

10 Series

Owner's Manual

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Installation Record and Water Readings

Date of Installation _____

Serial Number _____

Model Number _____

Returned Warranty Card Date _____

Hardness _____

Iron _____

pH _____

Other _____

PREFACE

Congratulations on your decision to place your confidence in a superior Hague WaterMax water treatment appliance.

Recognized nationwide for built-in quality, dependability, and ease of service, this appliance represents state-of-the-art in home water treatment.

While your appliance should be installed and serviced by a professional Hague WaterMax dealer, important information is contained in this manual which will help you get the maximum benefit and enjoyment from your particular appliance.

We urge you to read this information carefully and review it again at any time a malfunction may occur. In most cases, this review will uncover minor problems that you can correct yourself, thereby saving you time and the cost of an unnecessary service call.

How To Get Maximum Efficiency

1. Maintain salt level at least 1/3 full; use solar or pellet salt. Purchase a clean grade of salt. Use one or the other; do not mix.
2. Allow the appliance to regenerate at a time when the water is not being used. If you have more than one appliance, allow two hours between each regeneration.
3. Protect your WaterMax, including the drain line, from freezing.
4. Should dirt, sand, or large particles be present in your water supply, it is important that you consult your Hague dealer for filters that will eliminate this problem.
5. Bypass the appliance(s) if well, plumbing, or pump work is required, and turn on outside tap until water runs clear before putting the appliance back in service.

Your WaterMax appliance may be disinfected with 5.25% sodium hypochlorite, which is the active ingredient in household bleach. To disinfect your appliance, add 4 fluid ounces of household bleach per cu.ft. of resin to the brine well of the brine tank (the brine tank should have water in it to permit the solution to be carried into the softener.) For non-resin media, add .8 fluid ounces of household bleach per cu.ft. of media to the brine well. Initiate an immediate recharge (Page 9.)

OPERATIONAL, MAINTENANCE, AND REPLACEMENT REQUIREMENTS ARE ESSENTIAL FOR THE PRODUCT TO PERFORM TO SPECIFICATIONS.

PRE-INSTALLATION

1. **Water Pressure** — Not less than 20 psi nor greater than 120 psi.
2. **Minimum Service Flow Rate Available to the appliance** — 3 gpm or equal to backwash flow rate of your particular model. (See Engineering Specifications, Page 12.)
3. **Drain** — Drain the appliance to a floor drain or washer drain. To prevent back siphoning, the installer must provide an adequate air gap or a siphon break.
4. **Electricity** — Use standard 115 Volt AC.
5. **Water Quality** — If water supply contains sulfur, bacteria, iron bacteria, tannins, algae, oil, acid, salt, or other unusual substances, special equipment must be installed ahead of the WaterMax system unless stated on Engineering Specifications (Page 12.)

Some Don'ts

1. Do not install if the above items are not satisfactory.
2. Do not install if incoming or outlet piping water temperature exceeds 120°F.
3. Do not allow soldering torch heat to be transferred to valve components or plastic parts.

Some Do's

1. Do install after the pressure tank and not between the well pump and pressure tank. (See Fig. 1, pg. 3.)
2. Do comply with all local plumbing and electrical codes.
3. Do install pressure-reducing valve if inlet pressure exceeds 90 psi.
4. Do examine the inlet line from the pressure tank to appliance on well water (recommended minimum inlet pipe size is ¾" I.D.) On municipal water, the recommended minimum inlet pipe size is ½" I.D.
5. Do install gravity drain on salt storage tank and media tank cabinet.
6. Do secure drain line on appliance and at drain outlet.
7. A minimum of 10 feet of pipe from the outlet of the water conditioner to the inlet of the water heater is recommended.

Where To Locate The 10 Series

Where you will locate the 10 Series depends on what other water treatment equipment you currently have installed. The 10 Series should be located:

After:
Water Meter
Pressure Tank

Before:
Water Heater

TYPICAL 10 SERIES INSTALLATION

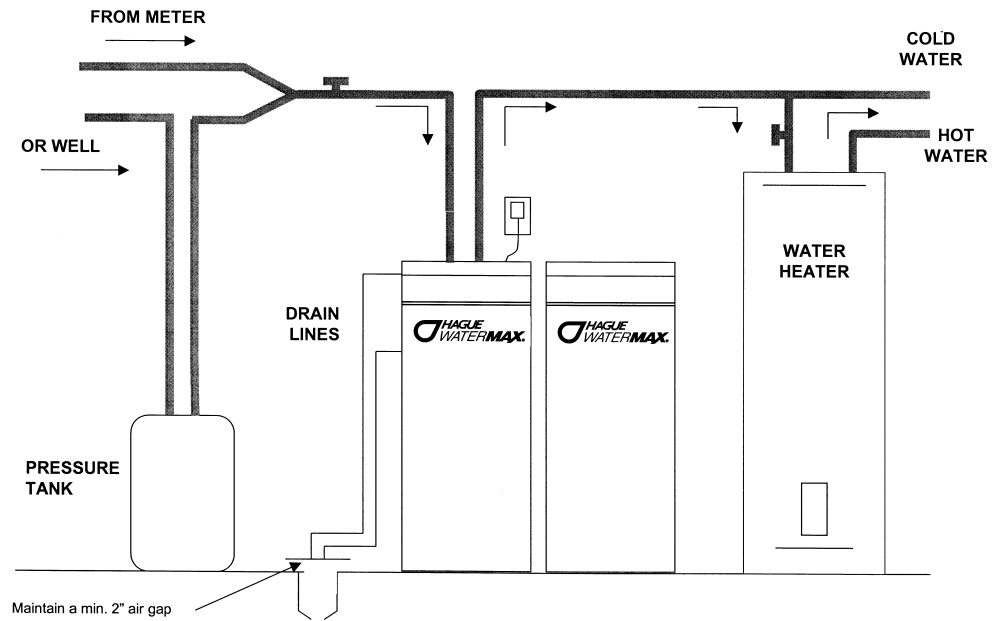


Figure 1

Keep in mind that you need to have a drain available nearby for waste water.

In placing the 10 Series, consider the following:

- Install the 10 Series ahead of the water heater to prevent build-up of hard water deposits in the water heater. This placement will maintain the water heater efficiency.
- Install pressure-reducing valve if inlet pressure exceeds 90 psi (620 kPa).
- A minimum of 10 feet (3 m) of 3/4" (19 mm) pipe from the outlet of the water conditioner to the inlet of the water heater is recommended to reduce the potential for hot water back flowing into the valve.

INSTALLATION AND START UP

1. Place the 10 Series in the desired location. Turn off the electricity and/or water supply to the water heater. Make sure the inlet, outlet and drain connections meet the applicable local codes. Check arrows on the bypass valve to be sure the water flows in proper direction. **CAUTION: Do not plumb the appliance in backwards.**
2. The drain hose must be a minimum of 1/2" I.D. tubing and should make the shortest run to a suitable drain.
3. Connect the salt tank to the valve head with the flexible 3/8" plastic tube included with the system. Be sure to insert the plastic insert in the end of the brine tube. (See Figure 13, page 32.)

Connect the Overflow Line to the brine tank. If the brine tank is filled with too much water, or if there is a malfunction, an overflow line will direct excess water to drain.

Insert the 2 pc. Overflow fitting into the outside of the cabinet and attach it with the plastic thumb nut. Connect 1/2" I.D. tubing (not supplied) between the overflow fitting and a suitable waste receptor. Maintain a minimum of 2" (50 mm) air gap between the drain line and the flood level rim of the waste receptor to prevent back siphoning. This is a gravity drain. The overflow line must end at a drain that is at least 3" lower than the bottom of the overflow fitting.

4. Attach the drain line. Route the drain line to a floor drain, laundry tub or other suitable waste receptor. Maintain a minimum of 2" (50 mm) air gap between the drain line and the flood level rim of the waste receptor to prevent back siphoning.
5. Place the appliance in the bypass position and turn on the main water supply. Open the nearest cold water faucet to flush the plumbing of any excess soldering flux, air, or any other foreign material.
6. Close the faucet and check for leaks. If leaks are found, turn off the main water supply and open the nearest cold water faucet to depressurize the lines. Close the faucet to eliminate siphoning action. Repair leaks. Place the bypass in the "service" position. Slowly open the main water supply valve and fill the WaterMax. Then open the nearest cold water faucet to purge air out of the appliance. Close faucet.
7. Connect transformer power cord to the back of the controller.
8. Plug in transformer.
9. Program the Systems Control as outlined on Page 5-11.
10. Add water to the brine tank. Fill to a minimum of 2" above the grid plate. Make sure that the salt dosage is set as recommended for the application. After the first regeneration, the appliance will automatically refill the correct amount of water into the brine tank.
11. Initiate a manual regeneration and inspect for proper operation. Allow the appliance to draw all the water out of the brine cabinet until the air check sets. Then advance to Brine Refill position by using Change & Select buttons simultaneously. Let the tank fill with proper amount of water. The controller will then step the valve to the Home position.

12. Fill the brine tank with salt.* Note: Do not mix pellet with solar salt!
13. Open the inlet valve and turn on the electricity to the water heater. To complete the installation, open a cold water tap and allow the appliance to flush for 20 minutes or until approximately 72 gallons have passed through the appliance. Verify flashing light on controller, indicating water flow. (See Figure 2, below.)
14. Make sure the bypass valve is left in the "service" position. Test the water at the test port to verify soft water.
15. Place covers on both cabinets.

*When using potassium chloride as an alternative to sodium chloride, increase the hardness setting by 12%. Note: we do not recommend using potassium chloride when iron is present in the raw water supply.

SETTING & USING THE SYSTEMS CONTROL

Control Panel Buttons

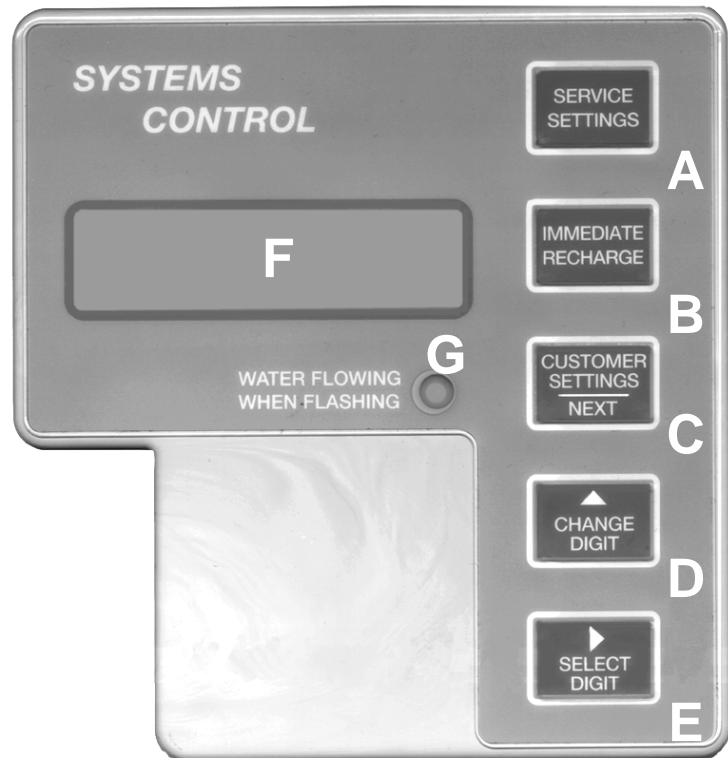


Figure 2

(A) SERVICE SETTINGS

This section is recommended for qualified service personnel only. Must be set correctly for proper performance.

FUNCTION: Used to enter SERVICE SETTINGS mode. All three OPERATING MODES can be selected and all operating parameters can be set for each OPERATING MODE when this button is activated.

Press and hold (approximately 3 seconds) until display changes to “Set language???”. Use the NEXT button to step through parameters that can be set.

(B) IMMEDIATE RECHARGE

FUNCTION: Used to put the appliance into an immediate regeneration.

Press and hold (approximately 5 seconds) until display changes to “Going to 1”. The appliance is now in regeneration and will return to “Gal. Remain” after completion of all cycles.

(C) CUSTOMER SETTINGS/NEXT

This section is recommended for qualified service personnel only. Must be set correctly for proper performance.

FUNCTION: Multi-purpose. 1.) Used to enter CUSTOMER SETTINGS mode. 2.) Used to “step” through parameters that can be set in CUSTOMER & SERVICE SETTINGS modes. Press and release to accomplish various functions.

(D) CHANGE DIGIT

FUNCTION: Used to change values of parameters that can be set. Used in conjunction with SELECT DIGIT button. Used simultaneously with CHANGE DIGIT button to “speed up” individual regeneration cycle times for a quick test.

Press and release the Select Digit button to move cursor one digit to the left of parameter that can be set. When cursor is at extreme left position, press again to reset cursor to extreme right position.

(E) SELECT DIGIT

FUNCTION: Used to control cursor movement when in CUSTOMER & SERVICE SETTINGS modes. Used in conjunction with CHANGE DIGIT button. Also used simultaneously with CHANGE DIGIT button to “speed up” individual regeneration cycle times for a quick test.

Press and release the Select Digit button to move cursor one digit to the left of parameter that can be set. When cursor is at extreme left position, press again to reset cursor to extreme right position.

Control Panel Display

(F) LCD DISPLAY

FUNCTION: Shows status of control; NORMAL OPERATING mode, SERVICE SETTINGS mode or CUSTOMER SETTING mode. It is very important to know which mode the control is in for proper operation.

(G) WATER FLOWING INDICATOR LIGHT

FUNCTION: When light is blinking, it indicates that water is flowing through the WaterMax. This is useful for checking for proper plumbing and leaks.

Description Of The Three WaterMax Operating Modes

CAUTION: *Be sure the controller is firmly “locked” onto the drive end cap assembly.” The four tabs on top of the drive end cap will allow the clips on the bottom of the controller case to lock onto the end cap tabs. (See detail diagram on page 18; fig. 3.)*

MODE 1

TIMER MODE: Will regenerate based on frequency. Example: every 2 days or as specified up to 12 days. Time of regeneration can be set.

MODE 2

PATENTED SAVEMATIC – DEMAND DELAYED: Is based on actual water usage and total capacity of the appliance. Will only regenerate using the amount of salt needed to maintain capacity. Time of regeneration can be set. If total capacity is depleted before set regeneration time, a forced regeneration will occur. Appliance will regenerate again that night and then go back to the normal setting.

MODE 3

DEMAND IMMEDIATE: Will regenerate based on water usage alone. Regeneration will occur when the capacity limit is reached. Time of regeneration cannot be set.

THE FOLLOWING EXAMPLE takes you through the steps involved for setting the WaterMax SYSTEMS CONTROL. If you follow these steps, you will set a WaterMax 12 AMQ for OPERATING MODE 2, DEMAND DELAYED operation. All three OPERATING MODES use similar procedures.

Push the SERVICE SETTINGS button to enter SERVICE SETTINGS mode. The display will show: **Set language???**

This parameter is used to set the language that is displayed in the CUSTOMER SETTINGS mode: ENG – English, FRA – French, ESP – Spanish, DEU – German, ITA – Italian.

- 1.00 Push the CHANGE DIGIT button until the correct language is displayed. In this example, set to: Set Language ENG.
- 2.00 Push the NEXT button to step to the next parameter. The display will show: **Units ENG**
- 2.00a Push the CHANGE DIGIT button to toggle English/metric units of measure. For this example, set to: Units ENG.
- 3.00 Push the NEXT button to step to the next parameter. The display will show: **History NO** This parameter is used to enter the History file. The History file is used as a record of water readings for future reference. (3.00 – 3.14 is an electronic notepad only and does not affect the operation of the appliance.)
- 3.00a Push the CHANGE DIGIT button to toggle between Yes or No. Setting to “Yes” will enter the History file and setting to “No” will bypass the History file. In this example, set to: History Yes
- 3.01 Push the NEXT button and the display will show **Soft Ver 1.00**. This is information only and cannot be reset. Push the NEXT button to step to the next parameter. The display will show: **Inst. Date #####** This parameter is to be set to the installation date of the appliance. There are six digits. The first two are the month. The next two are the day and the final two are the year. This is the first entry in the History file.
- 3.01a Push and release the SELECT DIGIT button until the cursor (_) is positioned in the display as follows:
Inst. Date #####
- 3.01b Push and release the CHANGE DIGIT button until the value above the cursor is equal to the tens position of the desired Month setting.
- 3.01c Continue using the SELECT and CHANGE buttons until the desired date is displayed. Example: April 22, 2000 = 042200
- 3.01 d Push the SELECT and CHANGE buttons until the desired date is entered.
- 3.02 Push the NEXT button to step to the next parameter. The display will show: **# People ##** This parameter is used to record the number of people in the household and should match the “# People” setting in the CUSTOMER SETTINGS file.
- 3.02a Push the SELECT and CHANGE buttons until the desired number of people in the household is reached. In this example, set to: # People 04
- 3.03 Push the NEXT button to step to the next parameter. The display will show: **Hard. Gr. ###** This parameter is used to record the tested Hardness of the water.
- 3.03a Push the SELECT and CHANGE buttons until the desired hardness number is reached. In this example, use 40 gpg: Hard. Gr. 040
- 3.04 Push the NEXT button to step to the next Parameter. The display will show: **Iron ppm ###** This parameter is used to record the tested iron content of the water.
- 3.04a Push the the SELECT and CHANGE buttons until the desired iron number is reached. In this example, set iron to 002 (this is 2 ppm).
- 3.05 Push the NEXT button to step to the next Parameter. The display will show: **Mang. ppm ###** This parameter is used to record the tested Manganese content of the water.
- 3.05a Push the SELECT and CHANGE buttons until the desired manganese number is reached. In this example, set to: Mang. ppm 000
- 3.06 Push the NEXT button to step to the next Parameter. The display will show: **Chlor. ppm ###** This parameter is used to record the tested chlorine content of the water.

- 3.06a Push the SELECT and CHANGE buttons until the desired chlorine number is reached. In this example, set to: Chlor. ppm 000
- 3.07 Push the NEXT button to step to the next Parameter. The display will show: **Sulfur ppm**
This parameter is used to record the tested sulfur content of the water.
- 3.07a Push the SELECT and CHANGE buttons until the desired sulfur number is reached. In this example, set to: Sulfur 00.0
- 3.08 Push the NEXT button to step to the next parameter. The display will show: **pH ###**
This parameter is used to record the tested pH of the water.
- 3.08a Push the SELECT and CHANGE buttons until the desired pH number is reached. In this example, set to: pH 07.0
- 3.09 Push the NEXT button to step to the next parameter. The display will show: **Iron Bact NO or YES**
This parameter is used to record the presence of iron bacteria in the water.
- 3.09a Push the SELECT and CHANGE buttons until the desired word is reached. In this example, set to: Iron Bact. NO
- 3.10 Push the NEXT button to step to the next parameter. The display will show: **Tot. Regens. ###**
This parameter is used to record the total number of regenerations the appliance has gone through and cannot be reset.
- 3.11 Push the NEXT button to step to the next parameter. The display will show: **Tot. Gal. #####**
This parameter is used to record the total number of gallons of water that has passed through the appliance and cannot be reset.
- 3.12 Push the NEXT button to step to the next parameter. The display will show: **Model # #####**
This parameter is used to record the model number of the appliance.
- 3.12a Push the SELECT and CHANGE buttons until the desired model number is reached. In this example, set to: Model # 12AMQ
- 3.13 Push the NEXT button to the next parameter. The display will show: **Save History NO**
This parameter, if set to YES, will save the current information you have just entered. If set to NO, it will leave the History file as previously defined.
- 3.14 Push the CHANGE DIGIT button to toggle between Yes or No. In this example, set to: Save History YES
- 4.00 Push the NEXT button to step to the next parameter. The display will show: **Tot. Regens. ###**
This parameter displays the number of regenerations the appliance has gone through since the last time the SERVICE SETTINGS mode was entered. This parameter is reset to 000 after exiting the SERVICE SETTINGS mode.
Push the NEXT button to step to the next parameter. The display will show: **Tot. Gal. ###**
This parameter displays the Total Gallons the appliance has gone through since the last time the SERVICE SETTINGS mode was entered. This parameter is reset to 000 after exiting the SERVICE SETTINGS mode.
- 5.00 Push the NEXT button to step to the next parameter. The display will show: **Mode #** The "Mode #" is the number of the OPERATING MODE for which the systems control is set.
- 5.00a Push the CHANGE DIGIT button to change the value of "Mode #" until it reads 2 (for this example.)
- 6.00 Push the NEXT button to step to the next parameter. The display will show: **Hard. Gr. ###** The "###" is the hardness number of the water tested. This number is to be the actual hardness reading and is not compensated for iron.
- 6.00a Push and release the SELECT DIGIT button until the cursor (_) is positioned in the display as follows: Hard. Gr. ###. The cursor is now under the "one" position.
- 6.00b Continue pushing the SELECT and CHANGE buttons until the desired hardness number is displayed. Example: Hard. Gr. 040
- 7.00 Push the NEXT button to step to the next parameter. The display will show: **Iron ppm ###**

This parameter is used to calculate a compensated hardness automatically.

7.00a Push the SELECT and CHANGE buttons until the desired iron number is displayed.

Example: Iron ppm 002

8.00 Push the NEXT button to step to the next parameter. The display will show: **Mang. ppm ###**

8.00a Push the SELECT and CHANGE buttons until the desired manganese number is displayed.

Example: Mang. ppm 000

9.00 Push the NEXT button to step to the next parameter. The display will show: **Comp. Hard. ###**

This parameter is the calculated compensated hardness using the hardness, iron and manganese settings. The formula is (4 x each ppm iron) + (4 x each ppm manganese) + hardness = compensated hardness. This is not a parameter that can be set. The display should now read: Comp. Hard. 0048

10.00 Push the NEXT button to step to the next parameter. The display will show: **Capty. Gr. #####**

This parameter is used to set the softening capacity of the appliance. (See WaterMax engineering specifications or setting charts on pages 12, 13 and 14 for capacities based on salt usage.)

10.00a Push the SELECT and CHANGE buttons until the desired capacity number is displayed. In this example, set to: Capty. Gr. 28730

11.00 Push the NEXT button to step to the next parameter. The display will show:

72-96HourRegen No

This parameter, if set to “Yes”, is used to force the appliance to regenerate every 96 hours if regularly scheduled regenerations based on water usage do not occur in 96 hours or less intervals. This should always be “yes” if iron is present in the water.

11.00a Push CHANGE button to toggle parameter value from “No” to “Yes”. In this example, set to:

96HourRegen Yes

12.00 Push the NEXT button to step to the next parameter. The display will show: **Distill/RO**

Set this parameter to “Yes” if a distiller or reverse osmosis system is plumbed to use soft water from the WaterMax.

12.00a Push the CHANGE button to toggle parameter value from “No” to “Yes”. In this example, set to:

Distill/RO Yes

13.00 Push the NEXT button to step to the next parameter. The display will show: **Backwash 1 ##.#** (See WaterMax setting chart for 17 through 20.) The “##.#” is the time, in minutes to the nearest tenth, for which the first backwash cycle can be set.

13.00a Push the SELECT and CHANGE buttons until the desired backwash time is displayed. In this example, set to: Backwash 1 07.0

14.00 Push the NEXT button to step to the next parameter. The display will show: **Brine/Rinse ##.#**

The “##.#” is the time, in minutes to the nearest tenth, for which the first brine and slow rinse cycles can be set.

14.00a Push the SELECT and CHANGE buttons until the desired combined brine and slow rinse cycle time is displayed. In this example, set to: Brine/Rinse 30.0

15.00 Push the NEXT button to step to the next parameter. The display will show: **Backwash 2 ##.#**

The “##.#” is the time, in minutes to the nearest tenth, for which the second backwash can be set.

15.00a Push the SELECT and CHANGE buttons until the desired backwash time is displayed.

In this example, set to: Backwash 2 02.0

16.00 Push the NEXT button to step to the next parameter. The display will show: **Salt lbs. ##.#**

This parameter sets the amount of salt to be used to achieve the capacity setting. Remember, in OPERATING MODE 2, WaterMax only uses as much salt as is needed to maintain the capacity setting.

16.00a Push the SELECT and CHANGE buttons until the desired salt setting is displayed.

In this example, set to: Salt lbs 06.2

17.00 Push the NEXT button to step to the next parameter. The display will show: **Turbine # ###**

This parameter is used to adjust the water metering system on the WaterMax. For a WaterMax, this value should always be 135. It is very important that this parameter is set correctly or your WaterMax will not

monitor water usage properly.

17.00a Push the SELECT and CHANGE buttons until the correct value is displayed.

In this example, set to: Turbine # 135

18.00 Push the NEXT button to step to the next parameter. The display will show: **Reg. Tonight NO**

This parameter, if set to YES, will force a regeneration at the next set regeneration time (i.e. 02.00.) After the regeneration, the parameter will automatically reset to "No."

18.00a Push the CHANGE DIGIT button to toggle between Yes or No.

In this example, set to: Reg. Tonight YES

19.00 Push the NEXT button to step to the next parameter. The display will show: **SAVING – then display Gal. Remain #####**

This is the normal operation display for OPERATING MODE 2. The ##### represents the number of gallons of softening capacity between regenerations. This completes the SERVICE SETTINGS mode. Even though the SERVICE SETTING mode has been completed, the WaterMax is not ready for service until the CUSTOMER SETTINGS mode is completed. The following example takes you through the steps required for setting the parameters of the CUSTOMER SETTINGS mode for OPERATING MODE 2.

1.00 Push and hold the Customer Settings/Next button to enter CUSTOMER SETTINGS mode. The display will show: **Set Time ##:##** This parameter is to be set to the current time of day using military time.

1.00a Push the SELECT and CHANGE buttons until the desired time is displayed. In this example, set time to: 13:00. (13:00 is 1:00 p.m., 14:00 is 2:00 p.m.)

2.00 Push the NEXT button to step to the next parameter. The display will show: **Reg Time ##:##**
This parameter is to be set for the desired time a normally scheduled regeneration is to occur using military time.

2.00a Push the SELECT and CHANGE buttons until the desired time is displayed. In this example, set to: Reg Time 02:00. (02:00 is 2:00am, 14:00 is 2:00pm)

3.00 Push the NEXT button to step to the next parameter. The display will show: **# People ##**

3.00a Push the CHANGE button until the correct number of people in the household is displayed.

4.00 Push the NEXT button to save the parameter settings and exit the CUSTOMER SETTINGS mode. The display will show: SAVING – then display Gal Remain #####

If you followed the above directions correctly, your WaterMax Systems Control is ready for OPERATING MODE 2 service.

ENGINEERING SPECIFICATIONS

10 SERIES	13MAQ	13BEQ	13MXQ	13MDQ	12AMQ	12APQ	12AKQ	12AJQ
Tannin (ppm)	0	*	0	0-2	0	** ***	0	****
Sulfur (ppm) – SulfurStat	0	0	0	0	0	0-5**	0	0
Iron (ppm) – ferrous – clear water	0	0	12	0	12	2-12**	15	5
Maximum Compensated Hardness	90	90	110	90††	90	90	90	60
Maximum Chlorine (ppm)	1	3	0	0	0	0	0	0
Minimum pH	7	7	7	7	7	7	7	6.3
Filtration – nominal rating (microns)	20	25	20	20	20	20	20	20
#1 Salt –5850 grains per lb of salt (lbs./capacity)	1/5,850	1/5,850	1.6/9,360	NA	1/5,850	NA	NA	NA
#2 Salt –5163 grains per lb of salt (lbs./capacity)	2.7/13,890	2.7/13,890	4.2/21,680	NA	2.7/13,890	NA	NA	2.7/13,890
#3 Salt –4679 grains per lb of salt (lbs./capacity)	6.2/28,730	6.2/28,730	9.6/44,840	8.5/28,730	6.2/28,730	6.2/28,730	6.2/28,730	6.2/28,730
#4 Salt –3828 grains per lb of salt (lbs./capacity)	9.3/35,300	9.3/35,300	14.4/55,090	10.7/35,300	9.3/35,300	9.3/35,300	9.3/35,300	9.3/35,300
Media Amount Compartment #1	1.5 lbs.	2.0 lbs.	1.5 lbs.	1.5 lbs.	NA	NA	NA	NA
Media Amount Compartment #2	Empty	.4 cu.ft.	.6 cu.ft.	.3 cu.ft.	6 lbs.	27 lbs.	.4 cu.ft.	.4 cu.ft.
Media Amount Compartment #3	1.06 cu.ft.	1.06 cu.ft.	1.06 cu.ft.	1.06 cu.ft.	1.06 cu.ft.	1.06 cu.ft.	1.06 cu.ft.	1.06 cu.ft.
Backwash Rate (gpm) @ min. water pressure	2.4†	3†	2.4†	2.4†	5†	***Empty†	7†	7†
Brine Line Flow Control Refill (gpm)	.5	.5	.5	.5	.5	.5	.5	.5
Water Pressure (min-max psi)	20-120	20-120	20-120	20-120	20-120	30-120	30-120	30-120
Flow Rate @ 25 psi drop	19.5	19.5	17	17	23	19.6	19.6	20.5
Flow Rate @ 15 psi drop	11	13	10.5	10.5	11.2	10.6	10.6	12.5
Pressure Drop @ Flow Rate Of 4 gpm	6.5 psi	8.5 psi	8.5 psi	8.5 psi	3.2 psi	6 psi	6 psi	7 psi
(#1 Salt Setting) total length of reg. Min / gal	12/13.5	12/16	12/13.5	NA	12/24	NA	NA	NA
(#2 Salt Setting) total length of reg. Min / gal	18/16.5	18/19	26/20.5	NA	18/27	NA	NA	23/70
(#3 Salt Setting) total length of reg. Min / gal	38/26.5	38/29.5	58/36.5	47/31	38/37	44/80	44/80	44/80
(#4 Salt Setting) total length of reg. Min / gal	56/35.5	56/38	74/44.5	64/39.5	58/56	61/89	61/89	61/89
Shipping weight (lbs.)	135	152	168	152	140	167	160	180
Bacteriostatic – KDF® Process Media – Listed With The U.S. EPA As A Bacteriostatic Device. U.S. EPA #54369-OH-001	YES	YES	YES	YES	YES	YES	YES	YES

Valve Inlet/Outlet 1"
Drain Line (Minimum I.D.) ½"
Water Temperature (Min-Max) 40-120 °F
Height (inches) 38"
Floor Space (inches) 14" x 28"
Salt storage capacity: 200 lbs, 90kg
Brine & Rinse total: .65 gpm
Brine Draw: .25 gpm
Rinse: .4 gpm
 Electrical rating: 115V, 60 cycle.

- Iron Reduction To .3 ppm Or Less.
- When Adding Media In The Field, Check For Proper Settings (See Specifications, Above.)
- Regeneration Every 96 Hours Is Required When Iron Is Present In The Raw Water Supply. Use Salt Setting #3 Or #4.

*Municipally Supplied Chlorinated Water Only.

**Must Have A Minimum of 2 ppm Iron and a Minimum of 200 ppm TDS.

***Unit Has No Backwash Flow Control Button Or Retainer. Must Have A Minimum Of 7 gpm @ 30 psi Available For Proper Backwash.

****Calcite Will Add Additional Hardness To Water Before Softening.

† Rate Of Flow Must Be Verified At The End Of ½" ID Drain Line.

†† Any Hardness Over 10 gpg Will Increase The Chance Of Calcium Carbonate Precipitation. As The Hardness Increases So Does The Chance Of This Precipitation.

††† Must Use Citric Acid to Regenerate Along With Salt.

MODE 1 SETTINGS — 5 BUTTON CONTROLLER.

10 SERIES	13MAQ	13BEQ *	13MXQ	13MDQ	12AMQ	12APQ ** ***	12AKQ	12AJQ ****
Mode 1	YES	YES	YES	YES	YES	YES	YES	YES
Regeneration Frequency	As required	As required	As required	1 or 2	As required	1 or 2	1 or 2	1 or 2
96 hour regeneration (if iron present – yes)	---	---	YES	---	YES	YES	YES	YES

#1 SALT SETTING

Backwash 1 (minutes)	1	1	1	---	2	---	---	---
Brine rinse (minutes)	7	7	7	---	7	---	---	---
Backwash 2 (minutes)	3	3	3	---	2	---	---	---
Capacity @ salt lbs.	5,850 1 lb.	5,850 1 lb.	9,360 1.6 lb.	---	5,850 1 lb.	---	---	---

#2 SALT SETTING

Backwash 1 (minutes)	1	1	1	---	2	---	---	7
Brine rinse (minutes)	12	12	19	---	12	---	---	12
Backwash 2 (minutes)	3	3	3	---	2	---	---	2
Capacity @ salt lbs.	13,890 2.7 lbs.	13,890 2.7 lbs.	21,680 4.2 lbs.	---	13,890 2.7 lbs.	---	---	13,890 2.7 lbs.

#3 SALT SETTING

Backwash 1 (minutes)	1	1	1 ⁺⁺	1	2 ⁺⁺	7	7	7
Brine rinse (minutes)	30	30	47	38	30	30	30	30
Backwash 2 (minutes)	3	3	3	3	2	2	2	2
Capacity @ salt lbs.	28,730 6.2 lbs.	28,730 6.2 lbs.	44,840 9.6 lbs.	28,730 8.5 lbs.	28,730 6.2 lbs.	28,730 6.2 lbs.	28,730 6.2 lbs.	28,730 6.2 lbs.

#4 SALT SETTING

Backwash 1 (minutes)	1	1	1 ⁺⁺	1	4 ⁺⁺	7	7	7
Brine rinse (minutes)	45	45	60	52	45	45	45	45
Backwash 2 (minutes)	3	3	3	3	2	2	2	2
Capacity @ salt lbs.	35,000 9.3 lbs.	35,000 9.3 lbs.	55,090 14.4 lbs..	35,000 10.7 lbs.	35,000 9.3 lbs.	35,000 9.3 lbs.	35,000 9.3 lbs.	35,000 9.3 lbs.

*Municipally supplied chlorinated water only.

**Must have a minimum of 2 ppm iron and a minimum of 200 ppm TDS.

***Unit has no backwash flow control button or retainer. Must have a minimum of 7 gpm@30 psi available for proper backwash.

****Calcite will add additional hardness to water before softening.

•If iron is present in water supply, use salt setting #3 or #4.

++If iron is present in the water supply, set #1 backwash to 7 minutes.

MODE 2 SETTINGS — 5 BUTTON CONTROLLER.

10 SERIES	13MAQ	13BEQ *	13MXQ	13MDQ **	12AMQ	12APQ ** ***	12AKQ **	12AJQ ****
Mode 2	YES	YES	YES	NO	YES	NO	NO	YES
Capacity	As required	As required	As required	---	As required	---	---	As required
96 hour regeneration (if iron present – yes)	YES OR NO	YES OR NO	YES OR NO	---	YES OR NO	---	---	YES OR NO

#1 SALT SETTING

Backwash 1 (minutes)	1	1	1	---	2	---	---	---
Brine rinse (minutes)	7	7	7	---	7	---	---	---
Backwash 2 (minutes)	3	3	3	---	2	---	---	---
Capacity @ salt lbs.	5,850 1 lb.	5,850 1 lb.	9,360 1.6 lb.	---	5,850 1 lb.	---	---	---

#2 SALT SETTING

Backwash 1 (minutes)	1	1	1	---	2	---	---	7
Brine rinse (minutes)	12	12	19	---	12	---	---	12
Backwash 2 (minutes)	3	3	3	---	2	---	---	2
Capacity @ salt lbs.	13,890 2.7 lbs.	13,890 2.7 lbs.	21,680 4.2 lbs.	---	13,890 2.7 lbs.	---	---	13,890 2.7 lbs.

#3 SALT SETTING

Backwash 1 (minutes)	1	1	1 ⁺⁺	---	2 ⁺⁺	---	---	7
Brine rinse (minutes)	30	30	47	---	30	---	---	30
Backwash 2 (minutes)	3	3	3	---	2	---	---	2
Capacity @ salt lbs.	28,730 6.2 lbs.	28,730 6.2 lbs.	44,840 9.6 lbs.	---	28,730 6.2 lbs.	---	---	28,730 6.2 lbs.

#4 SALT SETTING

Backwash 1 (minutes)	1	1	1 ⁺⁺	---	4 ⁺⁺	---	---	7
Brine rinse (minutes)	45	45	60	---	45	---	---	45
Backwash 2 (minutes)	3	3	3	---	2	---	---	2
Capacity @ salt lbs.	35,300 9.3 lbs.	35,300 9.3 lbs.	55,090 14.4 lbs.	---	35,300 9.3 lbs.	---	---	35,300 9.3 lbs.

*Municipally supplied chlorinated water only.

**NA, see Mode 1 Setting Chart.

***Unit has no backwash flow control button or retainer. Must have a minimum of 7 gpm@30 psi available for proper backwash. See Mode 1 Setting Chart and Engineering Specifications.

****Calcite will add additional hardness to water before softening.

•If iron is present in water supply, use salt setting #3 or #4.

++If iron is present in the water supply, set #1 backwash to 7 minutes.

TROUBLE-SHOOTING

PROBLEM	CAUSE	ACTION
No soft water after regeneration.	No salt in brine tank.	Add salt.
	Sediment in brine tank has plugged the brine line and/or air check. (See Fig. 12, pg. 31.)	Remove the brine line and flush clean. Clean air check. Clean brine tank.
	Refill flow control is plugged. (See Fig. 9, pg. 27.)	Remove brine piston housing and clear debris from the flow control.
	Drain line is pinched, frozen or restricted. (See Fig. 1, pg. 3.)	Straighten, thaw or unclog the drain line.
	Clogged injector assembly. (See Fig. 6, pg. 21)	Remove injector cap and clean nozzle and throat with a wooden toothpick. Replace throat if removed.
No soft water.	Salt bridge has formed. (See Fig. 4, pg. 19)	High humidity or the wrong kind of salt can create a salt bridge. This is a crust that forms an empty space between the water and salt. To test, use a blunt object like a broom handle. Push the handle into the salt to dislodge the salt bridge.
	The plumbing bypass valve is in the bypass position. (See Fig. 7, pg. 23.)	Place bypass valve in the service position.
	Appliance is plumbed in backwards. (See Fig. 1, pg. 3.)	Check that appliance is plumbed properly.
	Extended power outage	Reset time. (See Customer Settings)
	Water hardness has increased	Retest water and reset hardness. (See Installation Record)
	Not metering water.	Check light. Light should flash with water usage. If no light, see below.
	Blending dial is open.	Make sure blending dial is closed.
Light does not blink when water is flowing.	The bypass valve is in the Bypass position. (See Fig. 7, pg. 23.)	Place bypass in the service position.

TROUBLE-SHOOTING

PROBLEM	CAUSE	ACTION
	Appliance is plumbed in backward. (See Fig 1, pg. 3.)	Check that appliance is plumbed properly.
	Sensor not receiving signal from Magnet. (See Fig. 7, pg. 23.)	Remove sensor from bypass housing. Test with magnet on each flat side of sensor. One side should cause the light to glow. The other will not. If light glows, check turbine. If no light, replace sensor.
	Turbine is jammed.(See Fig. 7, pg. 23.)	Remove bypass valve and clear debris from turbine.
Light blinks when water is not being used. (Fig. 2, p. 5)	There is a leak in your household plumbing system.	Repair the leak.
Light on steady. (Fig. 2, p. 5)	Turbine stopped over sensor.	Run water. Verify flashing light.
Read-out lights do not glow.	Electric cord is unplugged.	Plug in transformer. (See Fig. 1, pg. 3.)
	No electric power at outlet.	Check power source. Make sure Outlet is not controlled by a switch.
	Defective transformer.(See Fig. 3, p. 18)	Test with volt meter for 12VAC at control. If less than 10 VAC or greater than 14 VAC, replace transformer.
	Defective circuit board.	With 12V AC present at control, Replace computer control.
	High ambient temperature. If temperature exceeds 120°F, display will blank out. This does not affect the operation of the controller.	See Engineering Specifications, pg. 12.
Appliance stays in regeneration. Cycle display remains “going to _?_”.	Defective magnet disk.	Replace magnet disk. (See Fig. 8, p. 25.)
	Foreign object in valve body.	Remove foreign objects from valve body. (See Fig. 5, p. 20.)

TROUBLE-SHOOTING

PROBLEM	CAUSE	ACTION
	Broken valve assembly. Motor running. Magnet disk not turning.	Repair drive end cap. (See Fig. 8, p. 25.)
Excess water in brine tank.	Restricted, frozen or pinched drain line. (See Fig. 1, pg. 3.)	Remove restriction, thaw or straighten drain line.
	Plugged brine line, brine line flow control or air check. (See Fig. 9, p. 27.)	Clean flow control, air check and brine line. (See Fig. 12, p. 31.)
	Plugged injector assembly. (See Fig. 6, pg. 21.)	Clean or replace injector assembly. Replace throat if removed.
Not regenerating in proper sequence.	Sticking brine refill valve. (See Fig. 9, pg. 27.)	Remove valve. Lubricate piston with silicone grease and reassemble.
	Defective magnet disk.	Replace magnet disk. (See Fig. 8, pg. 25)
Salty water	Defective controller.	Replace controller. (See Fig. 3, pg. 18.)
	Plugged injector	Clean injector screen, nozzle and throat (See Fig. 6, pg. 21.)
	Low water pressure	Maintain minimum pressure of 30 psi (See Engin. Specs, pg. 12.)
	Drain line or flow control restricted	Remove restriction.
	Brine line restricted or crimped	Remove restriction, replace if crimped.
	Excessive amount of water in Brine cabinet	Verify correct water level relative to salt setting. Check brine line and fittings for loose connections (See Brine Cabinet Data, page 33.)
	Insufficient rinse time	Check mode setting chart (pg. 13-14) for proper brine Rinse time. Adjust time if necessary.
	Intermittent pressure drop from feed source.	Install check valve on the inlet water line to the appliance. (Check local plumbing codes first.)

PARTS – WATERMAX HOOK-UP/COVER ASSEMBLY

	PART #	DESCRIPTION	QU
1	90240MT	Cabinet	1
2	90290	Media Cabinet Cover	1
3	CO700	2-Pc. Overflow	1
4	90837	Bypass Nut Gasket	2
5	90251	Bypass Nut	2
6	90254	Copper Adapter	2
	90256	Cpvc Adapter 3/4" (Optional)	2
7	90801	Support Panel Screws	4
8	93245	12v Transformer/Power Cord	1
9	90600	5-Button Control Assembly	1

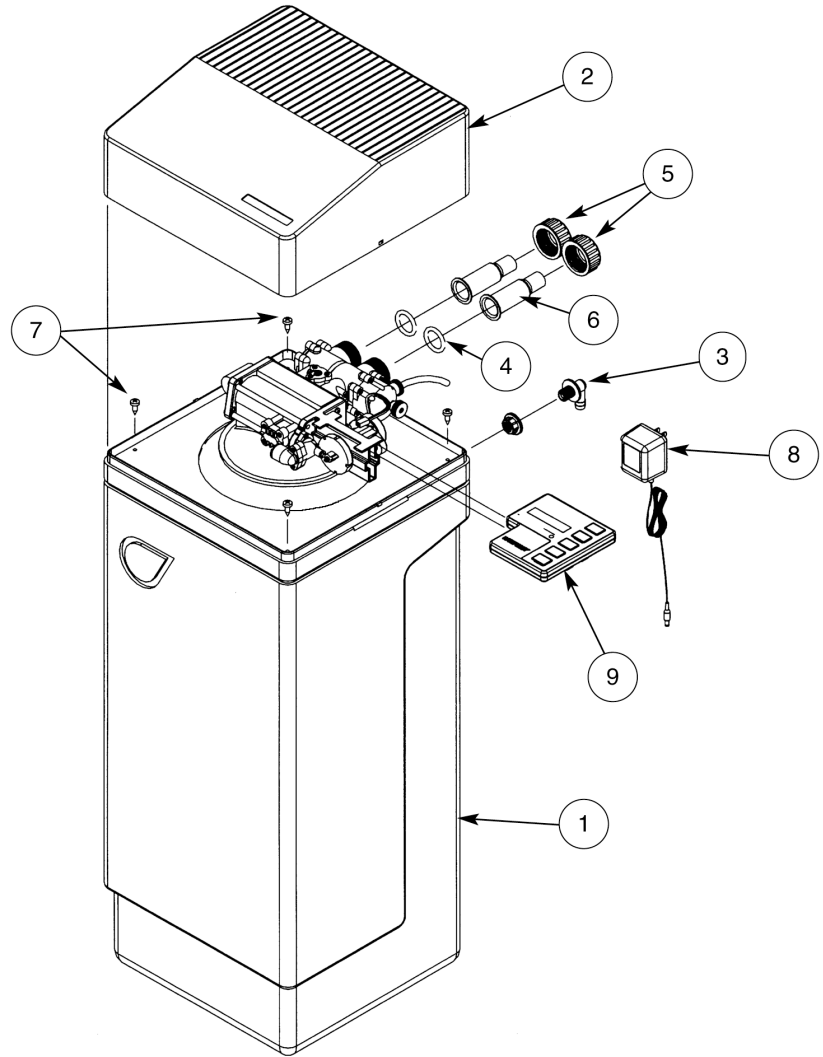
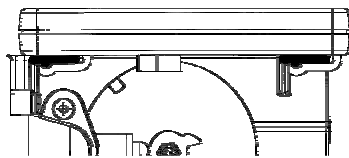
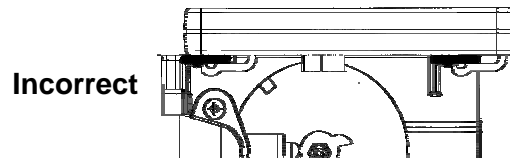


Figure 3

Controller Tab Lock Detail



Correct



Incorrect

PARTS – WATERMAX BRINE TANK ASSEMBLY

	PART #	DESCRIPTION	QU
1	90240	Brine Cabinet	1
2	90270	Support Panel	1
3	90289	Brine Cabinet Cover	1
4	90832	Cabinet Cover Clip	4
5	90626	Brine Well/Safety Shutoff Assembly	1
6	90101	Grid Plate	1
	93811-26.5	Air Check Assembly (Page 34)	
	90622	Brine Tank Assembly (Contains parts 1-7)	

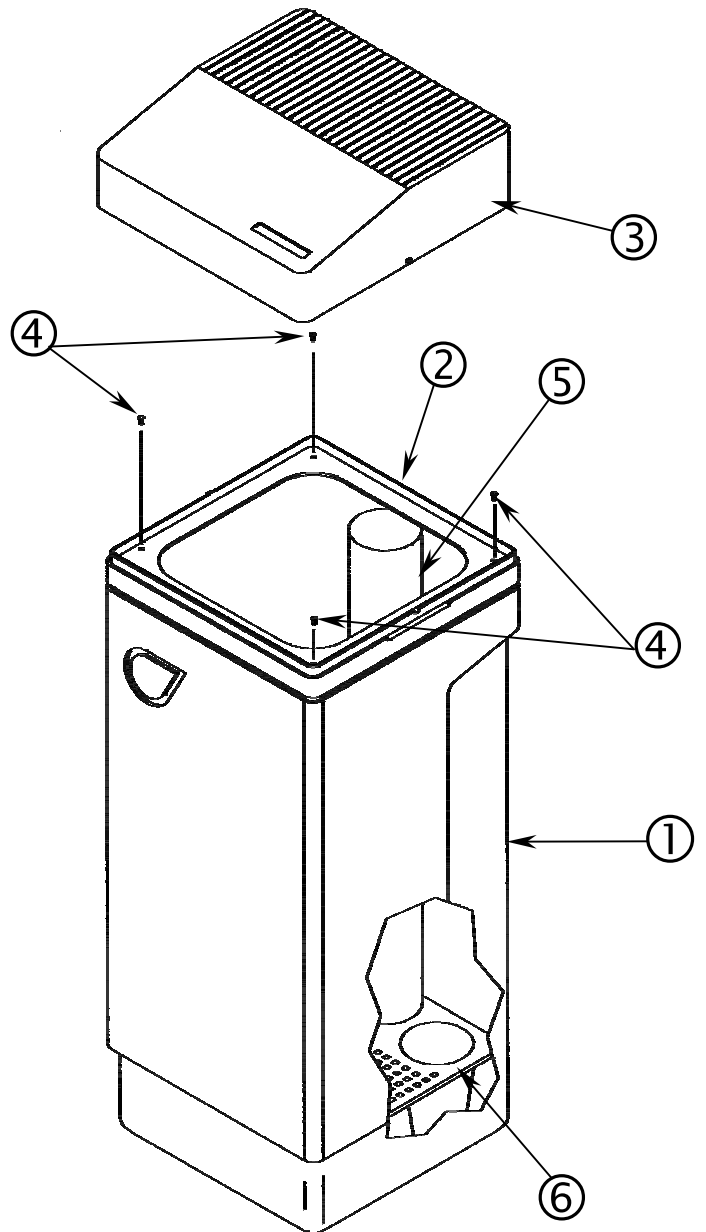
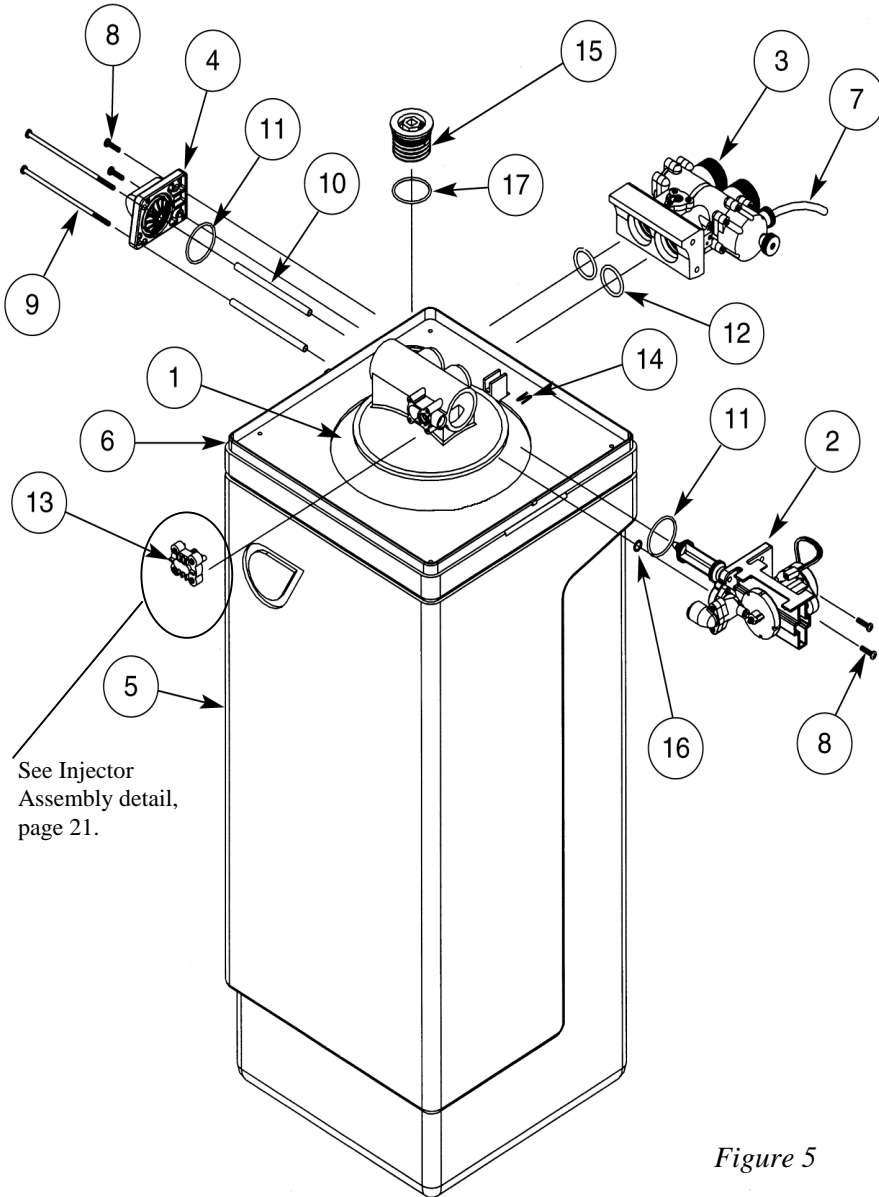


Figure 4

PARTS – WATERMAX TANK – CABINET ASSEMBLY



	PART #	DESCRIPTION	QU
1	90613 90632	Resin Tank (3 comp.) Resin Tank (2 comp.)	1
2	9530IT-JG	Drive End Cap Assembly	1
3	90615	Bypass Assembly	1
4	90614	Drain End Cap Assembly	1
5	90240MT	Media Tank Cabinet	1
6	90237	Support Panel	1
7	90812	Test Port Tube	1
8	93870	End Cap Screw	4
9	93809	End Cap Screw	2
10	93835	Spacer Tube	2
11	93808	End Cap O-ring	2
12	93838	I/O Adapter O-ring	2
13	93501	Injector Assembly	1
14	93833	Cord Clip	1
15	90238	Resin Tank Fill Plug	1
16	90828	Small End Cap O-ring	1
17	90819	Fill Plug O-ring	1

Figure 5

PARTS – WATERMAX INJECTOR ASSEMBLY

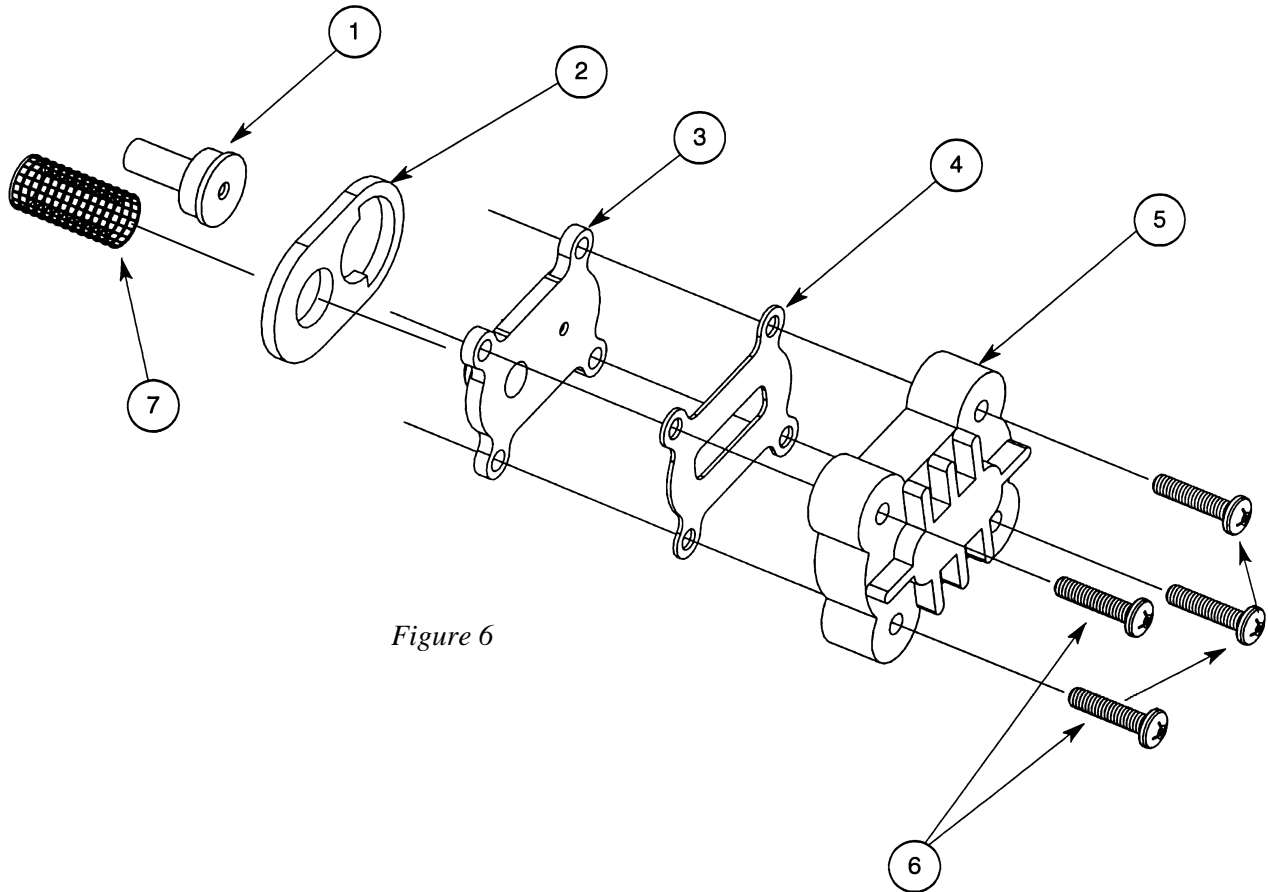


Figure 6

	PART #	DESCRIPTION	QU
1	93223	Injector Throat	1
2	93220	Bottom Injector Seal - thick	1
3	93221	Injector Nozzle	1
4	93232	Top Injector Seal - thin	1
5	93222	Injector Cap	1
6	90807	Injector Screw	4
7	93810	Injector Screen	1
	93501	Injector Assembly (Contains all of the above parts 1-7)	

INJECTOR ASSEMBLY

93223 Injector Throat: In conjunction with the Injector Nozzle, Part # 93221, it creates the vacuum that draws the brine solution from the brine cabinet. The center hole should be clear of debris, round and undamaged. The Throat should be pressed flush into the opening in the valve. If the Throat is removed, it must be replaced with a new one.

93220 Thick Injector Seal: Seals between the Injector Nozzle and the Main Valve Body. The gasket has a definite hole pattern that has to match-up with the Nozzle and Main Valve Body opening. The gasket seals at its outer edges and between the inlet screen and nozzle opening. These areas must be free of defects such as tears or pits and be free of debris.

93221 Injector Nozzle: Together with the Throat, 93223, creates the vacuum that draws the brine solution from the Brine Cabinet. There are two openings in the Nozzle plate. The small hole, flush on both sides, is the one that creates the “injection-stream” that enters the Throat. It is very important that this hole is clear of debris, round and undamaged. If this hole becomes “clogged”, do not use anything to clear this opening that could damage it, such as metal objects. Use a clean cloth and flush with water. If necessary, a wood toothpick may be used. When assembling to the Valve, the Nozzle hole should line up with the Throat.

93232 Thin Injector Seal: Seals between the Injector Nozzle and Injector Cap. The gasket must be free of defects such as tears or cuts and be free of debris.

93222 Injector Cap: Holds the injector assembly together and seals the assembly to the Main Valve Body. The four machine screws should be tightened evenly and “snug”.

93810 Injector Screen: Acts as pre-filter to keep debris from entering the Injector Nozzle and Throat. Attaches to the cylinder on the Nozzle plate and spherical “bump” inside the Valve Body. Some Compression of the Screen may occur during assembly. The opening in the screen must be clear to insure Proper flow to the Injector assembly.

PARTS – WATERMAX BYPASS ASSEMBLY

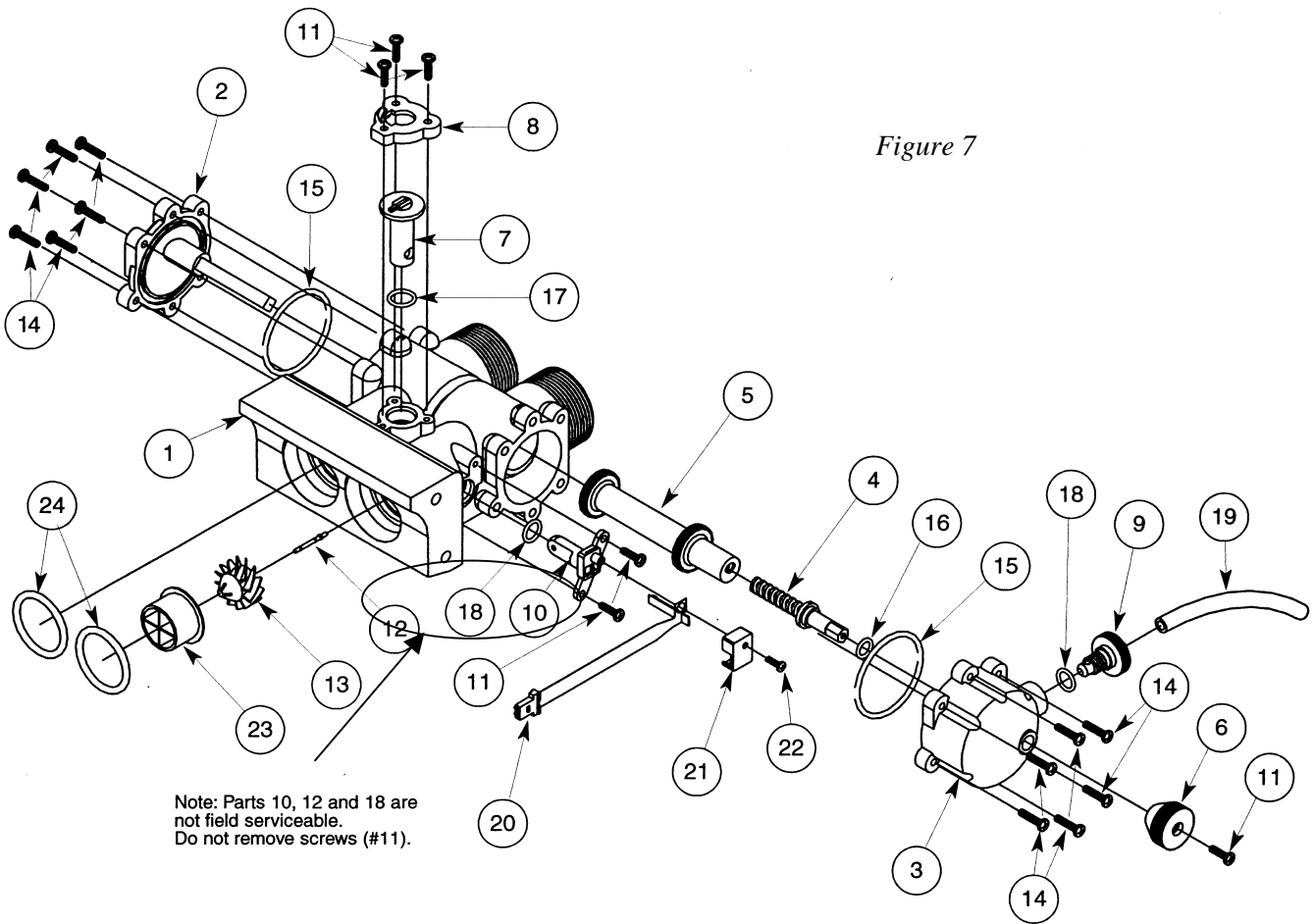


Figure 7

Note: Parts 10, 12 and 18 are not field serviceable. Do not remove screws (#11).

	PART #	DESCRIPTION	QU
1	90246	Bypass Housing	1
2	90262	Bypass Endcap - left	1
3	90263	Bypass Endcap - right	1
4	90218	Bypass Piston Drive Shaft	1
5	90616	Bypass Piston Assembly	1
6	90221	Bypass Piston Knob	1
7	90222	Blending Dial	1
8	90252	Cap – Blending Valve	1
9	90226	Test Port Valve	1
10	93228	Turbine Sensor Housing	1
11	90802	Bypass Handle & Sensor housing Screw And Blending Valve Cap Screw	6

12	90245	Turbine Axle	1
13	90522	Turbine	1
14	90807	End Cap Mounting Screw	12
15	93808	End Cap O-ring	2
16	90803	Drive Shaft O-ring	1
17	90827	Blending Valve O-ring	1
18	90828	Test Port/Sensor Housing O-ring	2
19	90812	Tubing 4.0"	1
20	93858	Turbine Sensor PCB	1
21	90232	Turbine Sensor Cap	1
22	90809	Sensor Cap Screw	1
23	93229	Flow Director	1
24	93838	I/O Adapter O-ring	2
	90615	Bypass Assembly contains all items above	

90246 Bypass Housing: Makes the connection between the plumbing and Main Valve Body. Also, contains the “Hard Water” Blending Valve and Bypass Piston. The recommended seal for the 1 ¼" male inlet-outlet threads is the plastic Hook-up Nut (90251), Gasket (90837), and Copper Adapter (90254). Make sure the Gasket is between the Housing and Copper Adapter. The O-ring seal areas at the Main Valve Body inlet and outlet must be smooth and free of defects and debris, and lubricated with silicone grease before assembling. When attaching to the Main Valve Body, put the O-rings on the male bosses on the Valve Body and push the Bypass into place; if not, the O-rings may be “pinched”. If the O-rings are pinched, replace with new ones. The Bypass is pre-assembled with the Sensor housing and turbine axle. These are not field serviceable and if damaged, must be replaced with a new assembly. The Bypass Piston bore is to be smooth and, at the recessed areas, have a smooth transition (no sharp corners) to the seat areas.

90262 Bypass End Cap – Left: Seals the left Piston opening on the Housing (90246). The opening is sealed with an O-ring used as an axial or “face” seal. The O-ring sits in a groove in the End Cap. This groove must be free of defects such as pits or scratches and also free of debris. When assembling the End Cap to the Housing, care should be taken to make sure that the O-ring stays in the groove in the End Cap. If misaligned, the O-ring can become pinched and leak. Also, on the End Cap is the Piston Axle, a ¼" square shaft that acts as a guide / slide and anti-turning mechanism for the Bypass Piston.

90263 Bypass End Cap – Right: Seals the right Piston opening on the Housing (90246). The opening is sealed with an O-ring used as an axial or “face” seal. The O-ring sits in a groove in the End Cap. This groove must be free of defects such as pits or scratches and also free of debris. When assembling the End Cap to the Housing, care should be taken to make sure that the O-ring stays in the groove in the End Cap. If misaligned, the O-ring can become pinched and leak. Also, on the End Cap is the guide / bushing for the Bypass Piston Drive Shaft. There is an O-ring seal at the opening for the Drive Shaft. This seal area must be free of defects such as pits or scratches and also free of debris.

90218 Bypass Piston Drive Shaft: The Drive Shaft has an acme thread which is used to move the Piston from “bypass” to “service” position. When operating the Bypass, to achieve either “service” or “bypass”, it is only necessary to turn the Handle (90221) until the Piston (90616) stops. Additional pressure (torque) will not improve the seal. As a matter-of-fact, once the Piston

reaches the stop at either position, it can be backed off up to one half turn of the handle and still achieve a seal.

90616 Bypass Piston Assembly: The white Teflon Hydro-slide o-ring covers should be free of defects such as indentations and cuts. The Piston should move freely into and out of the Bypass Housing without damaging the Hydro-slides. If the Hydro-slides catch, tear or crimp, the Housing should be replaced. Note: Some compression will occur when the Hydro-slides pass through the seal areas.

93858 Turbine Sensor Assembly: Picks up the magnetic field from the Turbine and relays it to the Controller. The three wire assembly connecting the “black wafer” Hall Effect Sensor to the Controller board must not be severely bent (folded over,) cut, or broken. Care should be taken when putting the Sensor into the Sensor Housing. The “spring” flap below the Sensor must be gently bent over (on top of) the Sensor, and then the Sensor slides all the way into the Sensor Housing. The round hole of the Sensor mounting tab is then placed down over the mounting screw boss. The cap is then put in place and the mounting screw is installed. A slot is provided in the cap for the wire way to exit. The three-wire socket connector must be properly installed in the controller. Stops on the connector prevent improper (upside down) assembly. Do not force the connector past the stops.

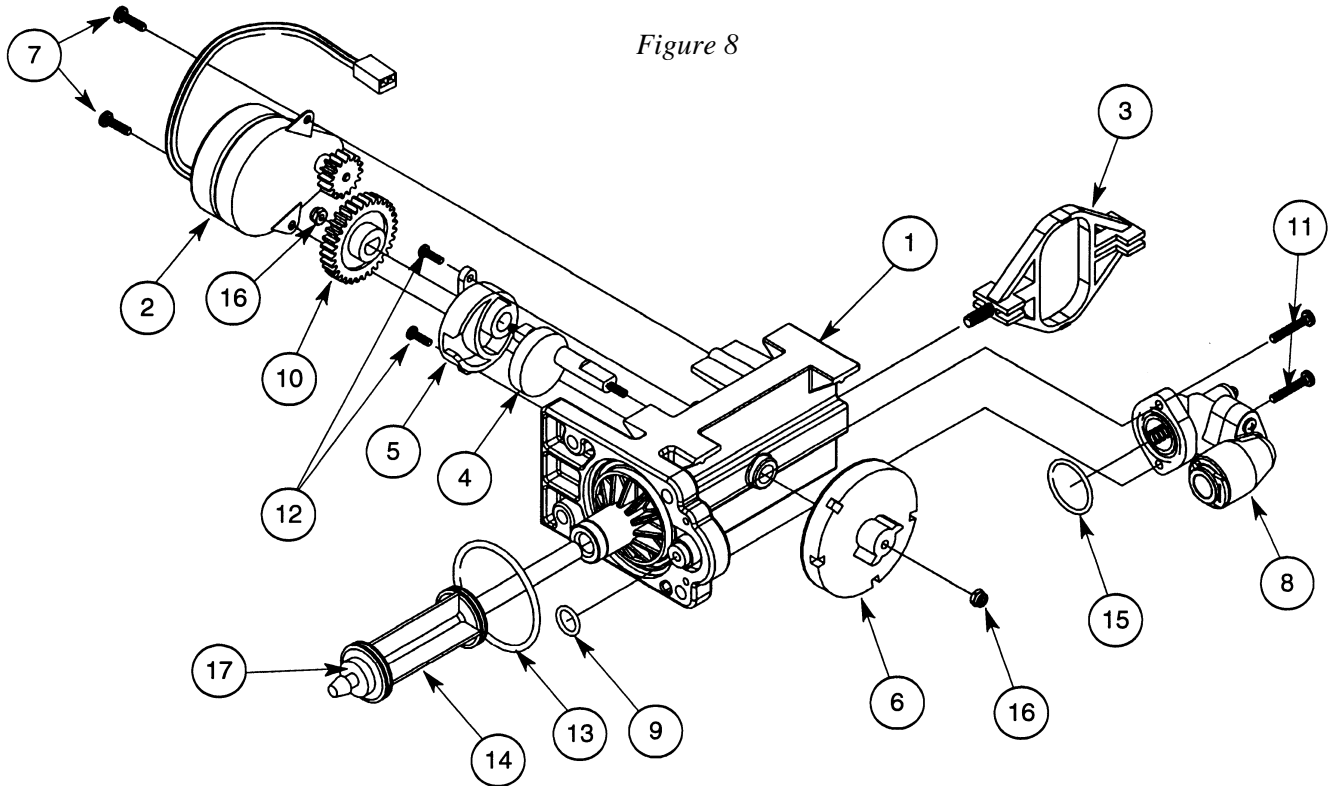
90522 Turbine Assembly: The turbine must have a 1/8" diameter Rare Earth magnet pressed into place adjacent to the axle opening. When assembled to the axle, the Turbine should spin freely. Do not use any lubricants. If the Turbine should become “jammed”, clean and flush the Turbine and Bypass Valve.

90252 Blending Dial Cap: The Cap should be held in place by the three ½" screws and be in the proper orientation.

90222 Blending Valve: The dial permits the addition of “hard water” into the soft water outlet. It is closed when pointing toward the Main Valve Body and open when pointing toward the inlet side.

90226 Test Port Valve: The Test Port Valve is used to draw water samples for testing of treated water. Note: The Bypass must be in the “service” position to get an accurate sample. There are two types of seals on the Test Port. One seal is an O-ring which seals off the threaded area when the Valve is opened. The other seal is a compression seal between the Test Port Valve material and the Right End Cap material. If this seal is “overtightened”, it can damage the sealing area on the End Cap causing a permanent leak.

PARTS – WATERMAX DRIVE END CAP ASSEMBLY



	PART #	DESCRIPTION	QU
1	93583	Drive End Cap	1
2	90217	Drive Motor	1
3	93216	Piston Slide	1
4	93217	Piston Slide Cam	1
5	93219	Piston Slide Cam Cover	1
6	90297	Magnet Disk, white	1
7	90802	Screw	2
8	93514-AJG	Brine Valve Housing Ass'bly	1
9	90828	Drive End Cap O-ring - small	1
10	93238	Drive Gear	1

11	90818	Brine Valve Housing Screw	2
12	90809	Cam Cover Screw	2
13	93808	Drive End Cap O-ring -large	1
14	93522-A	Drive Piston Assembly	1
15	93803	Brine Valve Housing O-ring	1
16	93891	1/4 Hex Nut	2
17	93839	Drain Gasket	1
	95301T-JG	Drive End Cap Assembly contains all of the above items, less motor and magnetic disk. Motor and disk must be ordered separately.	

DRIVE END CAP ASSEMBLY

93583 Drive End Cap: Seals the two openings on the Main Valve Body. The larger diameter opening is sealed with an O-ring used as an axial or “face” seal. The O-ring sits in a groove in the End Cap. This groove must be free of defects such as pits or scratches and also free of debris. The smaller diameter seal is accomplished with an O-ring used as a radial seal. The O-ring should be placed on the male boss on the End Cap. When assembling the End Cap to the Valve Body, care should be taken to make sure the small O-ring is aligned with the opening in the Valve Body and that the large O-ring stays in the groove in the End Cap. If misaligned, the O-rings can become pinched and leak.

90217 Drive Motor: The Motor is held in place by two ½" screws. The screws should be “snug”. The brass pinion gear on the Motor should engage the plastic Drive Gear. The wires should be securely fastened to the Controller.

93216 Piston Slide: The Slide should move freely inside the End Cap Housing. The stainless steel threaded stud should be pointing toward the Valve Body.

93217 Piston Slide Cam: This is the “heart” of the drive system. There is a threaded stainless steel shaft that runs through the main drive axle. The Drive Gear is attached at the short end and the Magnet Disc at the other end. The Slide Cam is assembled inside of the Piston Slide (93216). This Cam Shaft should turn freely before the Motor is assembled.

93219 Piston Slide Cam Cover: The cover secures the Piston Slide Cam (93217) in place and acts as a bushing for the Cam Shaft.

93238 Drive Gear: The Drive gear is assembled to the Slide Cam by means of a “keyed” opening which transfers the “torque” generated by the Motor to the rest of the drive system. If the drive system becomes jammed, this opening can become “rounded” causing the gear to turn, but not the Piston Slide Cam. If this occurs, clear the jam and replace the Drive Gear and Piston Slide Cam (93217).

93514-AJG Brine Valve Assembly: Attaches to the Drive End Cap with two ¾" thread cutting screws and has one O-ring seal. When assembling, the O-ring should be placed on the Drive End Cap boss and be lubricated with silicone grease. A twisting action should be applied along with pressure until the O-ring seats.

PARTS – WATERMAX BRINE VALVE HOUSING ASSEMBLY

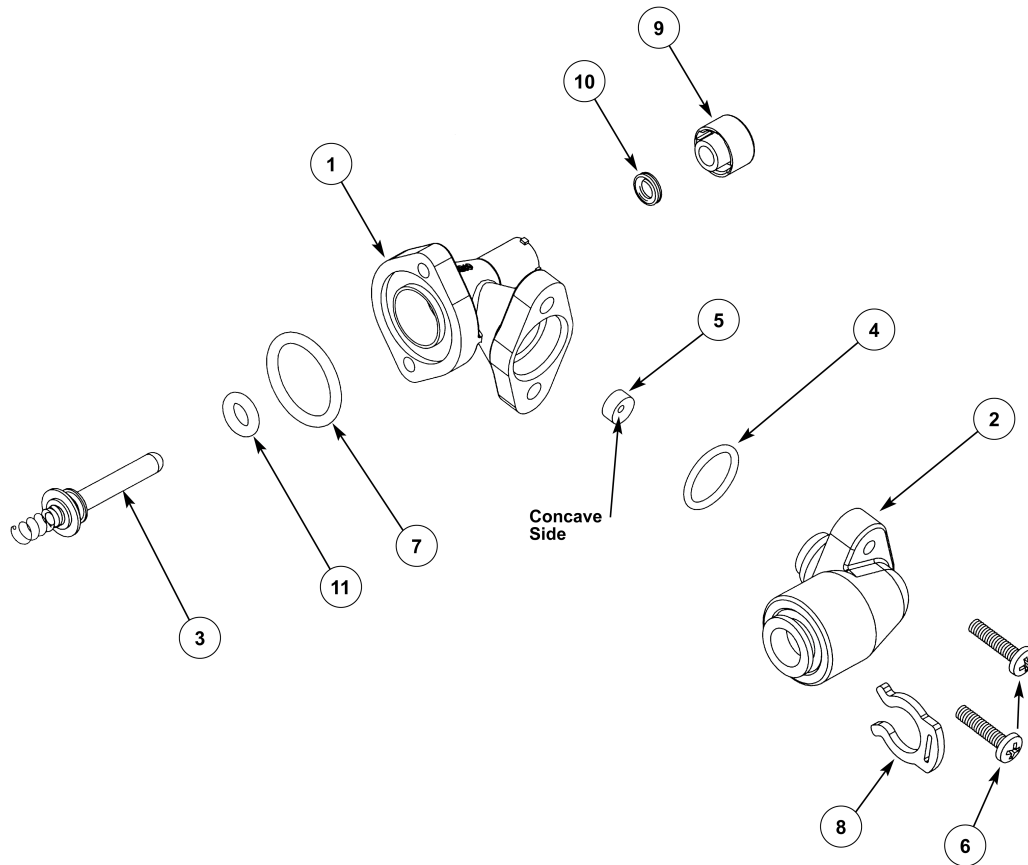


Figure 9

	PART #	DESCRIPTION	QU
1	93511-A	Housing	1
2	93243-JG	Housing Cap Assembly	1
3	90521	Piston Assembly	1
4	93805	Housing O-ring	1
5	90843	.5 gpm Flow Control	1
6	90807	Screw	2
7	93803	Brine Valve Housing O-ring	1
8	200199	3/8" Locking Ring	1
9	93254	Brine Valve Retainer	1
10	93878	Quad Ring	1
11	90820	O-ring	1
	93514-AJG	Brine Valve Housing Ass'ly (Contains 1-11)	

BRINE VALVE HOUSING ASSEMBLY

93511-A Housing: Should have a Quad-ring for the Piston seal. The Quad-ring, P/N 93878, is held in place by the brine valve retainer, P/N 93254. The brine valve housing, P/N 93511-A, has four retaining lugs that secure the brine valve retainer. Just inside the entrance hole for the Brine Piston, P/N 90521 is a concave seat area that must be free of defects such as nicks, indentations or debris. If any defects are detected by visual inspection, repair or replace as needed.

To replace the Quad-ring, it will be necessary to remove the brine valve housing assembly from the drive end cap (after by-passing and depressurizing the conditioning appliance). Push the piston assembly, P/N 90521, out of the housing. To remove the brine valve retainer, P/N 93254, push in and turn “clockwise” to unlock the retainer.

CAUTION! *Do not attempt to remove the retainer with the piston assembly in place. This will damage the housing and/or the retainer.* Push the piston back into the housing to dislodge the old Quad-ring, P/N 93878, and discard it. Remove the piston, insert the new Quad-ring and lock the retainer onto the housing by pushing in and turning “counterclockwise” to secure the Quad-ring. Replace the piston assembly and attach the brine valve assembly to the drive end cap and restore service to the conditioning appliance.

96510 Housing Cap: The Cap is held in place by two 5/8" machine screws that engage the Housing flange. An O-ring seals the Cap and Housing. Place the O-ring into the housing opening, lubricate with silicone grease and then using a twisting action, pressure insert the Cap. **CAUTION:** The 3/8" locking ring, part #200199 must be installed to prevent air from being drawn into the appliance during brine rinse.

90843 .5 gpm Flow Control: The Flow Button has two distinct and different sides. One is “flat”; the other is “concave”. The button should be centered in the housing opening with the four locator “ribs” with the concave side facing the Housing Cap.

90521 Brine Piston: The Piston should have an O-ring on the shaft side of the flange and a spring pressed onto a boss on the other side. The O-ring should be free of defects such as cuts or debris on the shaft side. The Piston is Teflon coated brass and should be free of scratches. The Piston should move freely in the housing; silicone lubrication is recommended on the Piston shaft.

PARTS - FILL PLUG ASSEMBLY

(1) 90238 Fill Plug: The Fill Plug seals the media access ports in the Media Tank. Care should be taken that the O-ring seal areas are kept clean and free of debris. Also, both O-rings should be in the proper locations, one under the flange and one in the groove. Do not overtighten the Fill Plug when assembling. When the flange comes into contact with the Media Tank, stop tightening. A 3/4" socket is recommended for assembly.

(2) 90819 Fill Plug O-ring

(3) 90618 Fill Plug Assembly (contains all of the above parts)

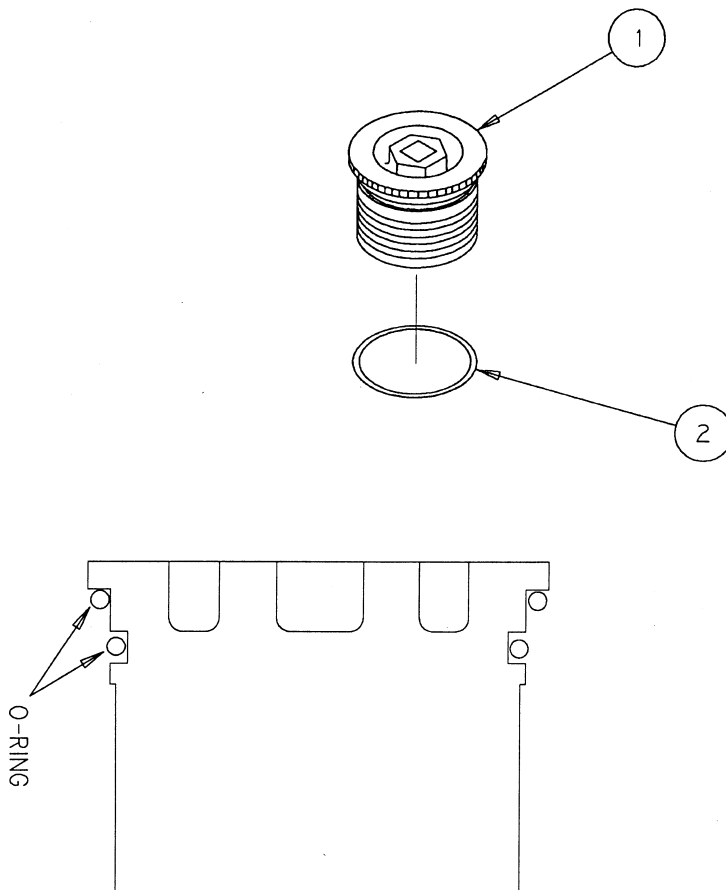


Figure 10

PARTS – DRAIN END CAP ASSEMBLY

(1) 90268 Drain End Cap: Seals the left opening on the Main Valve Body. The opening is sealed with an O-ring used as axial or “face” seal. The O-ring sits in a groove in the End Cap. This groove must be free of defects such as pits or scratches and also free of debris. When assembling the End Cap to the Valve Body, care should be taken to make sure that the O-ring stays in the groove in the End Cap. If misaligned, the O-ring can become pinched and leak.

(2) H2086 Drain Line Flow Control Button: The Drain Line Flow Control Button (D.L.F.C.) maintains a constant (plus or minus 10%) backwash flow rate at varying pressures. Care should be taken when replacing FCB's to insure that the correct rate is being used for a particular model. Refer to Engineering Specifications, pg. 12. The flow control button should be assembled with the lettering facing the retainer.

H2086 – 2.4*

H2086 – 3.0*

H2086 – 5.0*

H2086 – 7.0*

(3) 90267 Retainer: The Retainer holds the backwash Flow Control Button in place. One side is smooth and the other has a groove for a screw driver. When assembling the retainer to the Drain End Cap, the retainer should be “screwed” in until it stops. If the retainer is not fully engaged, the Flow Control may not function properly.

(4) 93808 End Cap O-ring

90614 Drain End Cap Assembly (contains all of the above items)

* The numbers shown after the Drain Line Flow Control Button Part # indicate the back wash flow rate in gpm.

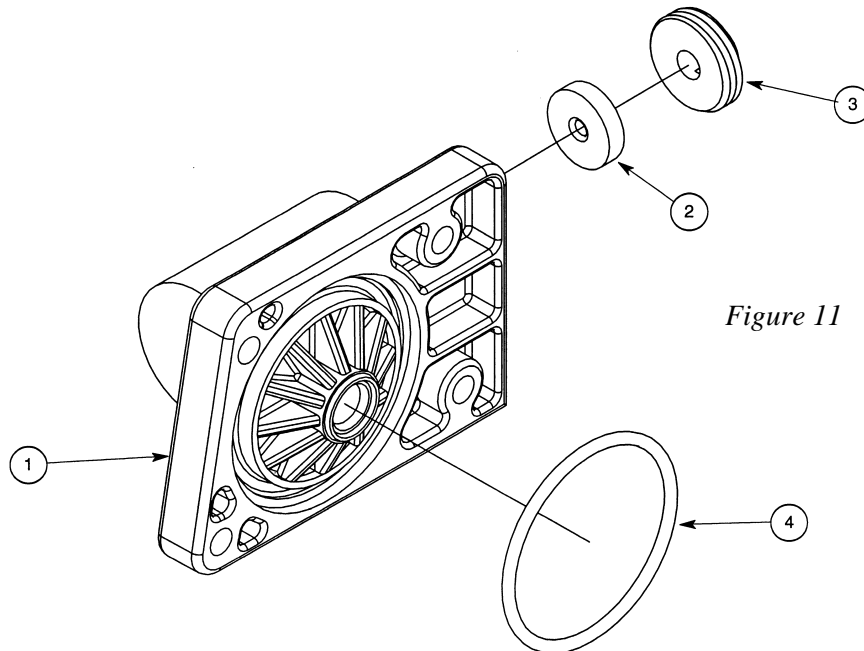
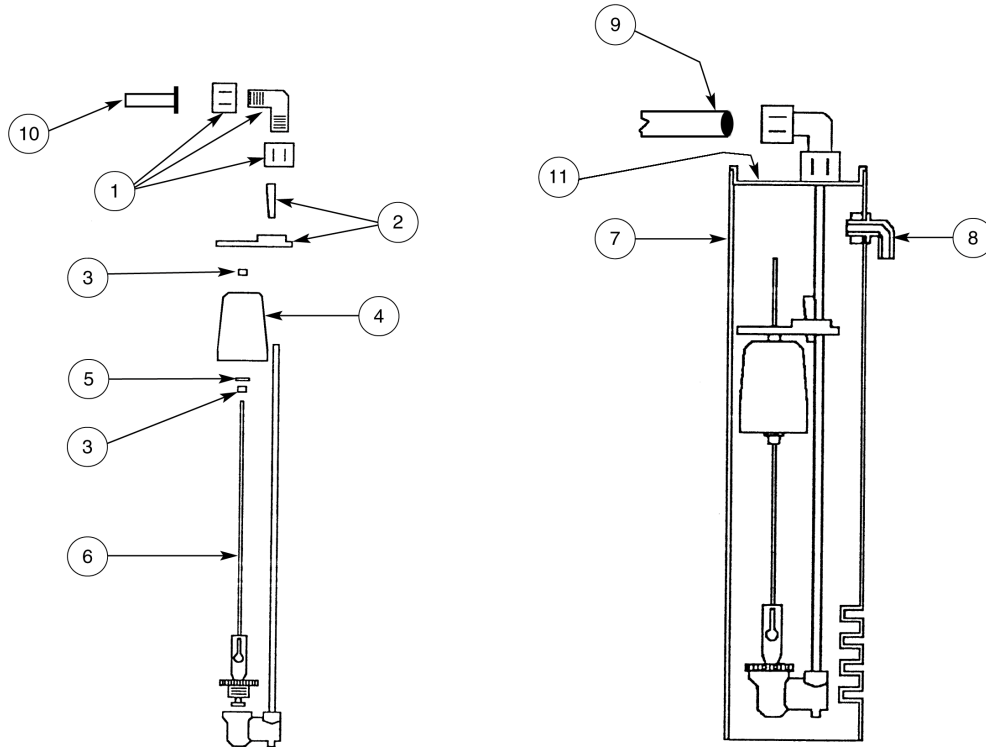


Figure 11

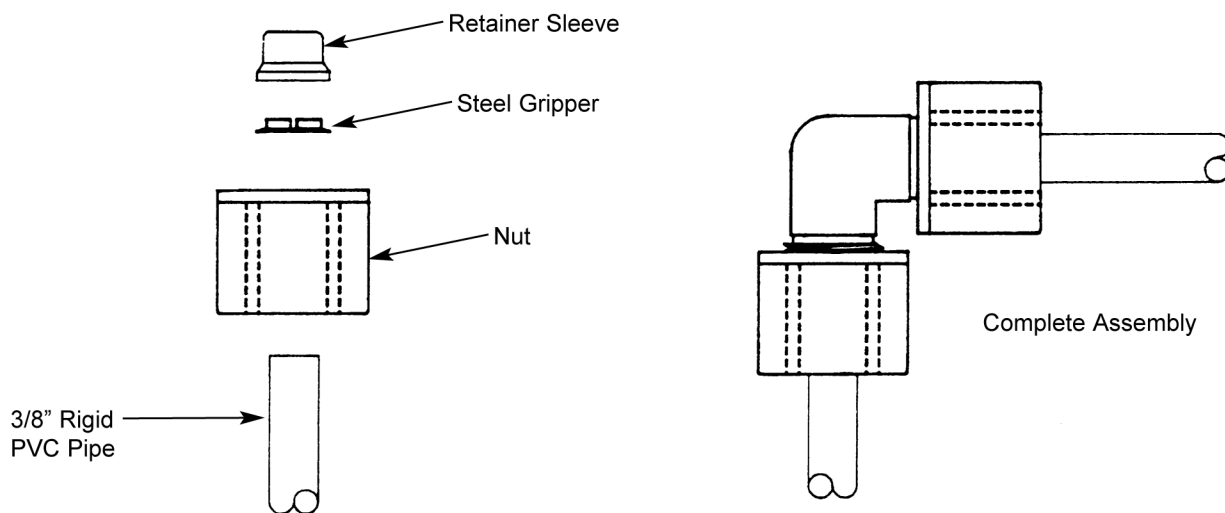
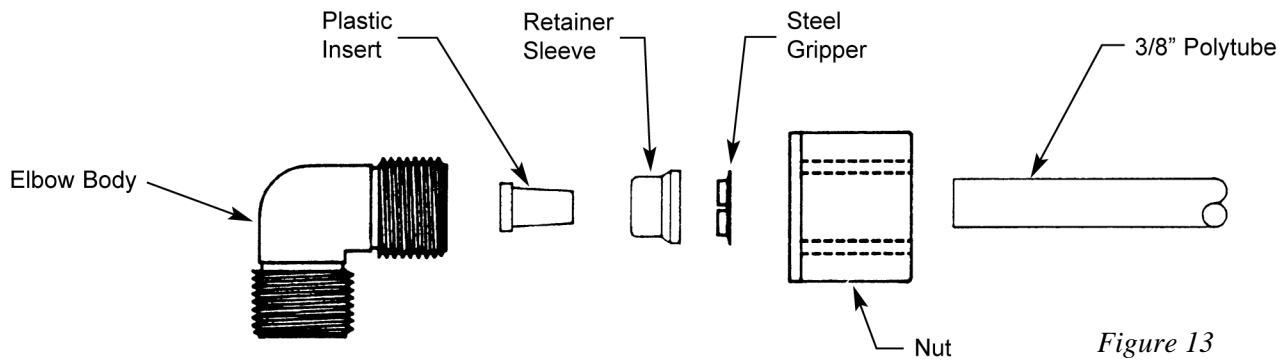
PARTS – WATERMAX SAFETY SHUTOFF ASSEMBLY



	PART #	DESCRIPTION	QU
1	51366	Air Check Elbow Assembly	1
2	H7041	Guide and Lock Set	1
3	H7039	Float Grommet	2
4	H7040	Bell Float	1
5	H7042	Float Washer	1
6	H7038-01	Float Rod	1
7	90102	3.5 X 26.5 Brine Well	1
8	C0700	2-Pc. Overflow Fitting	1
9	93848	3/8" Brine Line (5 ft.)	1
10	201120	3/8" Nylon Insert	1
11	CO600	Brine Well Cap	1
	93811-26.5	Air Check/Brine Well Assembly	

Figure 12

PARTS – BRINE VALVE ELBOW INSTALLATION INSTRUCTIONS



The nut, gripper and retainer sleeve are a 3 piece assembly that can come apart if removed from the elbow body. Parts must be re-assembled exactly as shown to function properly.

When connecting the 3/8" polytube, it is first necessary to assemble the nut, gripper and retainer sleeve on the tubing before inserting the plastic insert, Screw the nut on the elbow body. With a wrench tighten nut securely to create a pressure tight connection.

PARTS – BRINE CABINET DATA

Based on the water level measured from the bottom of the WATERMAX brine cabinet WITH GRID PLATE, the following depths correlate to the amount of salt used per regeneration:

DEPTH (inches)	SALT (lbs.)
6	.74
7	1.5
8	2.2
9	3.0
10	3.7
11	4.4
12	5.2
13	5.9
14	6.6
15	7.4
16	8.1
17	8.8
18	9.6
19	10.3
20	11.0
21	11.8
22	12.5
23	13.3
24	14.4

PLEASE STUDY THE ABOVE CHART TO CONFIRM THIS INFORMATION.

WaterMax Brine Cabinet Statistics

No Salt

1" = .791 gallons
 1" = 2.2148 lbs. Salt
 1 lb. = .451" water level

With Salt

1" = .264 gallons
 1" = .738 lbs. Salt
 1 lb. = 1.353" water level

25 YEAR LIMITED RESIDENTIAL WARRANTY

TO PLACE THE EQUIPMENT UNDER WARRANTY, THE WARRANTY REGISTRATION CARD MUST BE COMPLETED AND RETURNED BY THE ORIGINAL OWNER TO HAGUE QUALITY WATER INTERNATIONAL WITHIN 30 DAYS OF INSTALLATION.

Coverage

This warranty covers the Hague WaterMax® System delivered to the original owner when the system is purchased for personal, family, or household use. It is intended to cover defects occurring in workmanship or materials or both.

Warrantor's Performance and Length of Warranty

Hague Quality Water International warrants that upon receipt from the owner of any Hague Media Tank, Brine Tank, Valve Body, or the fine mesh polystyrene resin found to be defective in material or workmanship, Hague will repair or replace the defective item, at no charge for that item, for 25 YEARS from date of installation.

Hague Quality Water International further warrants that upon receipt from the owner of any other mechanical or electronic parts, which are found to be defective in material or workmanship, Hague will repair or replace the defective parts, at no charge for those parts for 3 YEARS from date of installation; and thereafter will repair or replace the defective parts only upon receipt of payment by the owner of the following percentages of the then current list prices for the parts:

If more than 3 years from date of installation but not more than 4 years 50%	If more than 7 years from date of installation but not more than 8 years 70%
If more than 4 years from date of installation but not more than 5 years 55%	If more than 8 years from date of installation but not more than 9 years 75%
If more than 5 years from Date of installation more than 6 years 60%	If more than 9 years from date of installation but not more than 10 years 80%
If more than 6 years from Date of installation more than 7 years 65%	If more than 10 years from date of installation 100%

All defective parts must be returned, along with the equipment serial number and date of original installation, to an authorized Hague dealer or Hague Quality Water International PREPAID, and replacement parts will be returned by Hague to the owner FREIGHT COLLECT.

Further Exclusions and Limitations on Warranty:
This warranty is null and void unless the Hague System was purchased from an independent Hague dealer
THERE ARE NO WARRANTIES OTHER THAN THOSE DESCRIBED IN THIS WARRANTY INSTRUMENT.

This warranty does not cover any service call or labor costs incurred with respect to the removal and replacement of any defective part or parts. Hague Quality Water International will not be liable for, nor will it pay service call or labor charges incurred or expended with respect to this warranty.

In the event the water supply being processed through this product contains bacterial iron, algae, sulfur, tannins, organic matter, or other unusual substances, then unless the system is represented as being capable of handling these substances in the system specifications, other special treatment of the water supply must be used to remove these substances before they enter this product. Otherwise, Hague Quality Water International shall have no obligations under this warranty.

This warranty does not cover damage to a part or parts of the system from causes such as fire, accidents, freezing, or unreasonable use, abuse, or neglect by the owner.

This warranty does not cover damage to a part or parts of the system resulting from improper installation. All plumbing and electrical connections should be made in accordance with all local codes and the installation instructions provided with the system. The warranty does not cover damage resulting from use with inadequate or defective plumbing; inadequate or defective water supply or pressure; inadequate or defective house wiring; improper voltage, electrical service, or electrical connections; or violation of applicable building, plumbing, or electrical codes, laws, ordinances, or regulations.

THIS WARRANTY DOES NOT COVER INCIDENTAL, CONSEQUENTIAL OR SECONDARY DAMAGES.

ANY IMPLIED WARRANTIES ON THE PRODUCT DESCRIBED IN THIS WARRANTY WILL NOT BE EFFECTIVE AFTER THE EXPIRATION OF THIS WARRANTY.

Some states do not allow limitations on how long an implied warranty lasts or the exclusion or limitation of incidental or consequential damages, so the above limitations and 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.

Claims Procedure

Any defects covered by this warranty should be promptly reported to Hague Quality Water International at 4343 South Hamilton Road, Groveport, Ohio 43125. In writing about the defects, please provide the original owner's name, telephone number, and original address; serial number and model number of the product; date of purchase; and name of dealer from whom purchased. Hague Quality Water International reserves the right to replace defective parts with exact duplicates or their equivalent.

For Owner's Reference

_____	_____
Model No.	Equipment Serial No.
_____	_____
Installation Date	Installer's Signature
_____	_____
Independent Dealer	

NOTES:

NOTES:

NOTES:

The WQA Gold Seal assures that this product has been tested and validated by the Water Quality Association. This validation assures that all electrical components are UL or CSA listed and all components that are in contact with the treated water are NSF listed or FDA approved.

Listed and tested under NSF Standard 44 for Softening Performance, Barium Reduction, and Radium 226/228 Reduction. Water softeners using sodium chloride for regeneration add sodium to the water. Persons who are on sodium restricted diet should consider the added sodium as part of their overall sodium intake.



Hague Quality Water International
4343 S. Hamilton Rd.
Groveport, OH 43125
Litho USA
Form 90900
RV0601PP2.5M ©1995

Made in USA
Manufactured using one or more of the
following patent numbers: 5,089,140
5,300,230 DES.332,480 DES.331,097
5,116,419 5,157,979 5,378,370