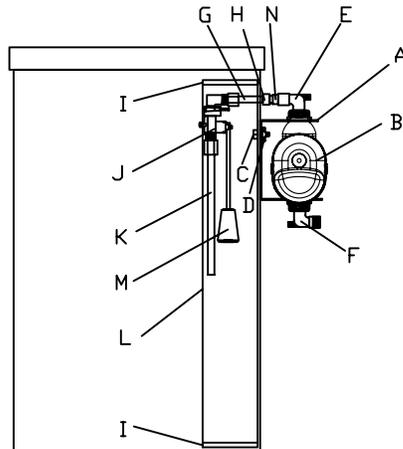
\*Must be ordered as complete assembly



\* INSTALL ON MAV ELBOW FOR 3/4" CONNECTION OR ON DRAIN ELBOW FOR 1" CONNECTION



FRONT VIEW



SIDE VIEW

## Brine Recovery Option

Stock code: 103841 - 36" Well - 40" Brine Tank  
103845 - 46" Well - 50" Brine Tank

Qty	P/N	Description
A	1	108015 1.25" Stainless Steel Bracket
B	1	102032 1.25" MAV FxFxF
C	1	108013 1/2"-13 1" Nylon Bolt
D	1	108012 1/2"-13 Nylon Wing Nut
E	0.5	101640 1" Solvent Elbow
F	1	101639 1" MNPT Plastic Elbow
G	0.25	102664 1/2"x12-1/2" PVC80 Tube
H	1	100415 Adapter 1/2" TxMNPT
I	2	101365 4" Well Cap
J	1	101275 474 Brine Valve
K	1	102664 1/2" x 12-1/2" Tube
L	1	102877 4"x36" Brine Well
	1	102878 4"x46" Brine Well
M	1	101660 Float
N	1	100342 Bushing 3/4"x1/2" SxF PV80
O	1	108565 Bushing 1"x3/4" TxT PV80

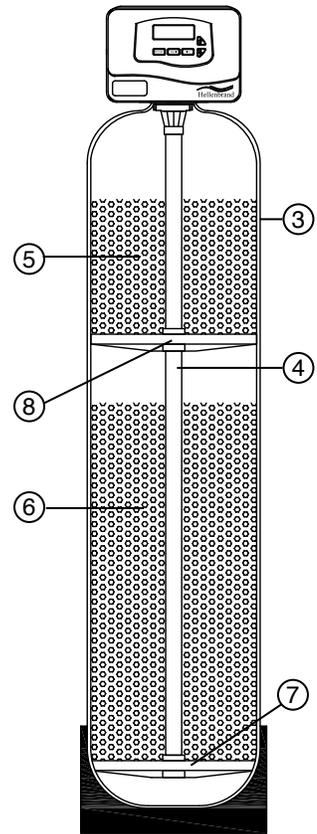
Note: MAV bracket can be removed and valve mounted if desired. Kit # 108469 required.

**NOTE:** Do not use 3/4" drain nut & insert (102131 & 101871) when installing connection between softener drain & MAV

## PROMATE-6.0 DMT

<u>Item</u>	<u>Description</u>	<u>Qty</u>	<u>Part #</u>
3	Mineral Tank		
	DMT PM6-032	1	104473
	DMT PM6-064	1	108576
4	Distributor Tube 1.05	Based on Model	
5	Carbon		
	Coconut Shell	Based on Model	100974
	High Activity Coconut Shell	Based on Model	110053
6	Ion Exchange Resin 8%	Based on Model	101113
7	Vortech Adapter	1	101173
8	Mid-Plate Adapter	1	101164

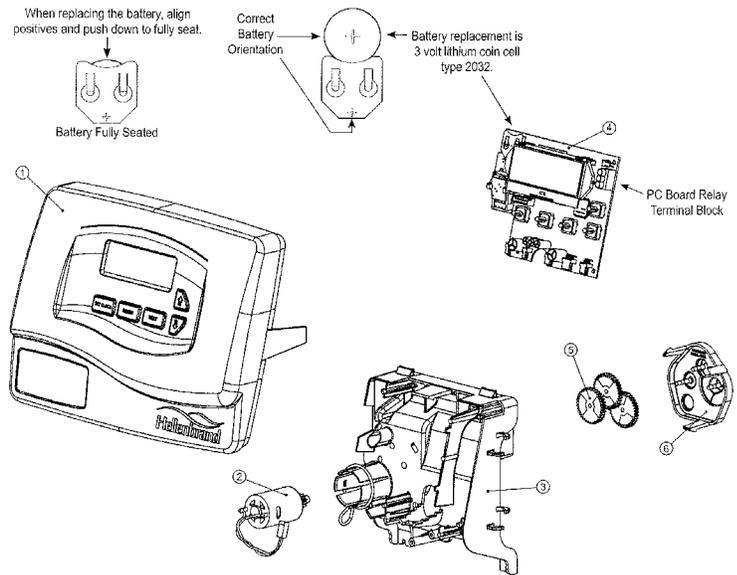
Recommend replacing carbon every 2 years or as needed



## FRONT COVER AND DRIVE ASSEMBLY

ITEM NO.	ORDER NO.	DESCRIPTION	QTY.
1	103473	PM 6.0 Cover Assy w/Label	1
2	102096	Motor	1
3	101262	Drive Bracket & Spring Clip	1
4	109807	PM 6.0 - PC Board	1
5	101746	Drive Gear 12x36	3
6	101459	Drive Gear Cover	1
7	Relay Kit Options:	<b>See Page 24 for Relay Wiring</b>	1
	103724	PCM Relay Installed	
	103723	PCM Relay Kit	
	103730	Pigtail Relay Installed	
	103729	Pigtail Relay Kit	
8	102385	Relay Only	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: 214) and then reset the valve to the service position.

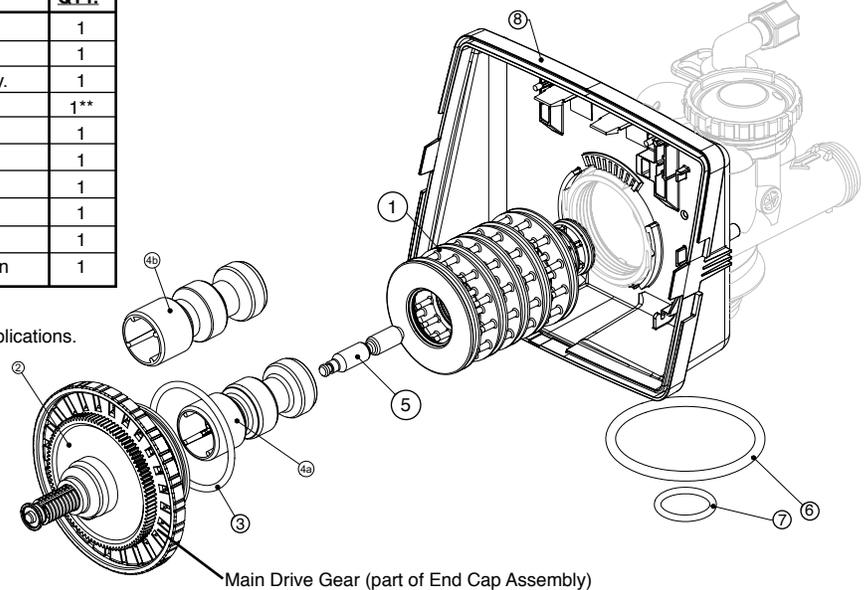


**Figure 14**

## 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 -Drive Cap Assy.	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
8	101189	PM 5.0 Back Plate	1
9	102892	Service Wrench - Not Shown	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 15**

Do not use vaseline, oils, other hydrocarbon lubricants or spray silicone anywhere. A silicone 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: 214) 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 32 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.

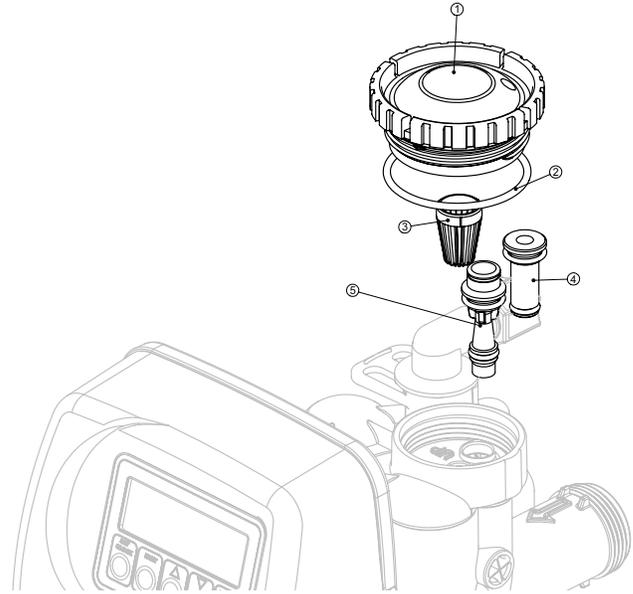
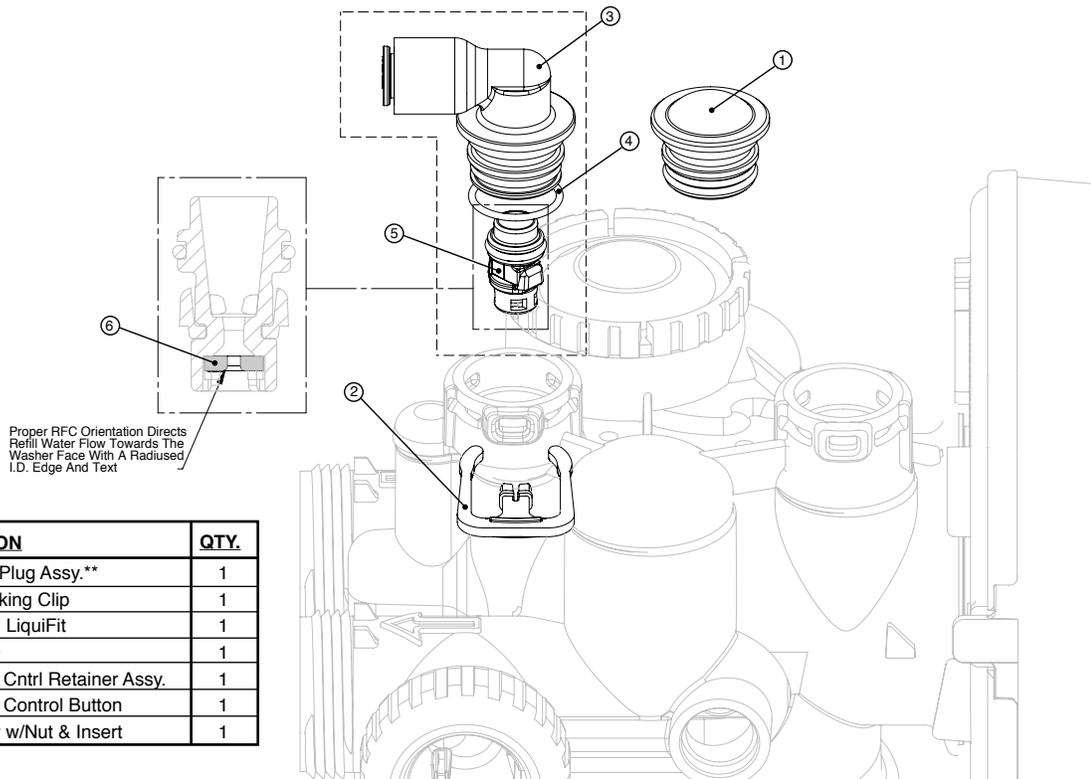


Figure 16

# 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.

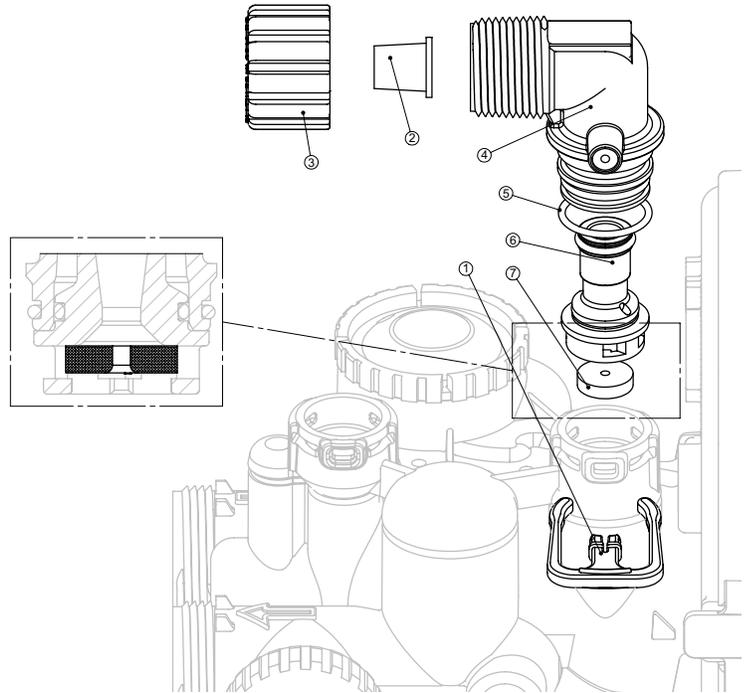
Figure 17

## 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 Elb 3/4" Male Assy-Vent	Optional
4-5	<b>101619</b>	<b>Drain Elb 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"	
	101594	DLFC 7.5 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).

See System Specifications DLFC on page 32, for correct DLFC size for your unit.



**Figure 18**

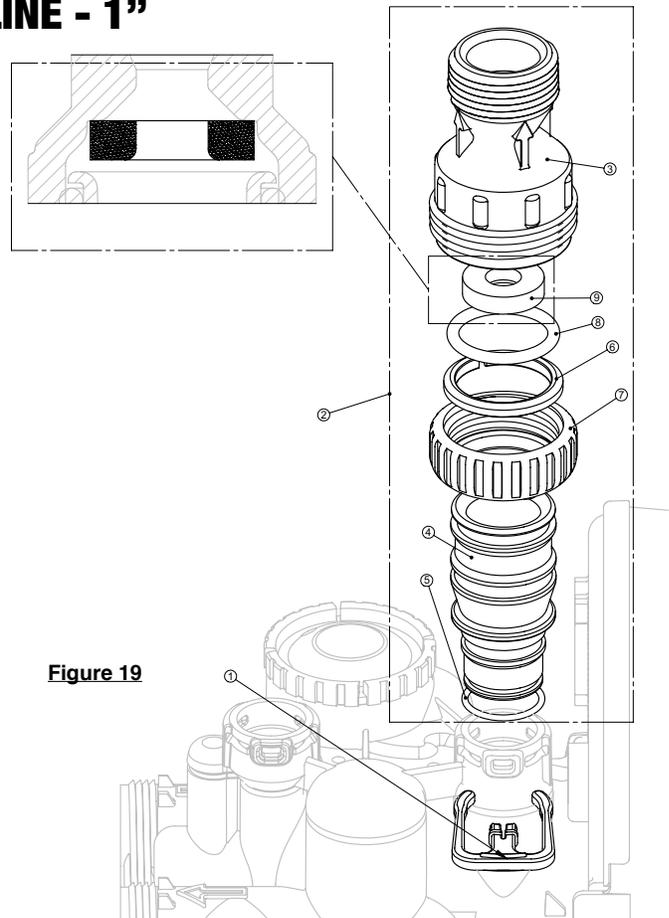
## DRAIN LINE - 1"

ITEM NO.	ORDER NO.	DESCRIPTION	QTY.
1	101414	Elbow Locking Clip	1
2	101635	Drain Ftg, 1" Straight Assy-Vent	optional
2	<b>101636</b>	<b>Drain Ftg, 1" Straight Assy-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"	

See System Specifications DLFC on page 32, for correct DLFC size for your unit.

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 19**

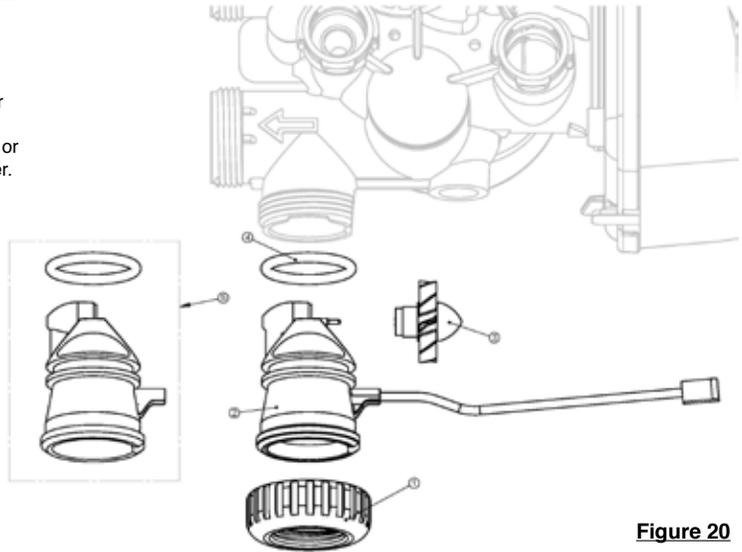
# WATER METER AND METER PLUG

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 1102165, 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 20**

# BYPASS VALVE

## Bypass Valve

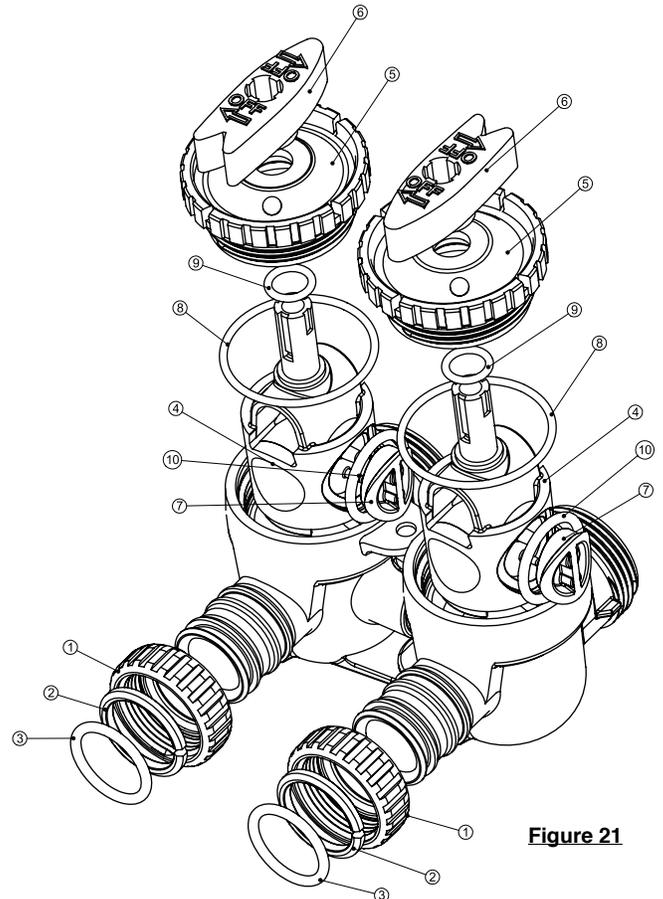
ITEM NO.	ORDER NO.	DESCRIPTION	QTY
1	102141	Nut 1" Quick Connect	2
2	102437	Split Ring	2
3	102165	O'Ring 215	2
4	102450	Bypass 1" Rotor	2
5	110997	Bypass Cap	2
6	110998	Bypass Handle	2
7	109479	Bypass Rotor Seal Retainer	2
8	102159	O-Ring 135	2
9	102161	O-Ring 112	2
10	102160	O-Ring 214	2

## (Not Shown) Bypass Vertical Adapter Assembly

ORDER NO.	DESCRIPTION	QTY
102141	Nut 1" Quick Connect	2
102437	Split Ring	2
102165	O'Ring 215	2
106858	Bypass Vertical Adapter	2

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-ring seals.

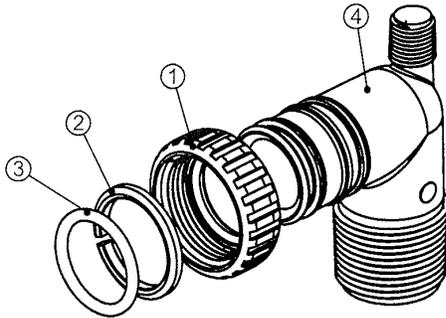


**Figure 21**

# INSTALLATION FITTING ASSEMBLIES

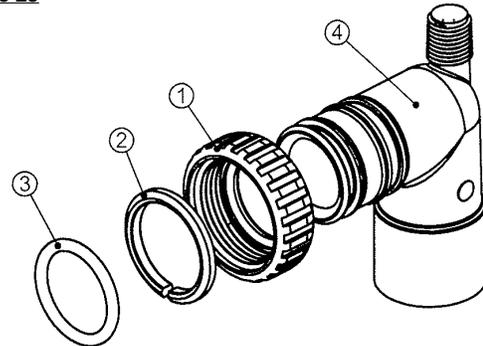
ITEM NO.	ORDER NO.	DESCRIPTION	QTY.
1	102141	Nut 1" Quick Connect	2
2	102437	Split Ring	2
3	102165	O-Ring 215	2
4	106761	Fitting 1" PVC Male NPT Elbow.	2
1-4	101639	Fitting 1" PVC Male NPT Assy. (Set of 2)	1

**Figure 22**



ITEM NO.	ORDER NO.	DESCRIPTION	QTY.
1	102141	Nut 1" Quick Connect	2
2	102437	Split Ring	2
3	102165	O-Ring 215	2
4	106762	Fitting 3/4" & 1" PVC Solv. 90	2
1-4	101640	Fitting 3/4" & 1" PVC Solv 90 (set of 2)	1

**Figure 23**

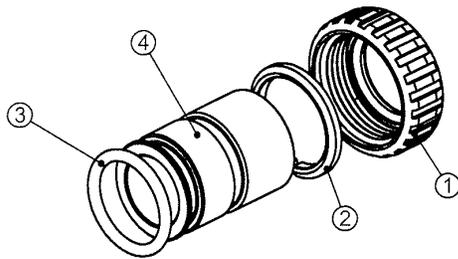


The nuts and caps are designed to be unscrewed or tightened by hand or with the special plastic wrench. If necessary a pliers can be used to unscrew the nut or cap. Do not use a pipe wrench to tighten or loosen nuts or caps. Do not place screwdriver in slots on caps and/or tap with a hammer.

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.

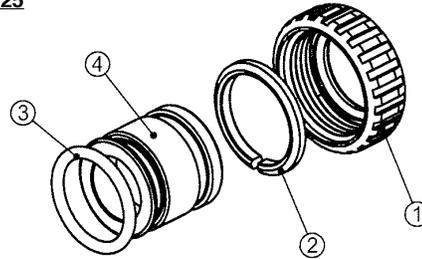
ITEM NO.	ORDER NO.	DESCRIPTION	QTY.
1	102141	Nut 1" Quick Connect	2
2	102437	Split Ring	2
3	102165	O-Ring 215	2
4	106763	Fitting 1" Brass Sweat	2
1-4	108618	Fitting 1" Lead Free Brass Sweat Assy (Set of 2)	1

**Figure 24**



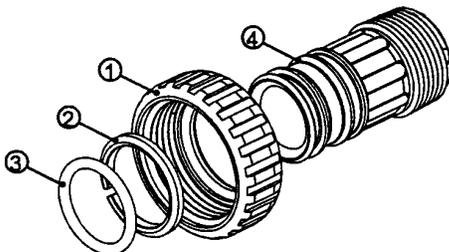
ITEM NO.	ORDER NO.	DESCRIPTION	QTY.
1	102141	Nut 1" Quick Connect	2
2	102437	Split Ring	2
3	102165	O-Ring 215	2
4	106764	Fitting 3/4" Brass Sweat	2
1-4	108617	Fitting 3/4" Lead Free Brass Sweat Assy (Set of 2)	1

**Figure 25**



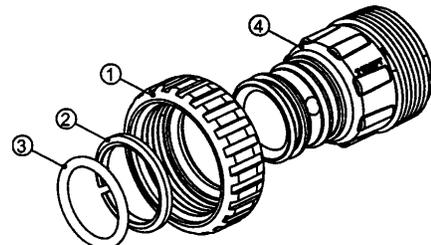
ITEM NO.	ORDER NO.	DESCRIPTION	QTY.
1	102141	Nut 1" Quick Connect	2
2	102437	Split Ring	2
3	102165	O-Ring 215	2
4	106765	Fitting 1" Plastic Male NPT	2
1-4	101643	Fitting 1" Male NPT Assy. (Set of 2)	1

**Figure 26**



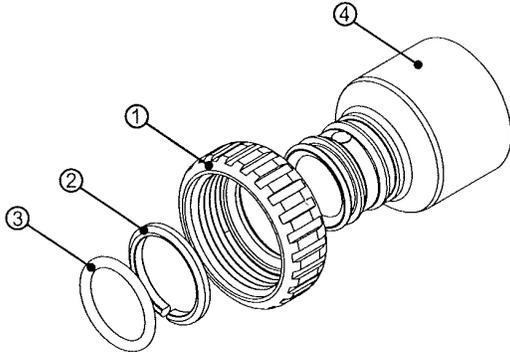
ITEM NO.	ORDER NO.	DESCRIPTION	QTY.
1	102141	Nut 1" Quick Connect	2
2	102437	Split Ring	2
3	102165	O-Ring 215	2
4	106766	Fitting 1-1/4" Plastic Male NPT	2
1-4	101644	Fitting 1-1/4" Male NPT (Set of 2)	1

**Figure 27**

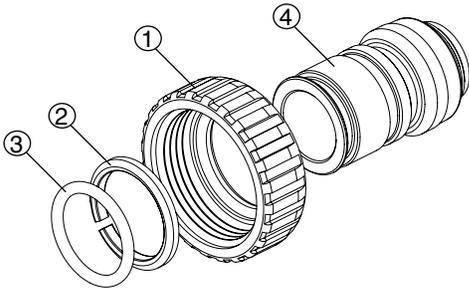


ITEM NO.	ORDER NO.	DESCRIPTION	QTY.
1	102141	Nut 1" Quick Connect	2
2	102437	Split Ring	2
3	102165	O-Ring 215	2
4	106787	Fitting 1-1/4" & 1-1/2" Brass Sweat	2
1-4	101648	Fitting 1-1/4" & 1-1/2" Brass Swt Assy.(Set of 2)	1

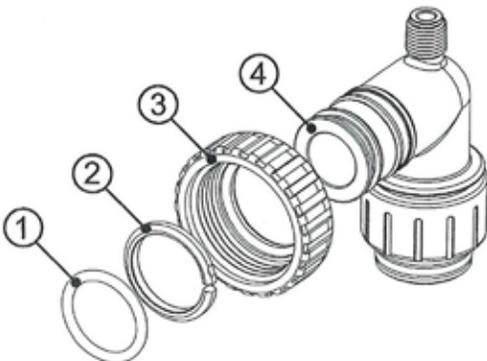
Figure 28



ITEM NO.	ORDER NO.	DESCRIPTION	QTY.
1	102141	Nut 1" Quick Connect	2
2	102437	Split Ring	2
3	102165	O-Ring 215	2
4	106769	Fitting 3/4" Brass Sharkbite	2
1-4	110135	Fitting 3/4" Brass Sharkbite Assy.(Set of 2)	1

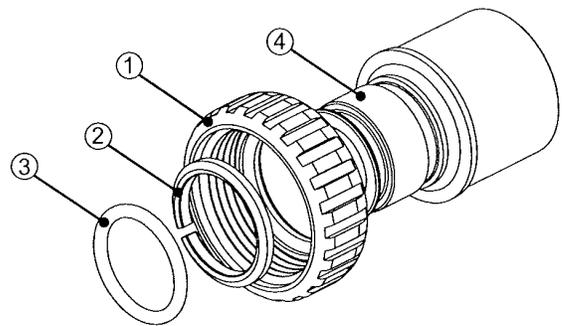


ITEM NO.	ORDER NO.	DESCRIPTION	QTY.
1	102141	Nut 1" Quick Connect	2
2	102437	Split Ring	2
3	102165	O-Ring 215	2
4	V3790	Fitting 3/4" John Guest	2
1-4	108478	Fitting 3/4" JG QC Assy (Set of 2)	1

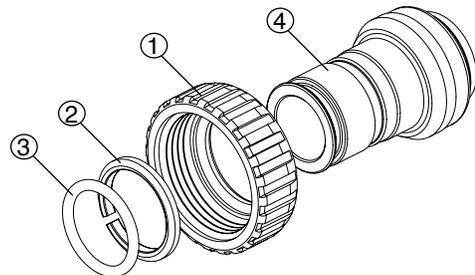


ITEM NO.	ORDER NO.	DESCRIPTION	QTY.
1	102141	Nut 1" Quick Connect	2
2	102437	Split Ring	2
3	102165	O-Ring 215	2
4	106786	Fitting 1-1/4" & 1-1/2" PVC Solvent	2
1-4	101646	Fitting 1-1/4" & 1-1/2" PVC Solvent Assy.(Set of 2)	1

Figure 29



ITEM NO.	ORDER NO.	DESCRIPTION	QTY.
1	102141	Nut 1" Quick Connect	2
2	102437	Split Ring	2
3	102165	O-Ring 215	2
4	106770	Fitting 1" Brass Sharkbite	2
1-4	110136	Fitting 1" Brass Sharkbite Assy. (Set of 2)	1



# PROMATE 6.0 SYSTEM SPECIFICATIONS

MODEL	PM6-024	PM6-032	PM6-032-10	PM6-048	PM6-064	PM6-096	PM6-128	PM6-160	PM6-192	PM6-032DMT	PM6-064DMT	
<b>FACTORY PRESET MINUTES</b>												
FILL	MINUTES	3	4	4	6	8	12	16	20	24	4	8
	GALLONS	1.5	2	2	3	4	6	8	10	12	2	4
BACKWASH:	MINUTES	8	8	8.0	8	8.0	8.0	8.0	8.0	8.0	8.0	8.0
	GALLONS	10.4	13.6	17.6	17.6	33.6	33.6	42.4	60	60	17.6	33.6
BRINE/RINSE:	MINUTES	60.0	60.0	60.0	60.0	68.0	68.0	68.0	68.0	68.0	60.0	68.0
	GALLONS	14.4	16.2	16.2	19.2	38.1	42.5	57.8	78.2	112.2	16.2	38.1
FINAL RINSE :	MINUTES	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
	GALLONS	5.2	6.8	8.8	8.8	16.8	16.8	21.2	30.0	30.0	8.8	16.8
<b>Refill - Pounds of Salt</b>												
EFFICIENT SALT	POUNDS	2.5	3.3	3.3	5	6.6	9.9	13.2	16.5	19.8	3.3	6.6
<b>LOW SALT</b>	<b>POUNDS</b>	<b>4.5</b>	<b>6</b>	<b>6</b>	<b>9</b>	<b>12</b>	<b>18</b>	<b>24</b>	<b>30</b>	<b>36</b>	<b>6</b>	<b>12</b>
MEDIUM SALT	POUNDS	7.5	10	10	15	20	30	40	50	60	10	20
HIGH SALT	POUNDS	11.3	15	15	22.5	30	45	60	75	90	15	30
<b>CAPACITY</b>												
EFFICIENT SALT		10,464	13,952	13,952	20,928	27,904	41,856	55,808	69,760	83,712	13,952	27,904
<b>LOW SALT</b>		<b>17,200</b>	<b>22,930</b>	<b>22,930</b>	<b>34,400</b>	<b>45,860</b>	<b>68,800</b>	<b>91,730</b>	<b>114,660</b>	<b>137,590</b>	<b>22,930</b>	<b>45,860</b>
MEDIUM SALT		21,040	28,060	28,060	42,090	56,120	84,810	112,240	140,300	168,360	28,060	56,120
HIGH SALT		24,230	32,310	32,310	48,460	64,620	96,930	129,240	161,550	193,860	32,310	64,620
<b>GRAINS OF HARDNESS REDUCED PER POUND OF SALT AT FACTORY SETTING</b>												
		3822	3822	3822	3822	3822	3822	3822	3822	3822	3822	3822
<b>Service Flow Rate</b>												
FLOW RATE AT 10 PSI		9.8	10.1	11.3	10.5	14.2	14.4	15.1	17.3	17.8	10.4	12.5
FLOW RATE AT 15 PSI		13.1	13.0	14.5	14.1	18.2	19.2	20.1	22.7	23.1	12.8	16.5
<b>OTHER DATA</b>												
RESIN, CUBIC FOOT		0.75	1	1	1.5	2	3	4	5	6	1	2
HAC (CU FT)		NA	NA	0.68	1							
MINERAL TANK DIMENSION		844	948	1044	1054	1354	1465	1665	1865	2162	1054	1356
BRINE TANK DIMENSION		1840	1840	1840	1840	1840	2441	2441	2450	2450	1840	1840
DRAIN LINE FLOW CONTROL GPM		1.3	1.7	2.2	2.2	4.2	4.2	5.3	7.5	7.5	2.2	4.2
BRINE LINE FLOW CONTROL GPM		0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
INJECTOR, COLOR		VIOLET	RED	RED	WHITE	YELLOW	LT GREEN	ORANGE	BLUE	DK GREEN	RED	YELLOW
INJECTOR DRAW RATE		0.135	0.210	0.210	0.250	0.410	0.425	0.520	0.610	0.630	0.210	0.410
INJECTOR SLOW RINSE RATE		0.240	0.270	0.270	0.320	0.560	0.625	0.850	1.150	1.650	0.270	0.560

**Factory Settings are in Bold**

System conforms to NSF/ANSI 44 for specific performance claims. Efficiency is valid only at stated salt dosage. Efficiency is measured by laboratory test described in NSF/ANSI44. This represents the maximum possible efficiency the system can achieve; The operational efficiency is the actual efficiency achieved after the system has been installed. The operational efficiency is typically less than the tested efficiency due to individual application factors including water hardness, water usage and other contaminants that reduce softener capacity. These efficiency-rated softeners are Demand-Initiated Regenerating (DIR) Softeners which comply with specific performance specifications intended to minimize the amount of brine and water used in operation.

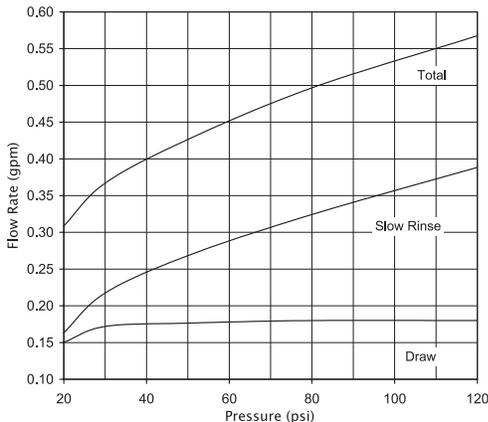
**If application demands 1 gpg or less in service flow at peak flows, may need to add safety factor when programming capacity.**

High efficient salting is intended for clean water (iron <0.5 ppm) such as most city water supplies. High efficient testing was done with maximum service flow of 8 gpm/ft<sup>3</sup>

## INJECTOR FLOW GRAPHS

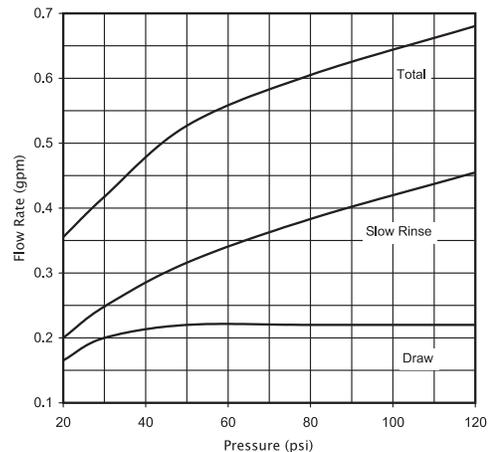
### VIOLET, ORDER NO. 101827

US Units



### RED, ORDER NO. 101828

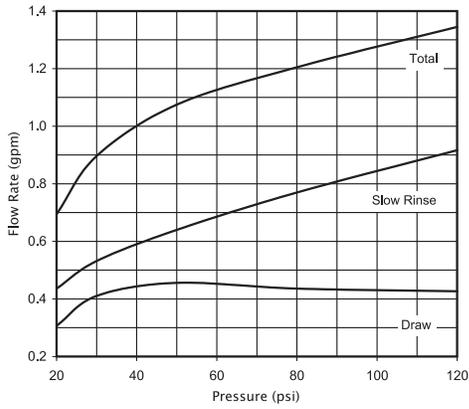
US Units



# INJECTOR FLOW GRAPHS

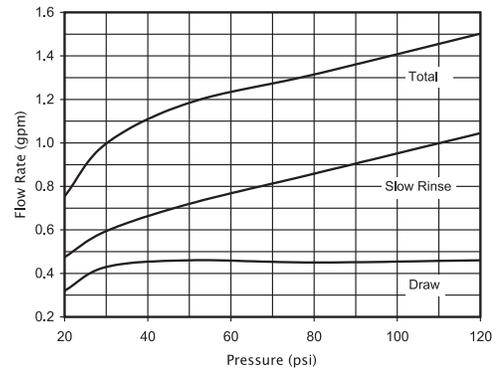
## YELLOW, ORDER NO. 101831

US Units



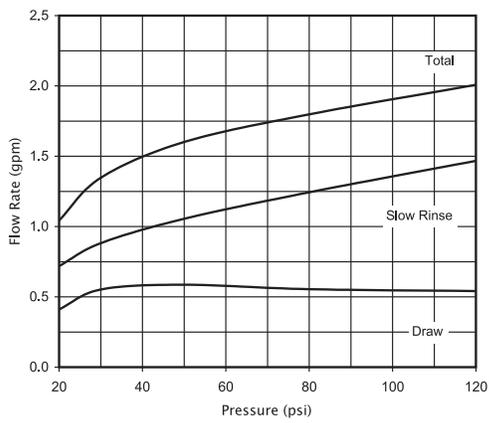
## GREEN, ORDER NO. 101832

US Units



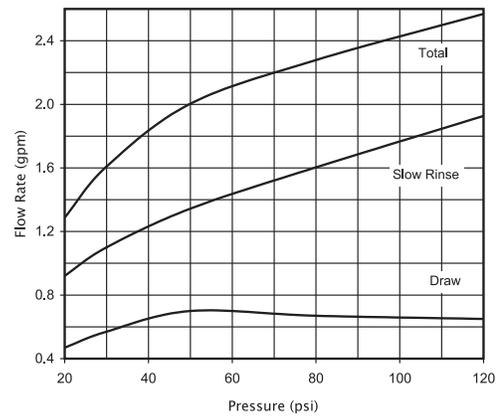
## ORANGE, ORDER NO. 101833

US Units



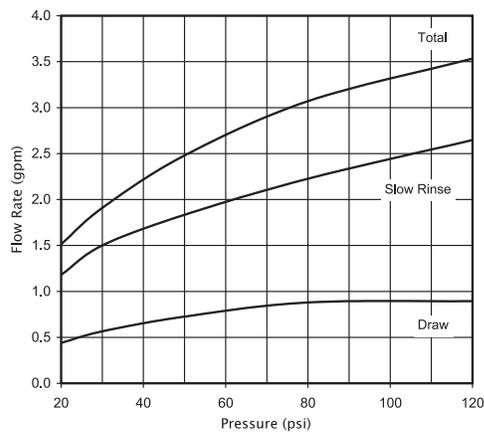
## LIGHT BLUE, ORDER NO. 101834

US Units



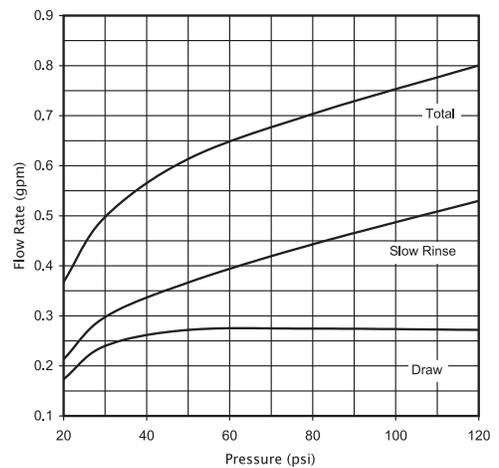
## LIGHT GREEN, ORDER NO. 101835

US Units



## WHITE, ORDER NO. 101829

US Units



## PROGRAMMING OPTIONS

Reserve Gallons	Regeneration Type	Days Override	Results (Reserve capacity estimate based on history of water usage)
AUTO	DELAYED REGEN	oFF	Reserve capacity automatically estimated. Regeneration occurs when gallons capacity falls below the reserve capacity at the next Regen Set Time.
AUTO	DELAYED REGEN	1 to 28	Reserve capacity automatically estimated. Regeneration occurs at the next Regen Set Time when gallons capacity falls below the reserve capacity or the specified number of days between regenerations is reached.
20 to 250,000	DELAYED REGEN	oFF	Reserve capacity <u>not</u> automatically estimated. Regeneration occurs at the next Regen Set Time when gallons capacity reaches 0.
oFF	DELAYED REGEN	1 to 28	Reserve capacity <u>not</u> automatically estimated. Regeneration occurs at the next Regen Set Time when the specified number of days between regenerations is reached.
20 to 250,000	DELAYED REGEN	1 to 28	Reserve capacity <u>not</u> automatically estimated. Regeneration occurs at the next Regen Set Time when gallons capacity reaches 0 or the specified number of days between regenerations is reached.
AUTO	IMMEDIATE REGEN	oFF	Reserve capacity <u>not</u> automatically estimated. Regeneration occurs immediately when gallons capacity reaches 0. Time of regeneration will not be allowed to be set because of regeneration will always occur when gallons capacity reaches 0.
20 to 250,000	IMMEDIATE REGEN	oFF	Reserve capacity <u>not</u> automatically estimated. Regeneration occurs immediately when gallons capacity reaches 0. Time of regeneration will not be allowed to be set because regeneration will always occur on 0.
AUTO	DELAY + IMMEDIATE	oFF	Reserve capacity automatically estimated. Regeneration occurs when gallons capacity falls below the reserve capacity at the next Regen Set Time or regeneration occurs immediately after 10 minutes of no water usage when gallon capacity reaches 0.
<b>AUTO*</b>	<b>DELAY + IMMEDIATE</b>	1 to 28 <b>*14</b>	Reserve capacity automatically estimated. Regeneration occurs at the next Regen Set Time when gallons capacity falls below the reserve capacity or the specified number of days between regenerations is reached or regeneration occurs immediately after 10 minutes of no water usage when gallon capacity reaches 0.
20 to 250,000	DELAY + IMMEDIATE	1 to 28	Reserve capacity <u>not</u> automatically estimated. Regeneration occurs at the next Regen Set Time when specified number of days between regenerations is reached or regeneration occurs immediately after 10 minutes of no water usage when gallon capacity reaches 0.

**\*Factory settings in bold**

To "lockout" access to softener setup, diagnostic and valve history press ▾ next, ▲ and clock buttons in sequence.

To "unlock" repeat sequence, press ▾ next, ▲ and clock buttons in order. Time of Day, Hardness, Day Override and Time of Regeneration not included in Lockout.

## GENERAL SPECIFICATIONS

**OPERATING PRESSURES**

Minimum/Maximum .....25 psi-125 psi

**OPERATING TEMPERATURES**

Minimum/Maximum .....40° - 110° F

**METER**

Accuracy.....±5%  
Flow Rate Range.....0.25 - 27 GPM  
Gallon Range .....20 - 250,000

**DIMENSIONS**

Drain Line .....3/4" or 1" NPT  
Brine Line .....3/8" Poly Tube

**ELECTRICAL CURRENT DRAW/VOLTAGE/FREQUENCY** .....0.5A/110v/60Hz

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

# Residential Water Softener & Filter Limited Warranty

**INCLUDES – ProMate<sup>®</sup>, ProMate-1<sup>®</sup>, ProMate-5<sup>®</sup>, ProMate-6<sup>®</sup>, ProMate-6.5<sup>®</sup>, ProMate-7.0<sup>®</sup>, ProMate-7.1<sup>®</sup>, E6  
EXCLUDES – Iron Curtain<sup>®</sup>, Iron Curtain<sup>®</sup> Jr. and Storm 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.