HOUSEPURE®

9100 TS Upflow

Service Manual

TABLE OF CONTENTS

JOB SPECIFICATION SHEET

Job No: _____

Model No: _____

Water Test:_____

Capacity Per Unit: _____

Mineral Tank

Size:_____Diameter:_____ Height: _____

Brine Tank Size and Salt Setting per Regeneration: _____

9100 TS Control Valve Specifications:

1. Type of Timer:
   a. 82 minute available regeneration time, 1/15 RPM
   b. 164 minute available regeneration time, 1/30 RPM
2. Type of Meter:

Mechanical Valves (Gallon Settings)

Meter	Standard Range	Extended Range
3/4”	125 - 2,125	625 - 10,625
1”	310 - 5,270	1,150 - 26,350
1-1/2”	625 - 10,625	3,125 - 53,125

3. Timer Gallon Setting:_____ Gallons
4. Regeneration Program Setting:
   a. Backwash: _____Minutes
   b. Brine and Slow Rinse: _____Minutes
   c. Rapid Rinse:_____Minutes
   d. Brine Tank Refill: _____Minutes
5. Drain Line Flow Control: _____ gpm
6. Brine Refill Rate: _____ gpm
7. Injector Size: _____

EQUIPMENT CONFIGURATION

9100 TS Configuration

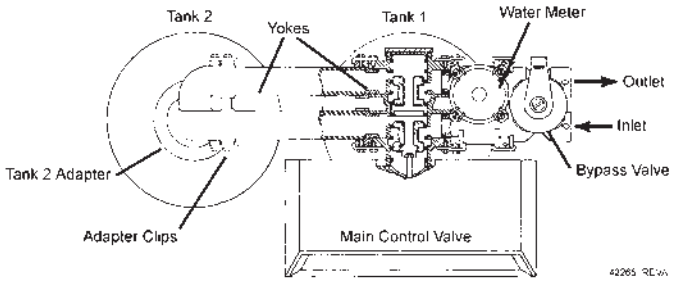


Figure 1

Water, inc.®

800.322.WATER(9283)
waterinc.com

SAFETY INFORMATION

This water conditioner's control valve conforms to UL/CE Standards. Generic valves were tested and certified for compliance as verified by the agency listing.

- Please review the entire Installation and Operation Manual before installing the water conditioning system.
- As with all plumbing projects, it is recommended that a trained professional water treatment dealer install the water conditioning system. Please follow all local plumbing codes for installing this water conditioning system.
- This system will not make microbiologically unsafe water safe. Water that is unsafe must be treated separately from this conditioner.
- This water conditioning system is to be used only for potable water.
- Inspect the water conditioning system for carrier shortage or shipping damage before beginning installation.
- Use only lead-free solder and flux, as required by federal and state codes, when installing soldered copper plumbing.
- Use caution when installing soldered metal piping near the water conditioning system. Heat can adversely affect the plastic control valve and bypass valve.
- All plastic connections should be hand tightened. Teflon* tape may be used on connections that do not use an O-ring seal. Do not use pipe dope type sealants on the valve body. **Do not use pliers or pipe wrenches.**
- Do not use petroleum-based lubricants such as Vaseline, oils or hydrocarbon-based lubricants. Use only 100% silicone lubricants.
- Use only the power transformer supplied with this water conditioning system.
- All electrical connections must be completed according to local codes.
- The power outlet must be grounded
- Install an appropriate grounding strap across the inlet and outlet piping of the water conditioning system to ensure that a proper ground is maintained.
- To disconnect power, unplug the AC adapter from its power source.
- Observe drain line requirements.
- Do not support the weight of the system on the control valve fittings, plumbing, or the bypass.
- Do not allow this water conditioning system to freeze. Damage from freezing will void this water conditioning system's warranty.
- Operating ambient temperature: 34° to 120°F (1° to 49°C).
- Operating water temperature: 34° to 100°F (1° to 38°C).
- Operating water pressure range : 20 to 120 psi (1.38 to 8.27 bar). In Canada the acceptable operating water pressure range is 20 to 100 psi (1.38 to 6.89 bar).
- Observe all warnings that appear in this manual.
- Keep the media tank in the upright position. Do not turn upside down or drop. Turning the tank upside down or laying the tank on its side can cause media to enter the valve.
- Use only regenerants designed for water conditioning. Do not use ice melting salt, block salt or rock salt.

*Teflon is a trademark of E.I. duPont de Nemours.

HOW TO USE THIS MANUAL

This installation manual is designed to guide the installer through the process of installing and starting water conditioning systems featuring the 9100 TS controller.

This manual is a reference and will not include every system installation situation. The person installing this equipment should have:

- Training in the 9100 TS control and the 9000/9100 valve.
- Knowledge of water conditioning and how to determine proper control settings.
- Adequate plumbing skills.

GENERAL AND COMMERCIAL INSTALLATION INSTRUCTIONS

1. Place the softener tank where you want to install the unit.
   NOTE: Be sure the tank is level and on a firm base.
2. During cold weather it is recommended that the installer warm the valve to room temperature before operating.
3. Perform all plumbing according to local plumbing codes.
   — Use a 1/2" minimum pipe size for the drain.
   — Use a 3/4" drain line for backwash flow rates that exceed 7 gpm or length that exceeds 20' (6 m).
4. Both tanks must be the same height and diameter and filled with equal amounts of media.
5. The distributor tube must be flush with the top of each tank. Cut if necessary. Use only non-aerosol siliconelubricant.
6. Lubricate the distributor O-ring seal and tank O-ring seal. Place the main control valve on one tank and the tank adapter on the second tank.
   NOTE: If required, solder copper tubing for tank interconnection before assembling on the main control valve and tank adapter. Maintain a minimum of 1" distance between tanks on final assembly.
7. Solder joints near the drain must be done before connecting the Drain Line Flow Control fitting (DLFC).Leave at least 6" (152 mm) between the DLFC and solder joints when soldering pipes that are connected on the DLFC. Failure to do this could cause interior damage to DLFC.
8. Use only Teflon tape on the drain fitting.
9. Be sure the floor under the salt storage tank is clean and level.
10. Place approximately 1" (25 mm) of water above the grid plate. If a grid is not utilized, fill to the top of the air check in the salt tank. Do not add salt to the brine tank at this time.
11. On units with a bypass, place in Bypass position.
    — Turn on the main water supply.
    — Open a cold soft water tap nearby and let water run a few minutes or until the system is free of foreign material (usually solder) resulting from the installation. Close the water tap when water runs clean.
12. Place the bypass In Service position and let water flow into the mineral tank. When water flow stops, slowly open a cold water tap nearby and let water run until air is purged from the unit. Then close tap.
13. Make all electrical connections according to codes. Plug the valve into an approved power source. Do not insert meter cable into the meter yet.
14. Tank one has control valve and tank two has adapter.
15. Look on the right side of the control valve, it has indicators showing which position the control valve is in during Regeneration and which tank is In Service.

GENERAL AND COMMERCIAL INSTALLATION INSTRUCTIONS

continued

Water Pressure

A minimum of 25 pounds of water pressure is required for regeneration valve to operate effectively.

Electrical Facilities

A continuous 115 volt, 60 Hertz current supply is required. Make certain the current supply is always hot and cannot be turned off with another switch.

Existing Plumbing

Condition of existing plumbing should be free from lime and iron buildup. Piping that is built up heavily with lime and/or iron should be replaced. If piping is clogged with iron, a separate iron filter unit should be installed ahead of the water softener.

Location Of Softener And Drain

The softener should be located close to a drain.

Bypass Valves

Always provide for the installation of a bypass valve.

Tank and Probe Assembly

Use only 100% silicone lubricant on the probe O-rings (Figure 2). Do not allow the lubricant to come into contact with the probe pins. Install the probe assemblies into the tank and secure with the locking clasp (Figure 3).

Important: The pins on the probes will only fit into the bulkhead fittings one way. The pins must go into the matching holes at the bottom of the fitting. The probe with the shortest length of wire must be on top. Install the protective shield (Figure 3).

NOTE: Do not attempt to tighten or loosen the Bulkhead fittings as they are secured with a locking adhesive.

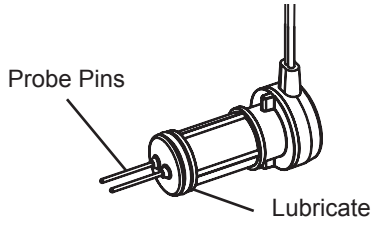


Figure 2

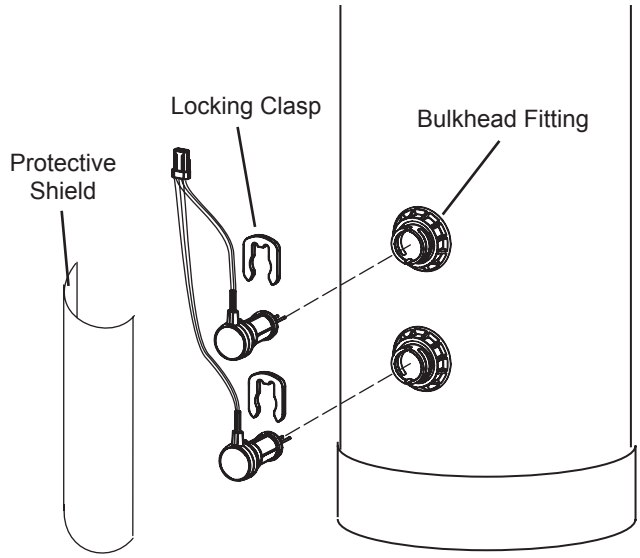


Figure 3

Valve to Tank Installation Instructions

1. Spin the valve onto the tank, ensuring the threads are not cross-threaded.

   NOTE: All Fleck® valves are right-hand threads, or clockwise, to install.

2. Rotate the valve freely without using force until it comes to a stop (this position is considered zero).
3. Rotate the valve clockwise from zero, between ¼ turn and ½ turn (Figure 4).

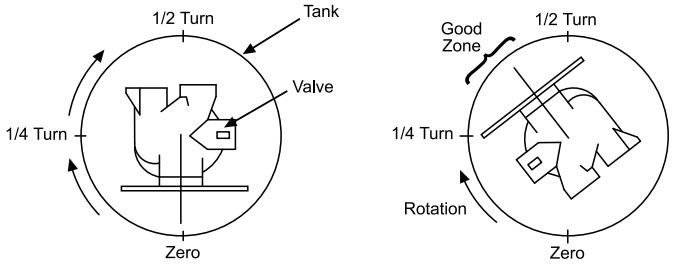


Figure 4

NOTE: If lubricant is required, a silicone compound is strongly recommended. Dow Corning® Silicone Compound (available from Fleck®), is recommended for best possible results. Dow Corning® 7 Release Compound is used in the manufacture of Fleck® control valves. The use of other types of lubricants may attack the control's plastic or rubber components. Petroleum-based lubricants can cause swelling in rubber parts, including O-rings and seals.

Part No.	Description
16174	Silicone, 2 oz Tube
16586-8	Silicone, Dow #7 8 LB

⚠ WARNING: Do not exceed water pressure of 125 psi (8.6 bar). Do not exceed 110°F (43.3°C). Do not subject unit to freezing conditions.

9100 TS Control Operation

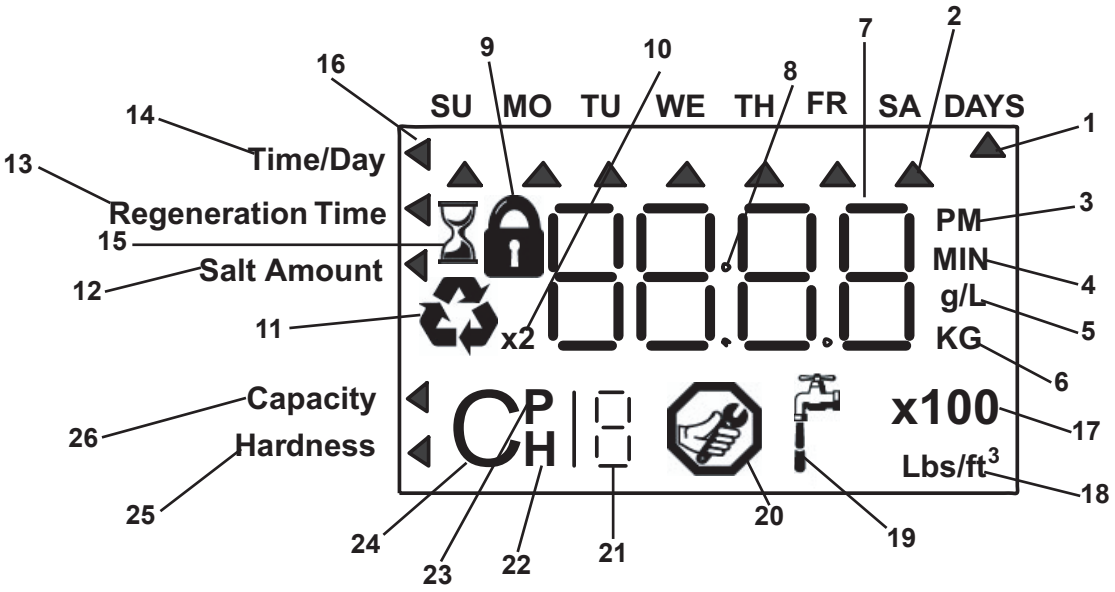
Power Loss Memory Retention

The 9100 TS control features battery-free Time of Day and Day of Week retention during temporary loss of power. A super capacitor is designed to keep time for 8 to 24 hours depending on the installation. If the super capacitor is exhausted the 9100 TS control will display four dashes (- - : - -) immediately upon power up. The Time of Day and Day of Week must be reset.

All other programmed parameters are stored in the static memory and are retained.

CONTROLLER FEATURES

Display Icons & Cursors



NOTE: In normal operation and during programming, only a few of the icons are actually displayed.

1. This cursor is displayed when the days between regeneration are being programmed (used with .5 to 30 day regeneration programming).
2. One of these cursors is displayed to indicate which day will be programmed into the controller.
3. "PM" indicates that the time displayed is between 12:00 noon and 12:00 midnight (there is no AM indicator). PM indicator is not used if clock mode is set to 24-hour.
4. When "MIN" is displayed, the value entered is in minute increments.
5. When g/L is displayed, the value for regenerant amount entered is in grams/Liter of resin.
6. When "Kg" is displayed, the value entered is in kilograms or kilograins.
7. Four digits used to display the time or program value. Also used for error codes.
8. Colon used as part of the time display.
9. Locked/unlocked indicator. In Level I Programming this is displayed when the current parameter is locked-out. It is also used in Level II Programming to indicate if the displayed parameter is locked (icon flashes) when controller is in Level I.
10. When "x2" is displayed, a second regeneration has been called for.
11. The recycle sign is displayed (flashing) when a regeneration at the next time of regeneration has been called for. Also displayed (continuous) when in regeneration.
12. The display cursor is next to "SALT AMOUNT" when programming the amount of regenerant.
13. The display cursor is next to "REGENERATION TIME" when programming the time of regeneration and the days of regeneration.
14. The display cursor is next to "TIME/DAY" when programming the current time and day.
15. The hourglass is displayed when the motor is running. The camshaft should be turning.
16. These cursors appear next to the item that is currently displayed.
17. X100 multiplier for large values.
18. When Lbs/ft3 is displayed the value for regenerant amount entered is in pounds/cubic foot of resin.
19. Faucet is displayed when the current flow rate is displayed. Control may show the faucet and "0", indicating no flow.
20. Maintenance interval display turns on if the months in service exceed the value programmed in P11.
21. Displays the tank in service durning normal operating mode. Used with #22, #23 and #24 in programming mode or regeneration.
22. History Values (H). The number displayed by #23 identifies which history value is currently displayed.
23. Parameter (P). Displayed only in Level II Programming. The number displayed by #21 identifies which parameter is currently displayed.
24. Cycle (C). The number displayed by #21 is the current cycle in the regeneration sequence.
25. Hardness setting.
26. Capacity display—shows estimated system capacity.

CONTROLLER FEATURES *continued*

Keypad - Buttons

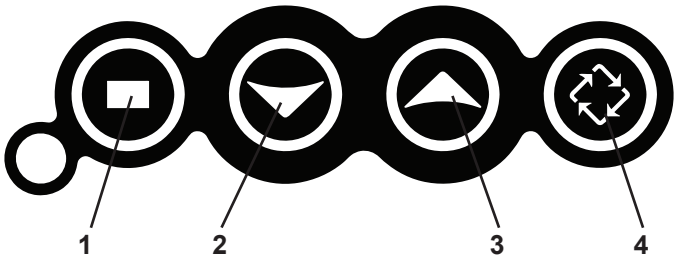


Figure 5

1. SET. Used to accept a setting that normally becomes stored in memory. Also used together with the arrow buttons.
2. DOWN arrow. Generally used to scroll down or decrement through a group of choices.
3. UP arrow. Generally used to scroll up or increment through a group of choices.
4. REGENERATE. Used to command the controller to regenerate. Also used to change the lock mode.

NOTE: If a button is not pushed for thirty seconds, the controller returns to normal operation mode. Pushing the Regenerate button immediately returns the controller to normal operation except when the controller is in regeneration mode or Level II Programming mode.

Programming Conventions

The 9100TS controller is programmed using the buttons on the keypad. The programming instructions are described two ways whenever a section has keypad input.

First a table shows simplified instructions. Second, text follows that describes the action. In each table:

"Action" lists the event or action desired.

"Keys" are listed as:

UP for up arrow

DOWN for down arrow

SET for set

REGEN for regeneration

"Duration" describes how long a button is held down:

P/R for press and release

HOLD for press and hold

X sec for a number of seconds to press the button and hold it down

"Display" calls out the display icons that are visible.

PLACING WATER CONDITIONING SYSTEM INTO OPERATION

After you have performed the installation steps, the conditioner will need to be placed into operation.

Follow these steps carefully, as they differ from previous valve instructions.

NOTE: 9100 TS control will be shipped in the service (treated water) position. Do not rotate the camshaft before performing the following steps.

The incoming supply water should be turned off.

Remove Air From Tank 1

1. Position the bypass valve(s) to the in service (not in bypass) position.
2. Open the nearest water faucet completely.
3. Open the incomming water supply valve slowly to the quarter open position.

   NOTE: Do not plug in the power supply until Step 5. The Tank 1 will fill with water. The air will exit through the faucet. When water flows steady from the faucet, the tank is purged.
4. Turn off the faucet then turn off the incomming water supply.

Power-up The Control

5. Plug the transformer into a non-switched outlet. The display will show 9100. If this is the first time the control is powered up the display will show "_.__" if the product is for USA otherwise it will show "___". Finish programming the 9100 TS control using the Level I Programming instructions.

   NOTE: Err3 will be displayed when the control does not detect the cam at the home position and that the motor is turned on. As soon as it detects the cam at the home position, the motor will be turned off and error will disappear. The camshaft will move to service if not already in service. These cam movements may take up to 5 minutes.

Remove Air From Tank 2

6. Press and hold the REGEN key for 3 seconds. The controller will enter the regeneration mode.
7. Press both SET key and UP key and hold for 3 seconds. Now, the cam will pass through all the cycles and bring the second tank into service position.
8. Turn on the faucet and then the incomming supply.

   NOTE: The Tank 2 will fill with water. The air will exit through the faucet. When water flows steady from the faucet, the tank is purged.

Flowmeter Setting

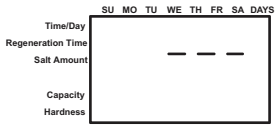
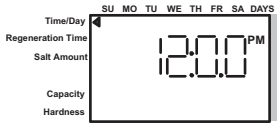
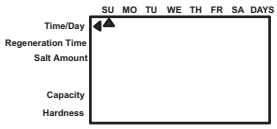
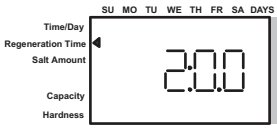
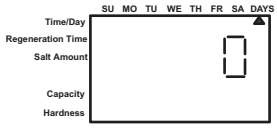
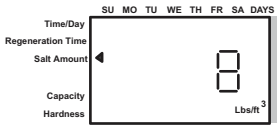
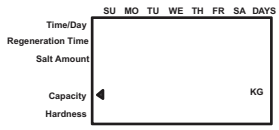
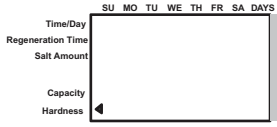
9. Press UP key and DOWN key and hold for 3 seconds. Now the control will enter into the Level II Programming mode.
10. Use DOWN key to scroll to the parameter P16: Flowmeter parameter setting.
11. Use SET key to change the parameter value.
12. Use UP/DOWN key to set the value as per the flowmeter connected to the system.
13. Use SET key to store the modified value.

Tank In Service Parameter Setting

14. Use DOWN key to scroll to the parameter P18: Tank In Service parameter setting.
15. Use SET key to change the parameter value.
16. Use UP/DOWN key to set the value as per the tank number shown by the indicator lablel on the valve.
17. Use SET key to store the modified value and wait for 30 seconds to let the control back to service mode.

PROGRAMMING MODE

Level I Programming - 9100 TS

Screen	Buttons to Press	Description	Range
	*then* ▼ or ▲ *press* ■	1. Resin Volume Select correct resin volume	Cubic feet: 0.75 to 4.00
	*press* ■ *then* ▼ or ▲ *press* ■	2. Time of Day (12 hr.) Set to time of day Note: Setting includes PM indicator.	
	*press* ■ *then* ▼ or ▲ *press* ■	3. Day of Week Set to actual day of the week	
	*press* ■ *then* ▼ or ▲ *press* ■	4. Time of Regeneration Set to desired time of regeneration	
	*press* ■ *then* ▼ or ▲ *press* ■	5. Days Override Leave at 0 to disable or Set to desired days between regeneration	Days: 0 (Disable) 0.5 to 30
	*press* ■ *then* ▼ or ▲ *press* ■	7. Salt Dosage Set to desired desired dosage lbs per cubic feet of resin	Lbs/ft^3 : 3 to 15
	*press* ▼ *to override press* ■ *then* ▼ or ▲ *press* ■	8. Capacity Capacity calculated by Logix Control Use to OVERRIDE calculated capacity	Kilograins: 1 to 900
	*press* ■ *then* ▼ or ▲ *press* ■	9. Hardness Set to actual water hardness in grains per gallon	Grains/gal: 3 to 200

Control programming is complete

NOTE: If one of the following conditions occur:
Control displays Err3 and goes to home position
or
Power outage discharges the supercapacitor and when power is restored and the time of day is reset;
the regen icon will begin flashing. This indicates that a delayed regeneration will occur at the next programmed time of regeneration and the system will regenerate by water usage.

In Service Display

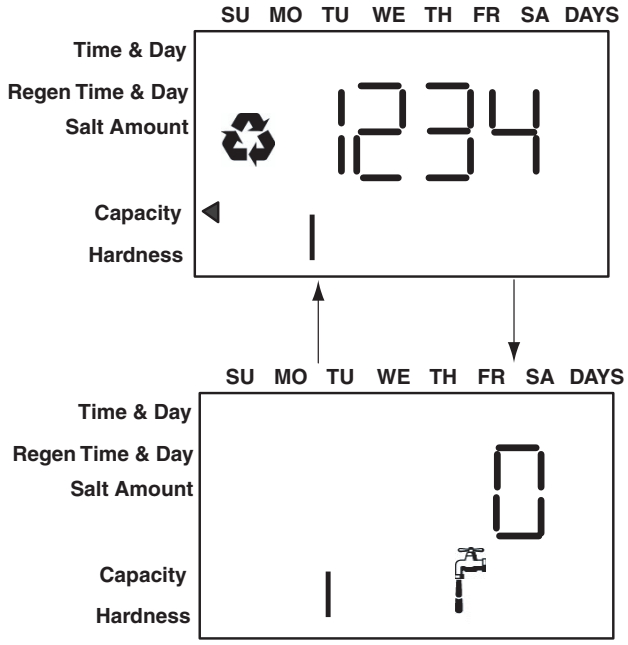


Figure 6

The display shows the number of the tank in service (small digit next to CPH position). The display also alternates between Capacity Remaining and Flow Rate (faucet icon) for the tank in service.

NOTE: The Regen icon is only on when in regeneration.

NOTE: The faucet icon is displayed on all the 9100 TS controls when there is flow. The 9100 TS will show the faucet icon when the flow rate is displayed, even if the flow rate is zero. The faucet icon will turn off when the capacity is displayed. In service flow rate display can be replaced with a clock display using Level II Programming (Parameter P10).

Programming Overview

The 9100 TS control includes multiple program levels that allow water treatment professionals to customize the system for many water conditions. Additionally, historical data can be viewed allowing quick and easy troubleshooting. In most cases Level I Programming is all that is required to set up the water conditioning system for proper operation. A brief description of each program level is listed below.

Level I - Used to program control for normal applications.

Level II (P-Values) - Allows the installer to customize programming for non-standard applications.

Level III (C-Values) - Allows the installer to adjust length of select cycles for non-standard applications.

Level IV History (H-Values) - Allows access to historical information for troubleshooting the system.

NOTE: If a button is not pushed for thirty seconds, the control returns to normal operation mode.

Level I Programming

The 9100 TS control can be quickly programmed by following the sequential procedure in the section "Placing Water Conditioning System Into Operation". Level I Program parameters are those that can be accessed by pressing the UP or DOWN buttons. Step-by-step instructions are shown on previous page.

- Resin Volume Setting: Set to match the volume (cubic feet) of resin in the mineral tank.
- Time of Day: Includes PM indicatior. Can be set to display as a 24-hour clock. See Level II programming.
- Day of Week: Set to actual day of the week.
- Time of Regeneration: Fully adjustable. Default is 2:00 AM.
- Days Override: Range 0.5 to 30 days. Leave at 0 to disable.
- Salt Dosage: Set at pounds of salt per cubic foot of resin in the conditioner tank.

NOTE: When the control is set up for a twelve-hour clock a PM indicator will illuminate when the displayed time is in the PM hours. There is no AM indicator.

Programming the Lockout Feature

All Level I parameters can be locked out when the control is in Level II Programming. Simply press the REGEN button during Level II Programming and a lock icon will appear indicating that the specific setting has been locked out. When locked out, the setting cannot be adjusted in Level I Programming. To disable the Lock Out feature, press the REGEN button when in Level II. The lock icon will not be displayed.

Resin Volume

The amount of resin can be determined by the diameter of the tank.

Tank Diameter (inches)	Resin Volume	
	US	Metric
8	0.90	
9	1.25	
10	1.75	
12	2.25	

PROGRAMMING MODE *continued*

Level II Programming - P Values

Level II Programming parameters can be adjusted to fine-tune the conditioner's operation. The parameters are accessible by pressing and holding the UP and DOWN buttons until the control displays a "P" value.

NOTE: The control must be in the home position to change settings. See Table for Level II parameters. Typically the Level II parameters will not need to be adjusted as the default settings accommodate most applications. Contact your water treatment professional before attempting any programming.

	Description	Range	Minimum Increments	Default	Units	Notes
P9	Units of Measure	0-1	1	(2)		0 = US 1 = Metric
P10	Clock Mode	0-3	1	(2)		0 = 12 hour clock: flow rate displayed 1 = 24 hour clock: flow rate displayed 2 = 12 hour clock; Time of Day displayed 3 = 24 hour clock; Time of Day displayed
P11	Service Interval	0-99	1	0	Months	0 = Dissabled. Number of days per month is fixed at 30.
P12*	Resin Tank Sensor Placement	60-01	1	20	% of Capacity	Expressed as a percentage of resin bed capacity remaining after lowest set of pins.
P13	Disable Resin Tank Sensors	0-1	1	0		0 = Resin Tank Sensors Enabled 1 = Resin Tank Sensors Disabled
P14	Refill Rate	1-700	1	(1)	gpm x 100	Used with salt amount to calculate refill time.
P15	Draw Rate	1-700	1	(1)	gpm x 100	Used with salt amount to calculate draw time.
P16	Flow sensor select	1-4	1	4		1 = 1" Autotrol turbine 2 = 2" Autotrol turbine 3 = User defined K-factor 4 = Fleck 3/4" Paddle 5 = Fleck 3/4" Turbine 6 = Fleck 1" Paddle 7 = Fleck 1"/1-1/2" Turbine 8 = Fleck 1-1/2" Paddle 9 = Meter Factor
P17	K-factor or Pulse equivalent	0.01-99.99	0.01	0.01		K-factor P16 = 3; Pulse Equivalent P16 = 9
P18	Tank in Service	1-2	1	1		Select the Tank in Service.
P19	Cleaning Cycle Interval	0-100	1	6		Number of standard regeneration cycles between cleaning regeneration cycles.

*The control will automatically adjust the Hardness Setting P8 when the sensors in the resin tank detect a hardness front passing. This automatic adjustment to the hardness setting may result in the system passing hard water near the end of the service cycle if the resin tank sensor placement setting P12 is wrong. The sensor placement setting P12 must be reduced to eliminate the problem. Reducing the Capacity Setting P7 or increasing the Hardness setting P8 will only produce a temporary solution.

NOTE: (1) Default selected with initial setting value.
(2) Facotry Default is "0" for North America units and "1" for World units.

PROGRAMMING MODE *continued*

Level III Cycle Programming - C Values

Several Level III program parameters can be adjusted to fine-tune valve operation for non-standard applications. Typically these parameters will not need to be adjusted as the default settings accommodate most applications. Contact your Water Treatment Professional before attempting any programming. The parameters are accessible by pressing and holding the UP and SET buttons until the display shows a “C” value.

NOTE: The control must be in the treated water position to change settings.

C#	Description	Range	Minimum Increments	Default Setting	Notes
C1*	Brine Draw	0-200	1 Min	See Notes	Automatically calculated from resin volume and salt dosage settings and draw rate.
C2	Slow Rinse	0-200		See Notes	Initial time automatically calculated to provide two bed volumes of rinse.
C3	Standard Backwash	0-20		7	Flow rate dictated by size of drain line flow controller.
C4	Standard Fast Rinse	0-200		3	Rinses residual regenerant from tank.
C5*	Refill	0-200		See Notes	Automatically calculated from resin volume and salt dosage settings and refill rate.
C13	Cleaning Backwash	0-200		14	Control uses C13 in place of C3 when the number of standard regenerations is more than or equal to the cleaning cycle interval P19.
C14	Cleaning Fast Rinse	0-200		6	Control uses C14 in place of C4 when the number of standard regenerations is more than or equal to the cleaning cycle interval P19.
*Cannot be changed in Level III Cycle Programming.					

PROGRAMMING MODE *continued*

Level IV Viewing History - H Values

Historical information can be viewed by pressing the SET and DOWN buttons simultaneously, with the 9100 TS control in the home position. Release both buttons when the control displays an "H" value. Press the UP or DOWN buttons to navigate to each setting.

H#	Description	Range	Notes
H0*	Initial Setting Value	Cubic Feet or Liters	Resin Volume, Holding SET for 3 seconds will reset control to factory defaults
H1	Days since last regeneration	0-255	
H2	Current Flow Rate	Depends on turbine used	
H3	Water used today in gallons or m^3 since Time of Regeneration	0-131,070 or 0-1,310.7 m^3	
H4	Water used since last regeneration in gallons or m^3	0-131,070 or 0-1,310.7 m^3	
H5*	Total water used since reset in 100s	0-999900 gallons or 0-9999m^3	Holding SET key for 3 seconds will reset H5 and H6 to zero.
H6*	Total water used since reset in 1,000,000	4,294 x 10^6 gal or 4,264 x 10^4 m^3	Holding SET key for 3 seconds will reset H5 and H6 to zero.
H7	Average usage for Sunday in gallons or m^3	0-131,070 gallons or 0-1,310.70 m^3	
H8	Average usage for Monday in gallons or m^3	0-131,070 gallons or 0-1,310.70 m^3	
H9	Average usage for Tuesday in gallons or m^3	0-131,070 gallons or 0-1,310.70 m^3	
H10	Average usage for Wednesday in gallons or m^3	0-131,070 gallons or 0-1,310.70 m^3	
H11	Average usage for Thursday in gallons or m^3	0-131,070 gallons or 0-1,310.70 m^3	
H12	Average usage for Friday in gallons or m^3	0-131,070 gallons or 0-1,310.70 m^3	
H13	Average usage for Saturday in gallons or m^3	0-131,070 gallons or 0-1,310.70 m^3	
H14	Average service cycle	0-255 days	Last 4 Regens
H15*	Peak Flow Rate	0-200 gpm or 1000Lpm	Holding SET key for 3 seconds will reset H15 to zero.
H16	Day and Time of Peak Flow Rate	Time and day that peak flow occurred	
H17*	Months since service	0-2184 months	Holding SET key for 3 seconds will reset H17, H18 and H19 to zero.
H18	Number of Low Salt Alarms	0-65536	
H19	Number of Reduced Capacity Alarms	0-65536	
H r	Number of regenerations since last serviced	0-65536	Holding Set key for 3 seconds will reset Hr to zero.

*H0, H5, H6, H15, H17 values can be reset by pressing and holding ⊖ for 3 seconds while the value is being displayed.

Program Reset

The 9100 TS control can be reset to original factory parameters when viewing the H0 parameter. Press and hold the SET button for three seconds while H0 is displayed. Release the button. All settings except for Time of Day and Day of Week will be reset. The 9100 TS control will now display the resin volume. Refer to Level I Programming.

NOTE: After a program reset all programmed values will reset to default settings.

Manual Regeneration Options

The 9100 TS control features several options that offer additional flexibility for manually regenerating the softener. On twin tank systems the tank in standby will move to service. Then the tank that was in service will be regenerated..

Delayed Manual Regeneration

Press and release the REGEN button to start a delayed manual regeneration. The Regeneration icon on the display will flash indicating a regeneration will start when the time of day reaches the programmed time of regeneration. Pressing the REGEN button again will turn off the regeneration icon and cancel the delayed regeneration.

Immediate Manual Regeneration

Pressing and holding the REGEN button for three seconds starts an immediate manual regeneration. A solid regeneration icon will be displayed. The control will immediately begin a regeneration on the tank in service.

Delayed Second Regeneration

Pressing and releasing the REGEN button while the control is in regeneration will program the control for a delayed second regeneration. A flashing x2 icon next to the regeneration icon will appear indicating a second regeneration will start when the time of day reaches the programmed time of regeneration. The delayed second regeneration will be performed on the new tank in service.

Double Immediate Manual Regeneration

Back-to-Back manual regenerations are initiated by pressing and holding the REGEN button for three seconds while the control is in the regenerating mode. A solid x2 icon next to the regeneration icon will appear indicating a second manual regeneration will start immediately after current regeneration is complete.

DISINFECTION OF WATER CONDITIONING SYSTEMS

The materials of construction in the modern water conditioning system will not support bacterial growth, nor will these materials contaminate a water supply. During normal use, a conditioner may become fouled with organic matter, or in some cases with bacteria from the water supply. This may result in an off-taste or odor in the water.

Some conditioners may need to be disinfected after installation and some conditioners will require periodic disinfection during their normal life.

Depending upon the conditions of use, the style of conditioner, the type of ion exchanger, and the disinfectant available, a choice can be made among the following methods.

Sodium or Calcium Hypochlorite

These materials are satisfactory for use with polystyrene resins, synthetic gel zeolite, and bentonites.

5.25% Sodium Hypochlorite

These solutions are available under trade names such as Clorox. If stronger solutions are used, such as those sold for commercial laundries, adjust the dosage accordingly.

1. Dosage
   - Polystyrene resin; 1.2 fluid ounce (35.5 mL) per cubic foot.
   - Non-resinous exchangers; 0.8 fluid ounce (23.7 mL) per cubic foot.
2. Regenerant tank conditioners
   A. Backwash the conditioner and add the required amount of hypochlorite solution to the well of the regenerant tank. The regenerant tank should have water in it to permit the solution to be carried into the conditioner.
   B. Proceed with the normal regeneration.

Calcium Hypochlorite

Calcium hypochlorite, 70% available chlorine, is available in several forms including tablets and granules. These solid materials may be used directly without dissolving before use.

1. Dosage
   A. Two grains (approximately 0.1 ounce (3 mL) per cubic foot.
2. Regenerant tank conditioners
   A. Backwash the conditioner and add the required amount of hypochlorite to the well of the regenerant tank. The regenerant tank should have water in it to permit the chlorine solution to be carried into the conditioner.
   B. Proceed with the normal regeneration.

WIRING DIAGRAMS

Connecting the 9100 TS Twin Alternating or Parallel Controls

The twin sensor and extension cables are used for twin unit parallel and alternating applications. Four standard connections are required for operation; the power transformer, the flow sensor, motor/optical sensor, and the connection between tank 1 and tank 2 controls. Figure 7 outlines these standard features.

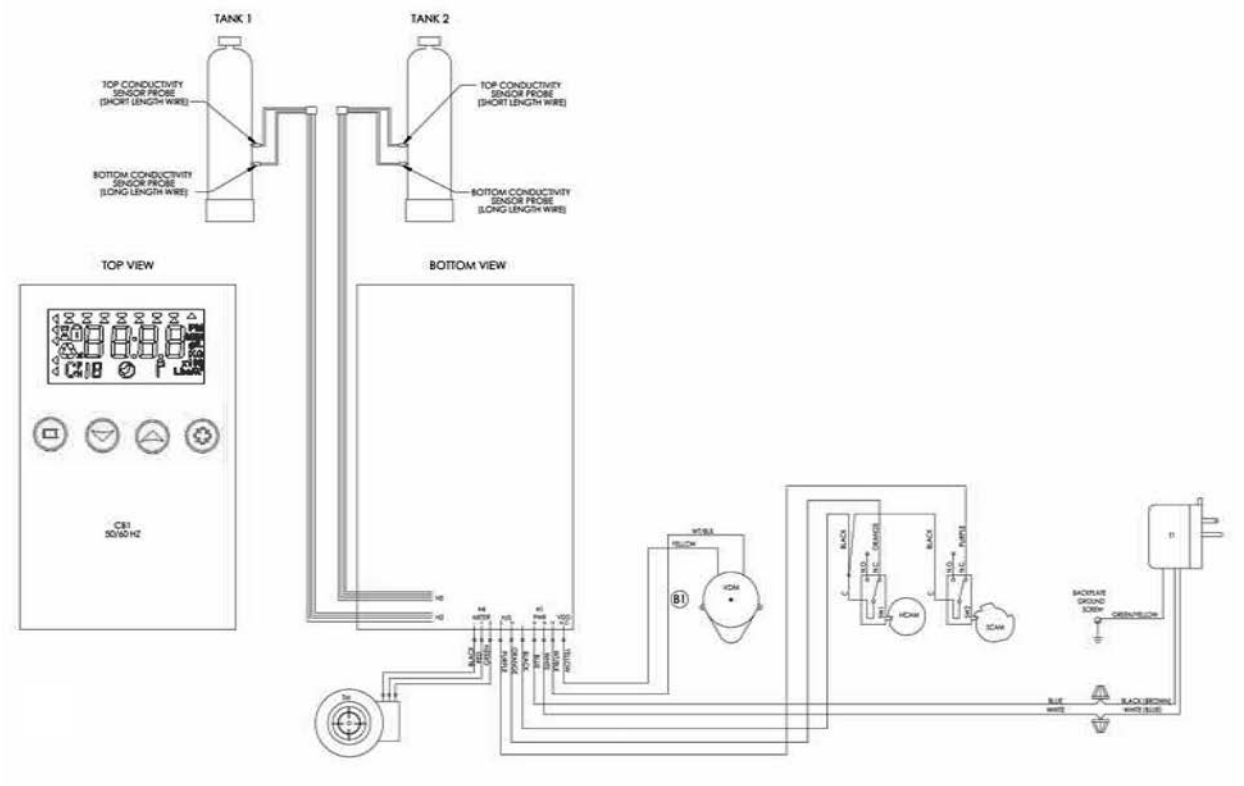
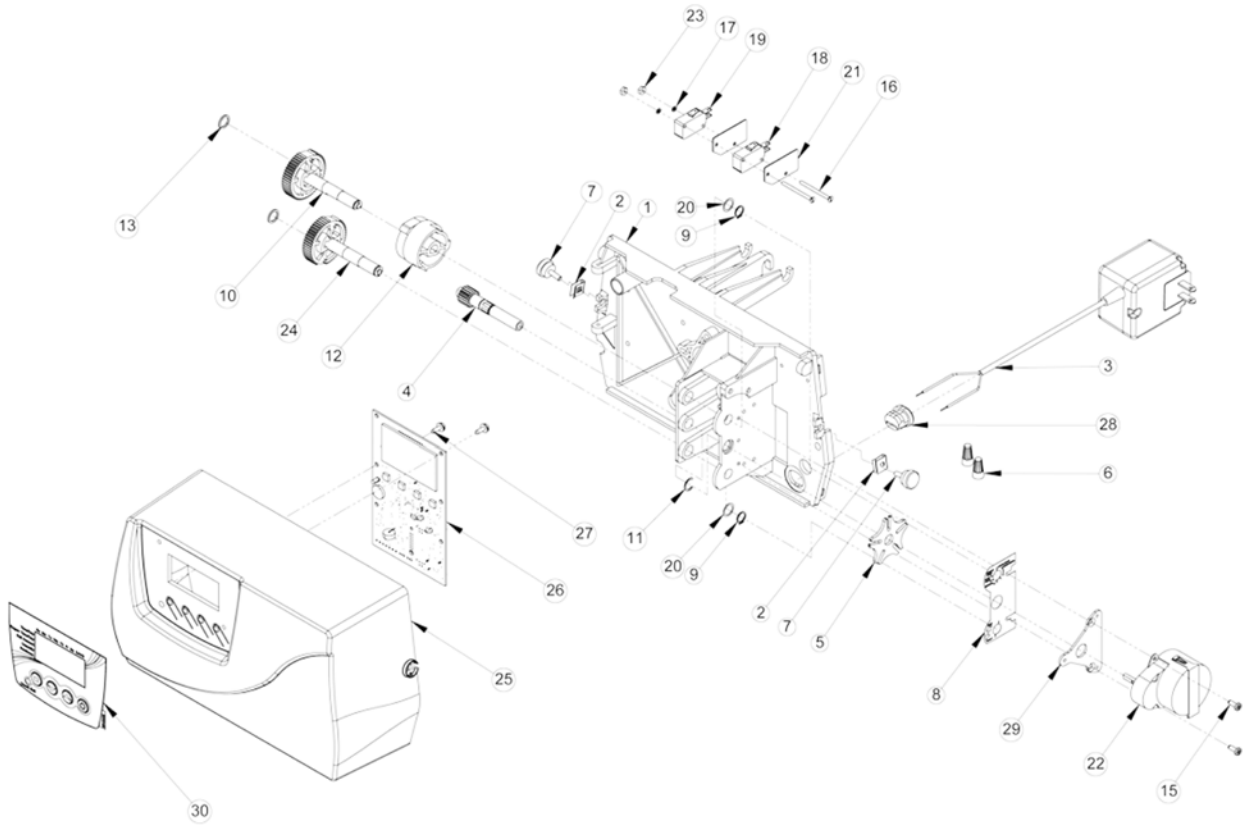


Figure 7

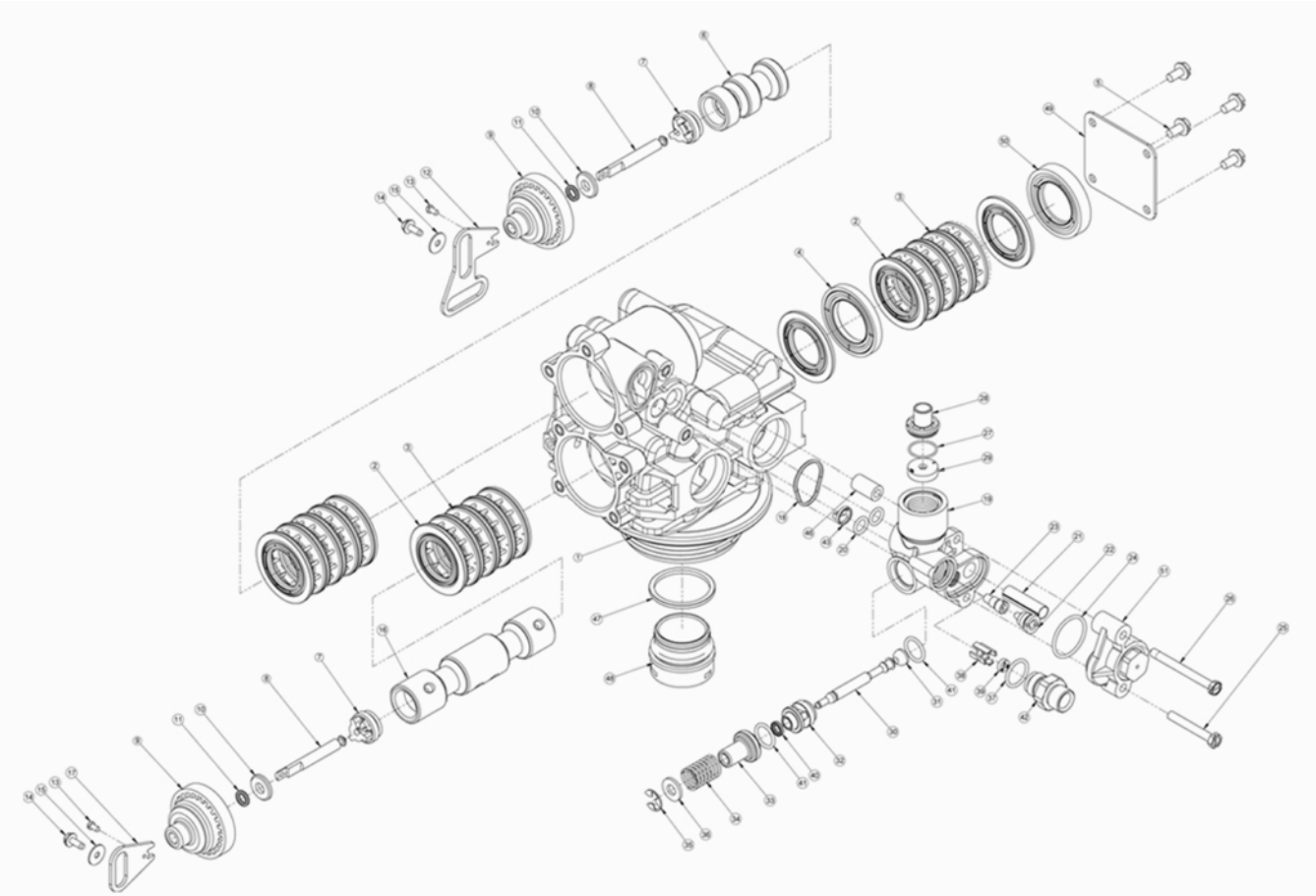
POWERHEAD ASSEMBLY



Item No.	QTY	Part No.	Description
1	1	15131	Backplate, 9000
2	2	18728	Nut, Clip, #8-32
3	1	19674	Transformer, US 24V 9.6VA
4	1	15135	Gear, Drive
5	1	14869	Wheel, Geneva
6	2	40422	Nut, Wire, Tan
7	2	19367	Screw, Designer Cover, Thumb
8	1	43085	Label, Shaft Position
9	2	14917	Retaining Ring, External
10	1	15133	Drive Gear Assembly - Upper
11	1	15810	Retaining Ring
12	1	43091	Cam, Triple 9100 TS
13	2	15372	Washer, Thrust
14	1	14430	Screw, Hex Washer Head
15	2	19160	Screw, #6-32 x 3/8 Pan Head
16	2	15172	Scrw, Flat Head

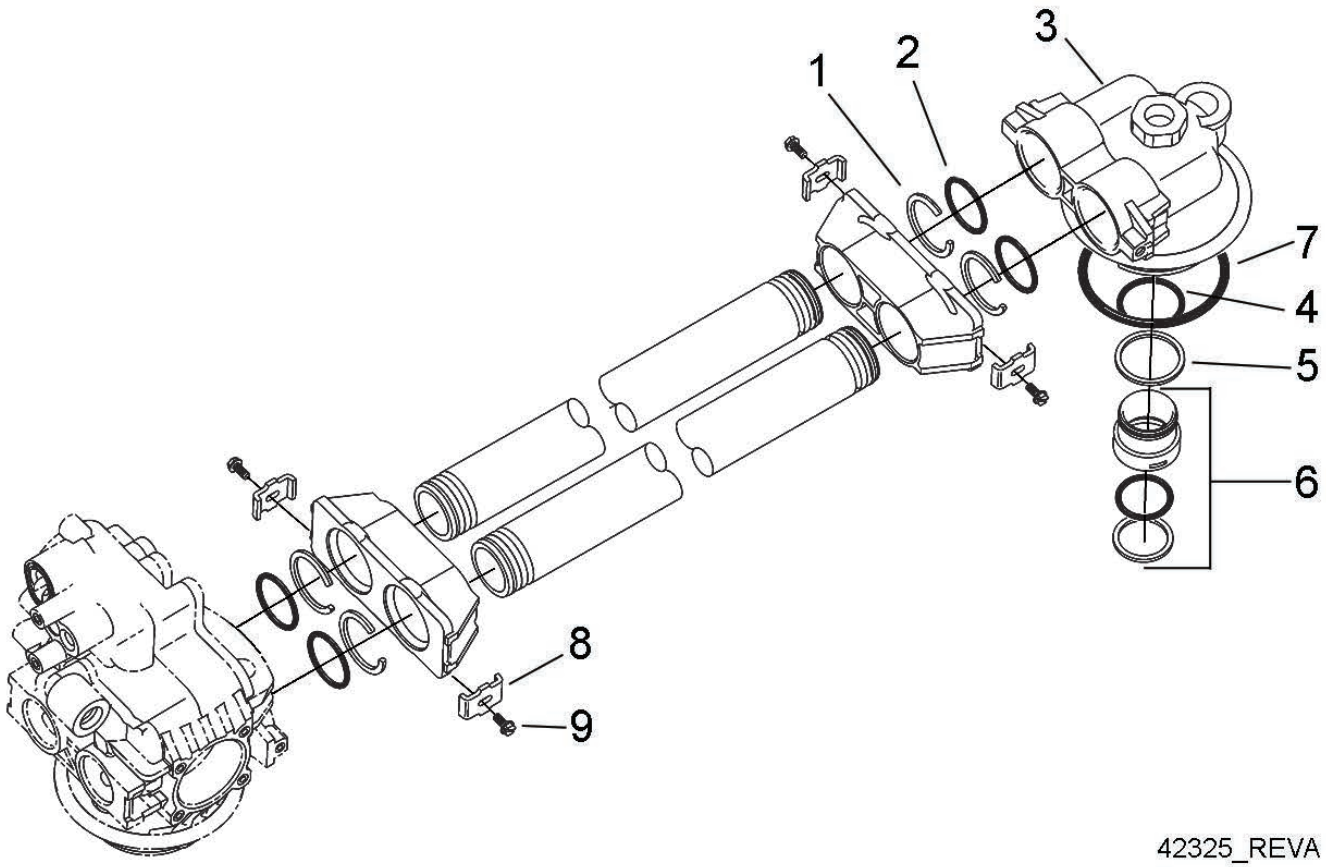
Item No.	QTY	Part No.	Description
17	2	10340	Washer, Lock #4, Zinc
18	1	16433	Switch, Micro Low DB
19	1	10218	Switch, Micro
20	2	15692	Washer, Plain, 3/8"
21	2	10302	Insulator, Limit Switch
22	1	18737	Drive Motor -24V, 50-60 Hz
23	2	10339	Nut, Hex, 4-40 Zinc Plated
24	1	15134	Drive Gear Assembly - Lower
25	1	43006	Cover, 9100 TS
26	1	43035	PCB, 9100 TS
27	2	17020	Screw, STL. Hex WSH, 6-20 x 3/8
28	1	13547	Strain Relief, Cord
29	1	42296-10	Plate, Adapter, Motor Kit
30	1	43056	Label, Overlay, 9100 TS
31	1	43112	Label, Sensor Wires 9100TS

9100 CONTROL VALVE ASSEMBLY



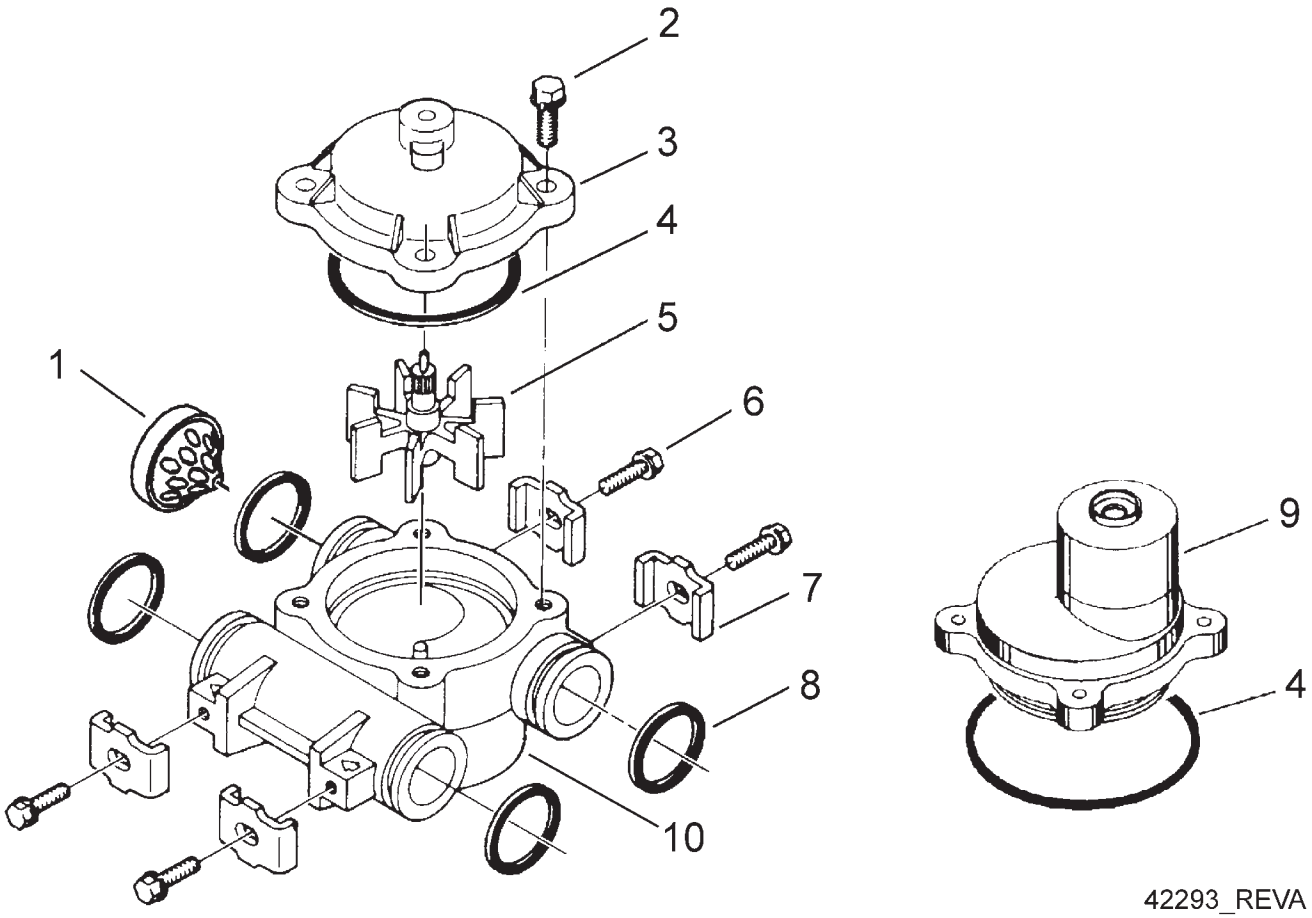
Item No.	QTY	Part No.	Description
1	1	40688	Valve Body Assy, 9100
2	16	13242	Seal, 5600
3	12	14241	Spacer
4	1	16595	Spacer, 9000
5	4	15331	Screw, Hex Washer Head
6	1	14914	Piston, 9000, Upper
7	2	14309	Retainer, Piston Rod
8	2	14919	Piston, Rod, Upper
9	2	13243	Plug, End, 5600
10	2	13008	Retainer, End Plug Seal
11	2	10209	Quad Ring, -010
12	1	14921	Link, Piston Rod
13	2	11335	Screw, #4-40
14	2	17020	Screw, STL. Hex WSH, 6-20 x 3/8
15	2	13363	Washer, Hague Drive
16	1	28170	Piston Lower, 9100 TS
17	1	15019	Link, Piston Rod, 9000/9500
18	1	41500	O-ring, 9100 Drain
19	1	15215	Body, Injector, 9000
20	2	13301	O-ring, -011
21	1	10227	Screen, Injector
22	1	10913-1	Nozzle, Injector, #1, Natural
23	1	10914-1	Throat, Injector
24	1	13303	O-ring, -021
25	1	15607	Screw, Hex, Slotted
26	1	25363	Screw, Hex WSH HD
27	1	15348	O-ring, -563
28	1	13173	Retainer, DLFC Button
29	1	12085	Washer, Flow, 1.2 gpm
30	1	14925	Brine Valve Stem, 9000
31	1	12626	Seat, Brine Valve
32	1	13167	Spacer, Brine Valve
33	1	13165	Cap, Brine Valve
34	1	11973	Spring, Brine Valve
35	1	11981-01	Ring, Retaining, SS
36	1	16098	Washer, Nylon Brine
37	1	12977	O-ring, -015
38	1	13245	Retainer, BLFC
39	1	12095	Washer, Flow Control, .50 gpm
40	1	12550	Quad Ring, -009
41	2	13302	O-ring, -014
42	1	13244	Adapter, BLFC
43	1	13497	Air Disperser, Injector
44	1	13333	Label, Injector
45	1	10759	Label, .5 gpm
46	1	13361	Spacer, 4600
47	1	40538	Retainer, 32 mm, O-ring Dist, 7000
48	1	61419	Kit, 1.05" Distributor Adapter
49	1	14906	Plate, End, 9000
50	1	14928	Plug, End Stub, 9000
51	1	60285-01	Injector Cap Assy, 9100 TS

9100 SECOND TANK ASSEMBLY



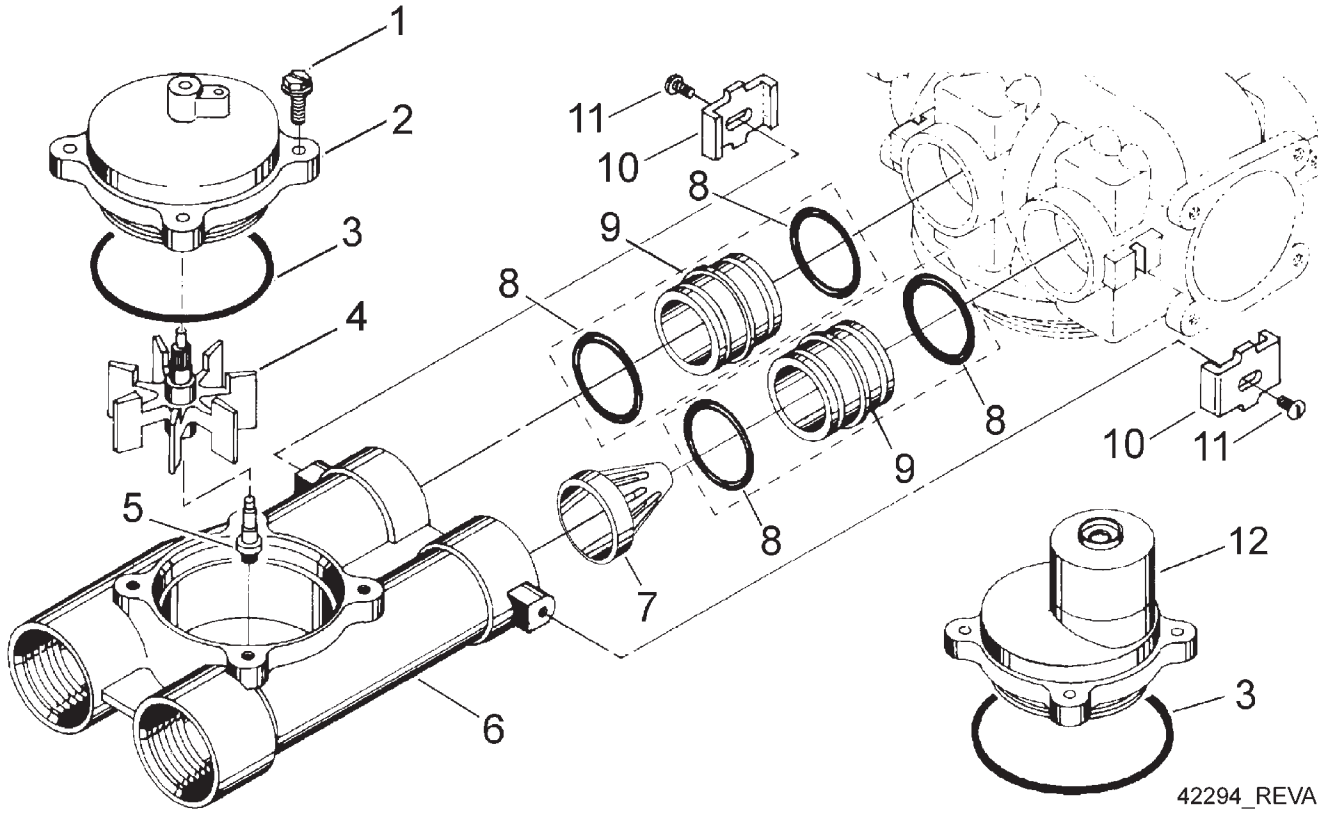
Item No.	QTY	Part No.	Description
1	4	40678	Ring, 9100, Yoke Retainer
2	4	13287	O-ring, -123
3	1	14865	Adapter Assy, 2nd Tank, 9100
4	1	19054	O-ring, -124
5	1	40538	Retainer, 32mm, O-ring Dist, 7000
6	1	61419	Kit, 1.05" Distributor, Adapter
7	1	18303	O-ring, -336
8	4	13255	Clip, Mounting
9	4	14202-01	Screw, Hex Wsh Mach, 8-32 x 5/16

3/4" METER ASSEMBLY



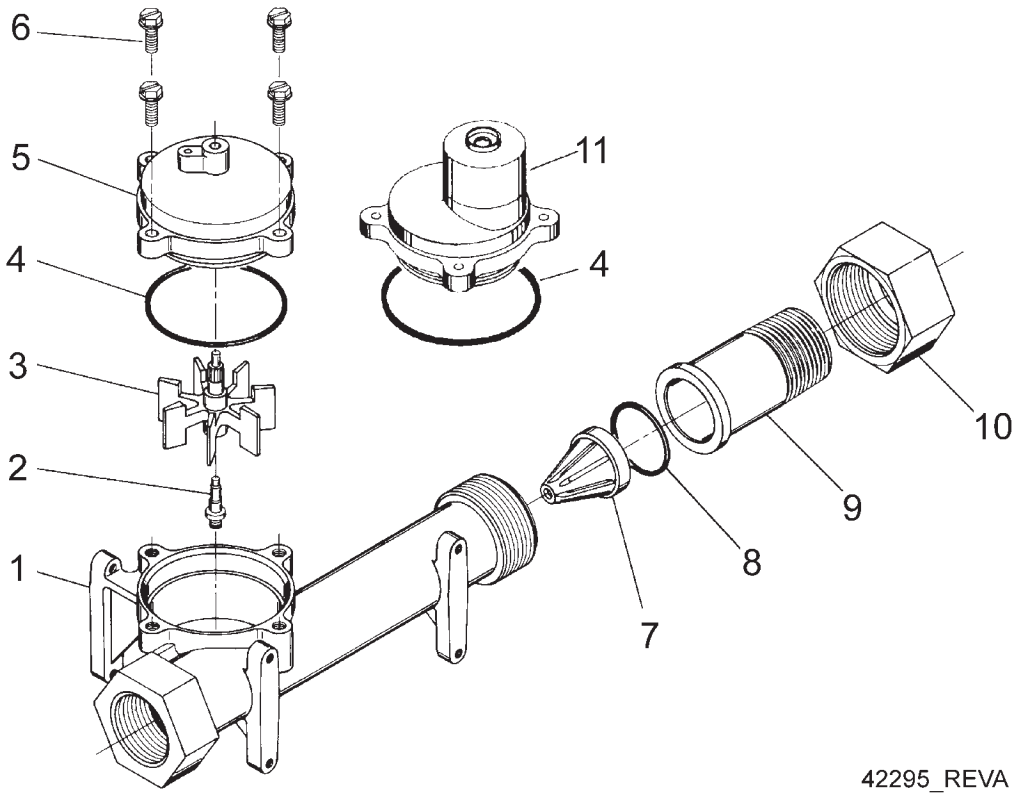
Item No.	QTY	Part No.	Description
1	1	14613	Flow Straightener
2	4	12473	Screw, Hex Wsh, 10-24 x 5/8
3	1	14038	Meter Cap Assy
4	1	13847	O-ring, -137, Std/560CD, Meter
5	1	13509	Impeller, Meter
6	4	13314	Screw, Slot Ind Hex, 8-18 x .60
7	4	13255	Clip, Mounting
8	4	13305	O-ring, -119
9	1	15150	Meter Cap Assy, Ext
	1	15237	Meter Cap Assy, Ext
10	1	13821	Body, Meter, 5600

1" METER ASSEMBLY



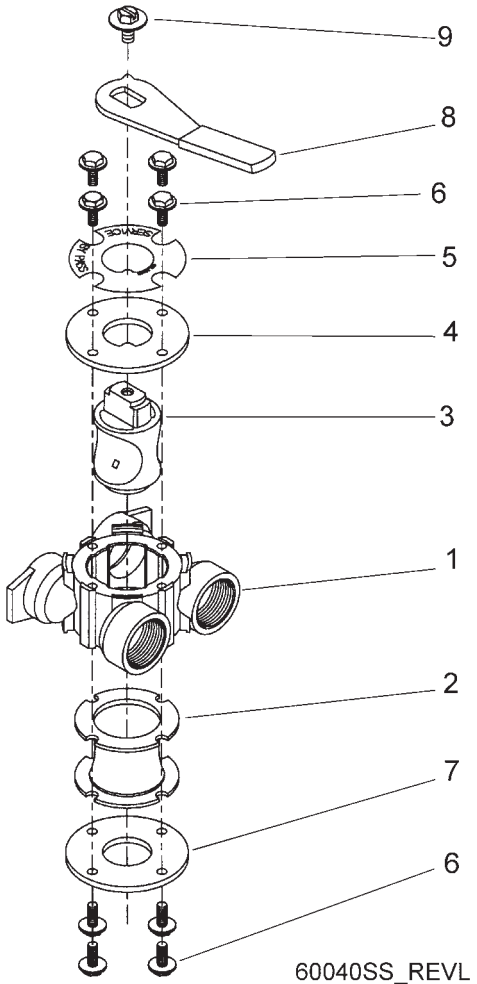
Item No.	QTY	Part No.	Description
1	4	12112	Screw, Hex Hd Mach 10-24 x 1/2
2	1	15218	Meter Cap Assy
	1	15237	Meter Cap Assy, EXT
3	1	13847	O-ring, -137, STD/560CD, Meter
4	1	13509	Impeller, Meter
	1	13509-01	Impeller, Celcon
5	1	13882	Post, Meter Impeller
6	1	15043	Body, Meter, 9000 1"
7	1	14960	Flow Straightener, 1"
8	4	13305	O-ring, -119
9	2	15078	Adapter, 1" Coupling
10	2	13255	Clip, Mounting
11	2	14202-01	Screw, Hex Wsh Mach, 8-32 x 5/16
12	1	15150	Meter Cap Assy, Ext
	1	15237	Meter Cap Assy, Ext

1-1/2" METER ASSEMBLY



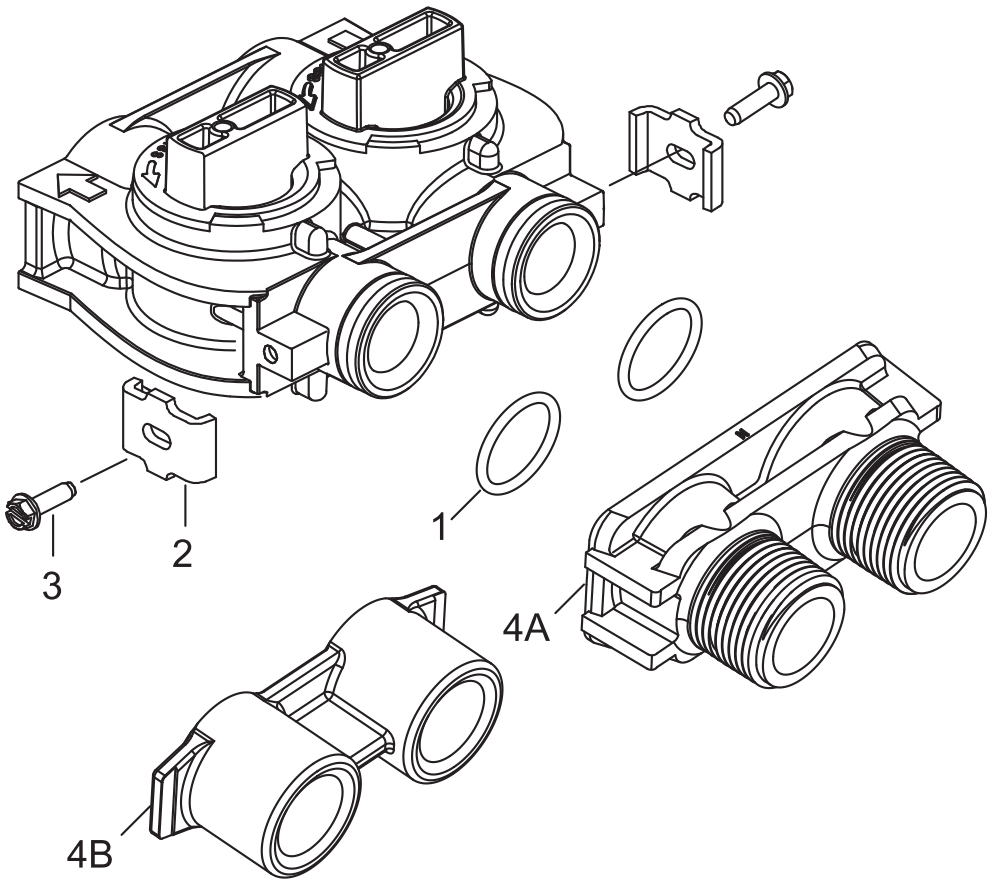
Item No.	QTY	Part No.	Description
1	1	17569	Body, Meter, 2850/9500
2	1	13882	Post, Meter Impeller
3	1	13509	Impeller, Meter
4	1	13847	O-ring, -137, Std/560CD, Meter
5	1	15218	Meter Cap Assy
6	4	12112	Screw, Hex Hd Mach, 10-24 x 1/2 18-8 S.S.
7	1	17542	Flow Straightener, 1 1/2”
8	1	12733	O-ring, -132
9	1	17544	Fitting, 1 1/2” Quick Connector
10	1	17543	Nut, 1 1/2”, Q/C
11	1	15150	Meter Cap Assy, Ext
	1	15237	Meter Cap Assy, Ext
Not Shown			
	1	17790	Sleeve, Meter, 1 1/2” x 1”

9000/9100 BYPASS VALVE ASSEMBLY



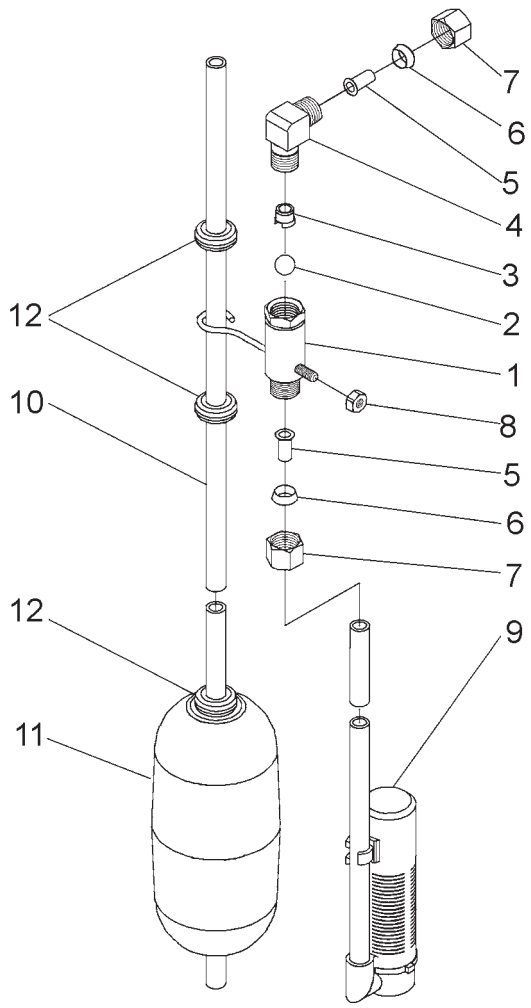
Item No.	QTY	Part No.	Description
1	1	17290	By-Pass Body, 3/4”
	1	17290NP	By-Pass Body, 3/4” NP, 5600
	1	13399	By-Pass Body, 1”
	1	13399NP	By-Pass Body, 1” NP
2	1	14105	Seal, By-Pass, 560CD
3	1	11972	Plug, By-Pass, w/Wax
4	1	11978	Plate, By-Pass, Top
5	1	13604-01	Label, By-Pass, Standard Mount
6	8	15727	Screw, Hex Wsh Hd, 10-24 x 1/2
7	1	11986	Plate, By-Pass, Bottom
8	1	11979	Lever, By-Pass
9	1	11989	Screw, Sltd Indent, 1/4 - 14 x 1 1/2

BYPASS VALVE ASSEMBLY



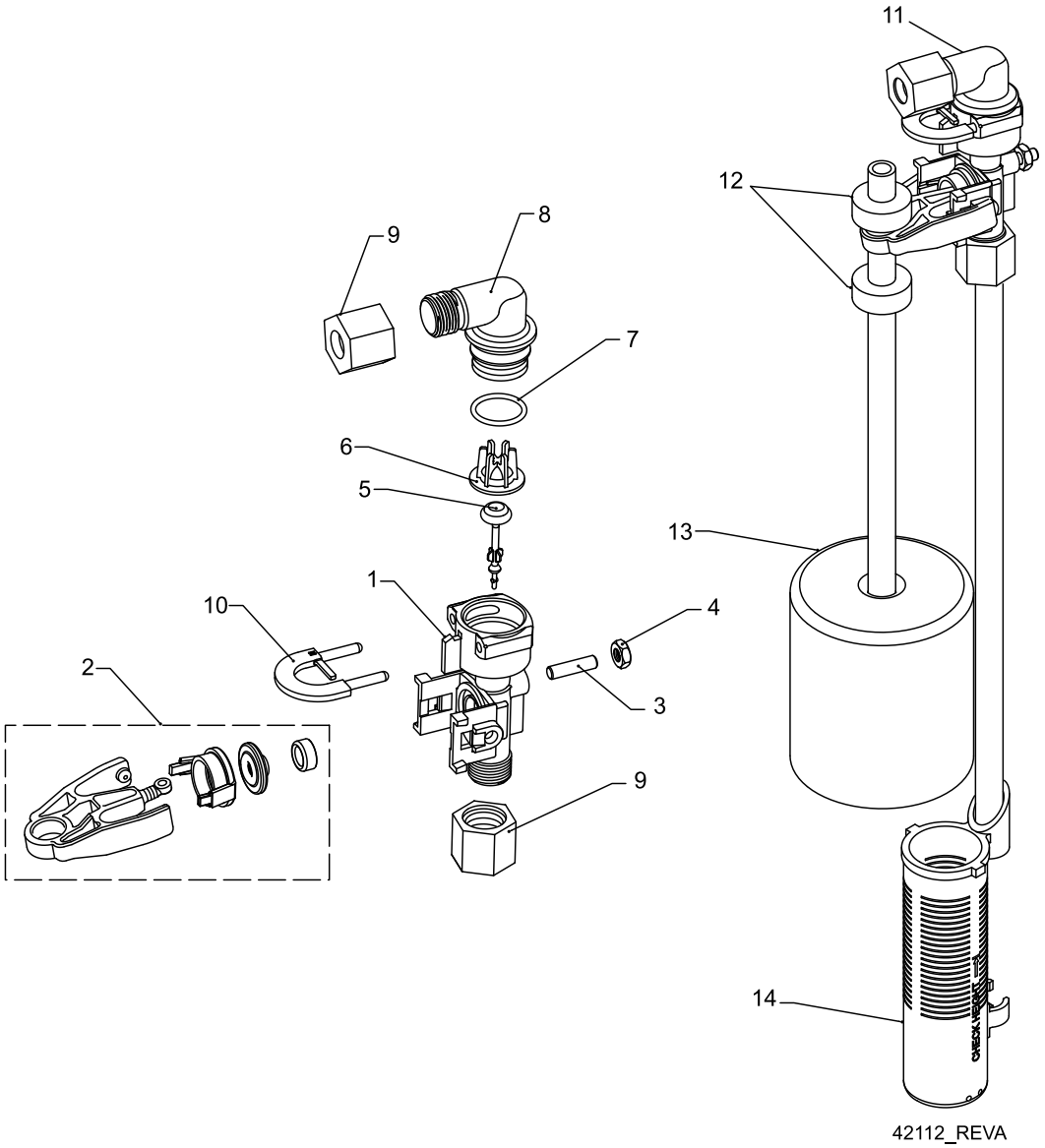
Item No.	QTY	Part No.	Description
1	2	13305	O-ring, -119
2	2	13255	Clip, Mounting
3	2	13314	Screw, Slot Ind Hex, 8-18 x .60
4A	1	18706	Yoke, 1”, NPT, Plastic
	1	18706-02	Yoke, 3/4”, NPT, Plastic
4B	1	41027-01	Yoke, 3/4”, NPT, Cast, Machd
	1	41026-01	Yoke, 1”, NPT, Cast, Machd, SS

2300 SAFETY BRINE VALVE



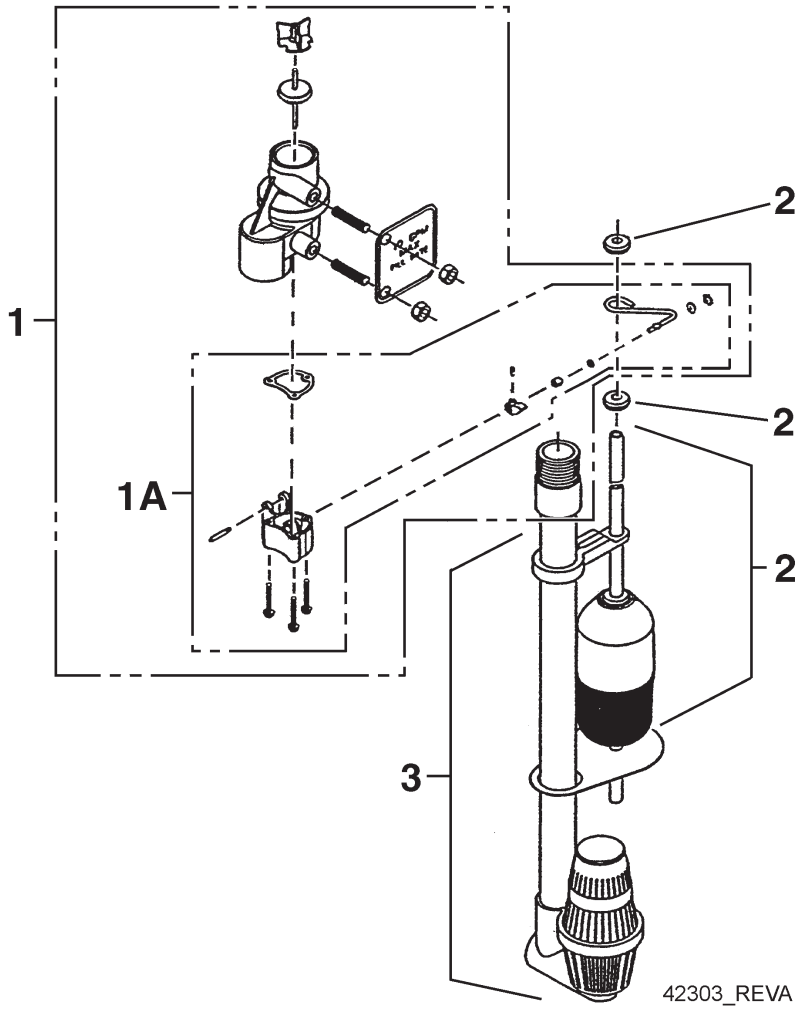
Item No.	QTY	Part No.	Description
1	1	60027-00	Safety Brine Valve, 2300, Less Elbow
2	1	10138	Ball, 3/8”, Brass
3	1	11566	Ball Stop, Slow Fill
4	1	10328	Fitting, Elbow, 90 Deg. 1/4 NPT x 3/8T
5	1	10332	Fitting, Insert, 3/8
6	1	10330	Fitting, Sleeve, 3/8 Celcon
7	1	10329	Fitting, Tube, 3/8 Nut, Brass
8	1	10186	Nut, Hex, 10-32
9	1	60002	Air Check, #500
10	1	10149	Rod, Float
11	1	10700	Float Assy, Blue/White
12	3	10150	Grommet, .30 Dia

2310 SAFETY BRINE VALVE



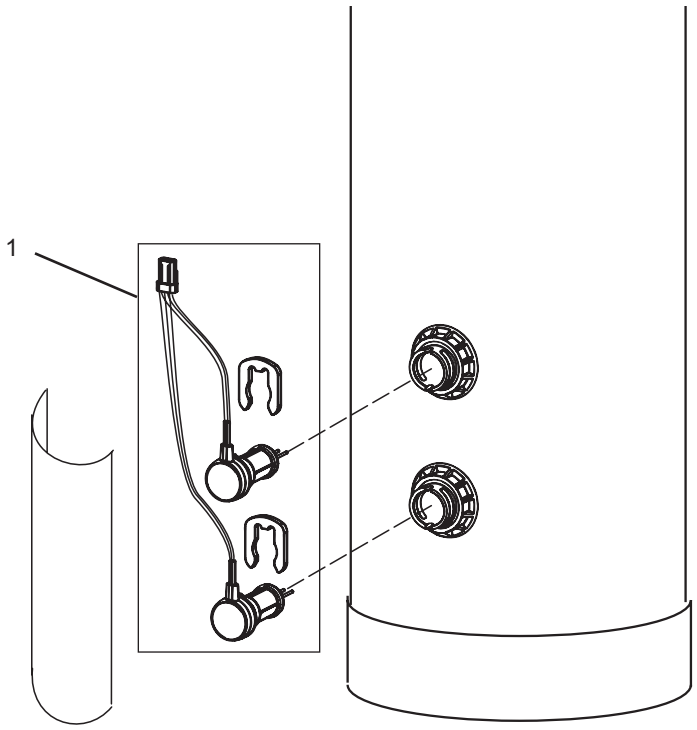
Item No.	QTY	Part No.	Description
1	1	19645	Body, Safety Brine Valve, 2310
2	1	19803	Safety Brine Valve Assy
3	1	19804	Screw, Sckt Hd, Set, 10-24 x .75
4	1	19805	Nut, Hex, 10-24, Nylon Black
5	1	19652-01	Poppet Assy, SBV w/O-ring
6	1	19649	Flow Dispenser
7	1	11183	O-ring, -017
8	1	19647	Elbow, Safety Brine Valve
9	2	19625	Nut Assy, 3/8” Plastic
10	1	18312	Retainer, Drain
11	1	60014	Safety Brine Valve Assy, 2310
12	2	10150	Grommet, .30 Dia
13	1	60068-30	Float Assy, 2310, w/30” Rod
14	1	60002-34	Air Check, #500

2350 SAFETY BRINE VALVE



Item No.	QTY	Part No.	Description
1	1	60038	Safety Brine Valve, 2350
1A	1	61024	Actuator Assy, 2350 Brine
2	1	60026-30	Float Assy, 400A/2350, 30” Red/ Wht
3	1	60009-00	Air Check, #900, Commercial Less Fittings
	1	60009-01	Air Check, #900, Commercial, HW Less Fittings
Not Shown:			
	1	18603	Fitting Assy, 900 Air Check 2350

PROBE KIT



Item No.	QTY	Part No.	Description
1	1	30212618	Probe/Cable/Clips Kit

TROUBLESHOOTING

Problem	Cause	Correction
1. Water conditioner fails to regenerate.	A. Electrical service to unit has been interrupted	A. Assure permanent electrical service (check fuse, plug, pull chain, or switch)
	B. Timer is defective.	B. Replace timer.
	C. Power failure.	C. Reset time of day.
2. Hard water.	A. By-pass valve is open.	A. Close by-pass valve.
	B. No salt is in brine tank.	B. Add salt to brine tank and maintain salt level above water level.
	C. Injector screen plugged.	C. Clean injector screen.
	D. Insufficient water flowing into brine tank.	D. Check brine tank fill time and clean brine line flow control if plugged.
	E. Hot water tank hardness.	E. Repeated flushings of the hot water tank is required.
	F. Leak at distributor tube.	F. Make sure distributor tube is not cracked. Check O-ring and tube pilot.
	G. Internal valve leak.	G. Replace seals and spacers and/or piston.
	H. Meter is not measuring flow.	H. Check meter with meter checker.
3. Unit used too much salt.	A. Improper salt setting.	A. Check salt usage and salt setting.
	B. Excessive water in brine tank.	B. See problem 7.
4. Loss of water pressure.	A. Iron buildup in line to water conditioner.	A. Clean line to water conditioner.
	B. Iron buildup in water conditioner.	B. Clean control and add mineral cleaner to mineral bed. Increase frequency of regeneration.
	C. Inlet of control plugged due to foreign material broken loose from pipes by recent work done on plumbing system.	C. Remove piston and clean control.
5. Loss of mineral through drain line.	A. Air in water system.	A. Assure that well system has proper air eliminator control. Check for dry well condition.
	B. Improperly sized drain line flow control.	B. Check for proper drain rate.
6. Iron in conditioned water.	A. Fouled mineral bed.	A. Check backwash, brine draw, and brine tank fill. Increase frequency of regeneration. Increase backwash time.
7. Excessive water in brine tank.	A. Plugged drain line flow control.	A. Clean flow control.
	B. Plugged injector system.	B. Clean injector and screen.
	C. Timer not cycling.	C. Replace timer.
	D. Foreign material in brine valve.	D. Replace brine valve seat and clean valve.
	E. Foreign material in brine line flow control.	E. Clean brine line flow control.
8. Softener fails to draw brine.	A. Drain line flow control is plugged.	A. Clean drain line flow control.
	B. Injector is plugged.	B. Clean injector
	C. Injector screen plugged.	C. Clean screen.
	D. Line pressure is too low.	D. Increase line pressure to 20 P.S.I.
	E. Internal control leak	E. Change seals, spacers, and piston assembly.
	F. Service adapter did not cycle.	F. Check drive motor and switches.
9. Control cycles continuously.	A. Misadjusted, broken, or shorted switch.	A. Determine if switch or timer is faulty and replace it, or replace complete power head.
10. Drain flows continuously.	A. Valve is not programming correctly.	A. Check timer program and positioning of control. Replace power head assembly if not positioning properly.
	B. Foreign material in control.	B. Remove power head assembly and inspect bore. Remove foreign material and check control in various regeneration positions.
	C. Internal control leak.	C. Replace seals and piston assembly.

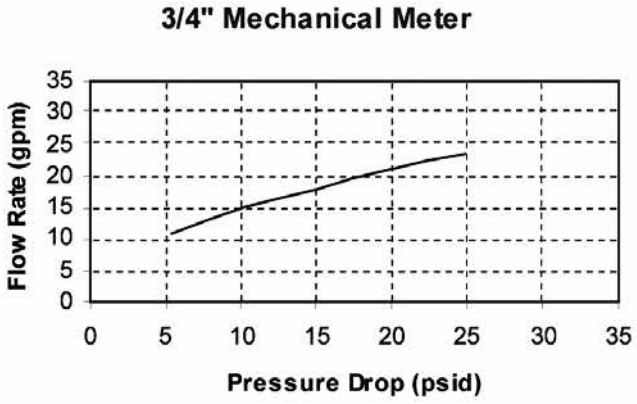
TROUBLESHOOTING *continued*

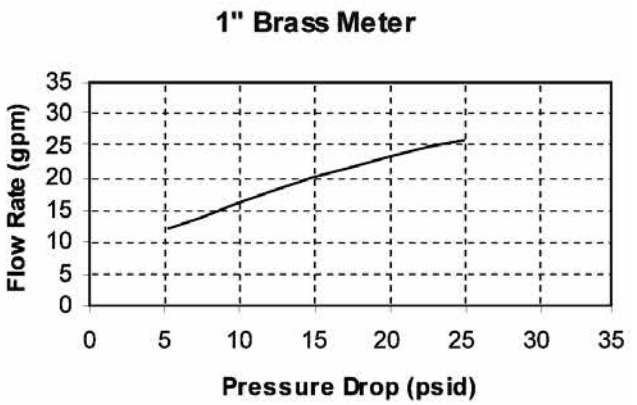
9100 TS Controller

Problem	Cause	Solution
ERR 1 is displayed.	Program settings have been corrupted.	Press any key and reprogram Level I settings.
ERR 3 is displayed.	Controller on tank 1 does not know the position of the camshaft. Camshaft should be rotating to find Home position.	Wait for two minutes for the controller to return to Home position. The hourglass should be flashing on the display indicating the motor is running.
	Camshaft on tank 1 is not turning during ERR 3 display.	Check that motor is connected. Verify that motor wire harness is connected to motor and controller module.
		Verify that Home switch sensor is connected and in place.
		Verify that motor gear has engaged cam gear.
		If everything is connected, try replacing in this order: 1. Wire Harness, Motor, Home Switch, Sensor Assy 2. Controller
	Camshaft on tank 1 is turning more than five minutes to find Home position.	Verify that Home Switch sensor is in place and connected to wire.
		Verify that camshaft is connected appropriately.
		Verify that no dirt or rubbish is clogging any of the cam slots.
		If motor continues to rotate indefinitely, replace the following components in this order: 1. Wire Harness, Motor, Home Switch, Sensor Assy 2. Controller
	Regeneration starts but control shows Err3 before completing regeneration.	Check that motor is connected. Verify that motor wire harness is connected to motor and controller module.
		Verify that Home Switch sensor is connected and in place.
		Verify that motor gear has engaged cam gear.
		If everything is connected, try replacing in this order: 1. Wire Harness, Motor, Home Switch, Sensor Assy 2. Controller
ERR 4 is displayed.	Hardness front detected with no water flow.	
ERR 6 is displayed.	Conductivity sensors' reading out of range. Defective sensors or no sensors are connected	Check which tank in service and check if the sensors have been connected properly. If already connected, replace conductivity sensor probes with new ones.
Check Salt Light is displayed - Press the regen button to turn off the check salt light.	No regenerant draw or insufficient regenerant detected during regeneration.	Ensure salt/regenerant is available.
		Check for regenerant draw.
		Inspect regeneration line for leaks.

9000/9100 METER FLOW DATA

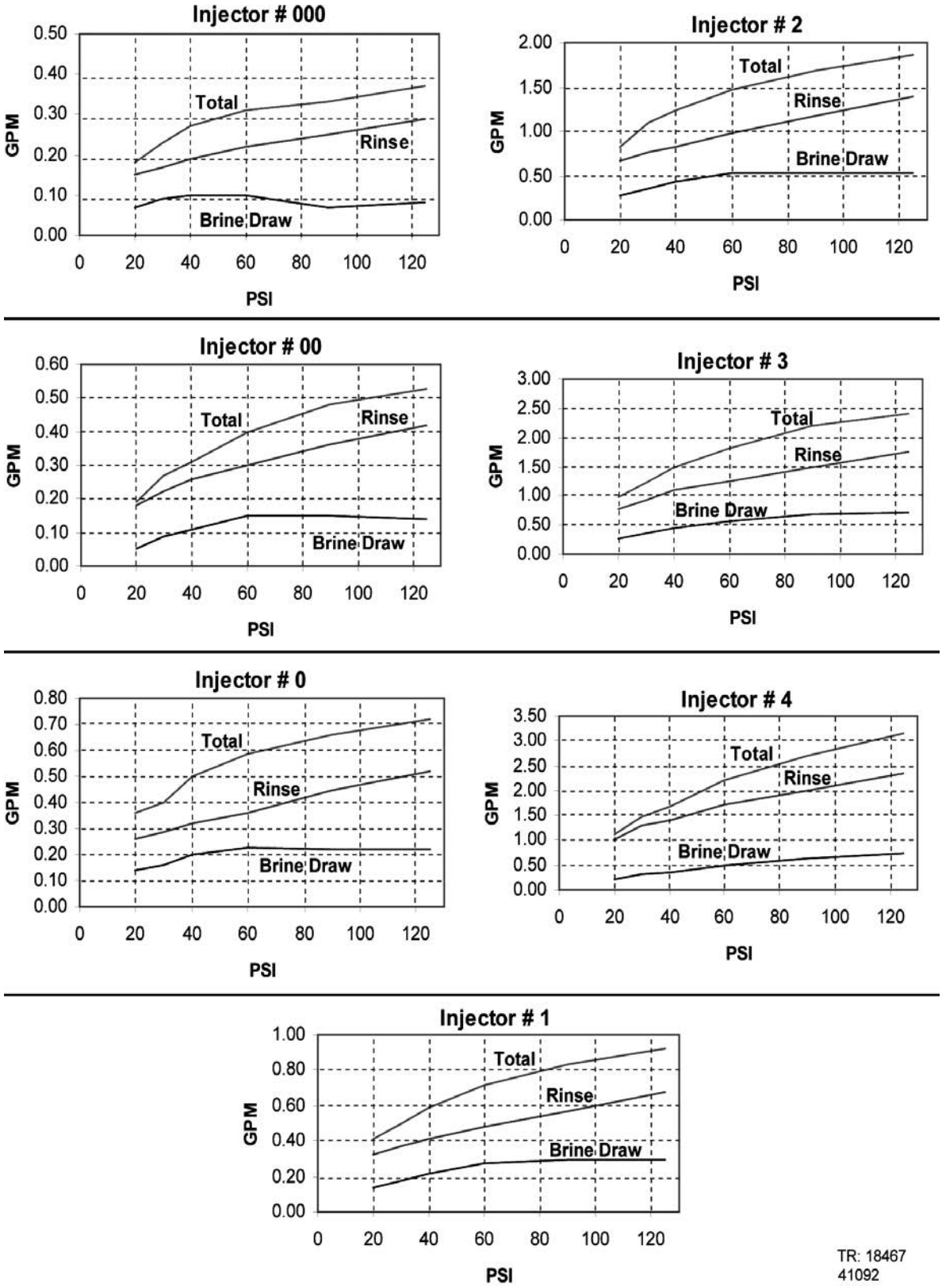
9100 Meter Flow Data





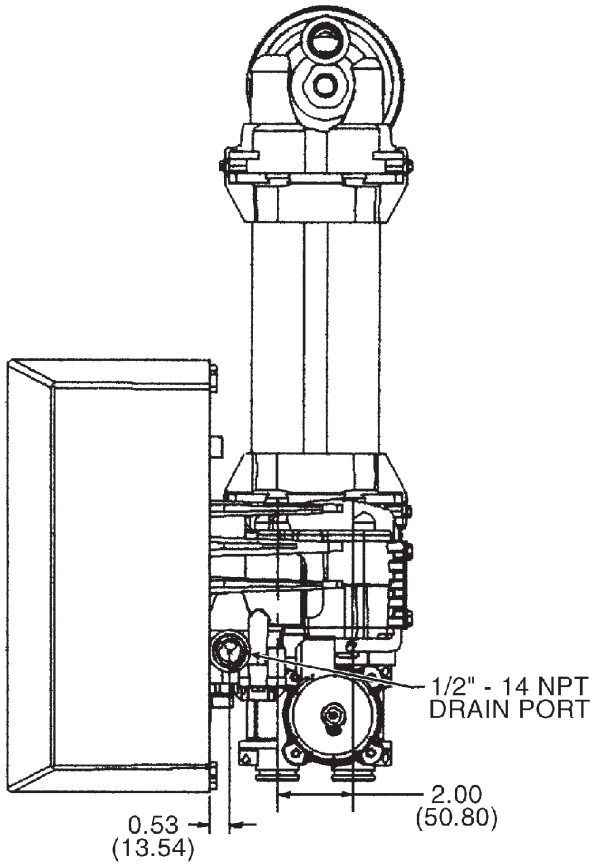
TR: 18467
41092

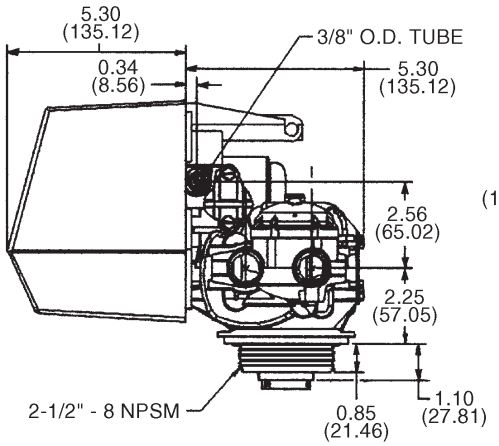
9000/9100 INJECTOR FLOW DATA (1600 SERIES INJECTORS)

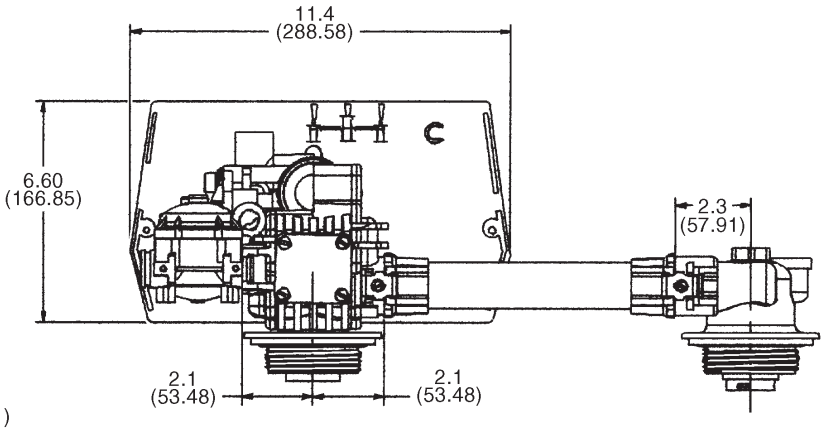


TR: 18467
41092

9100 CONTROL DIMENSIONS



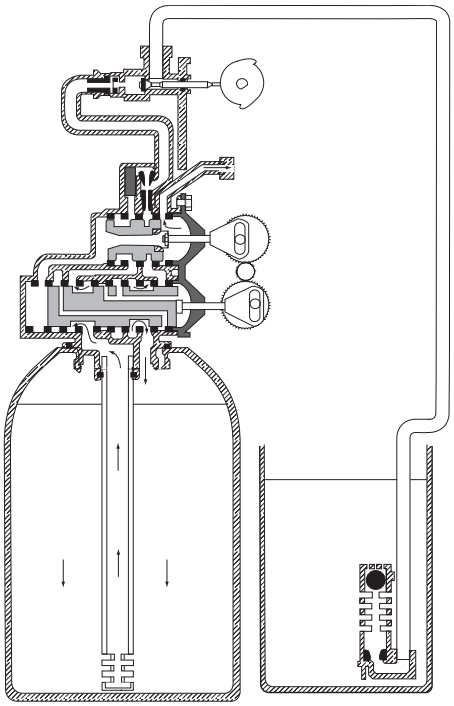




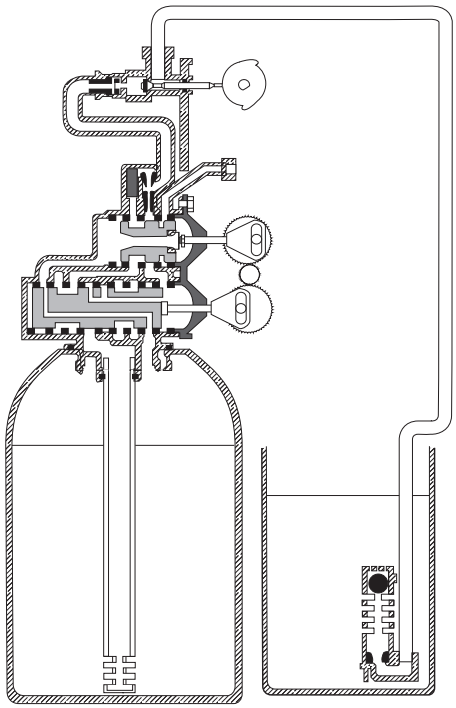
61500-9100LNE_REVA

WATER CONDITIONER FLOW DIAGRAMS

In Service Position

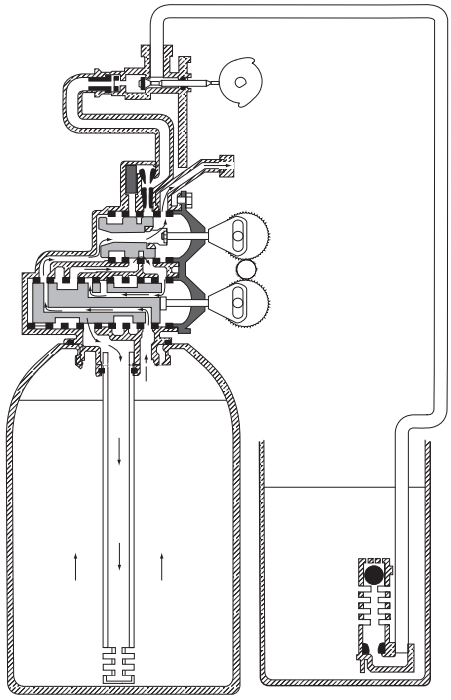


Tanks Switching Position (Meter Initiated Regeneration)

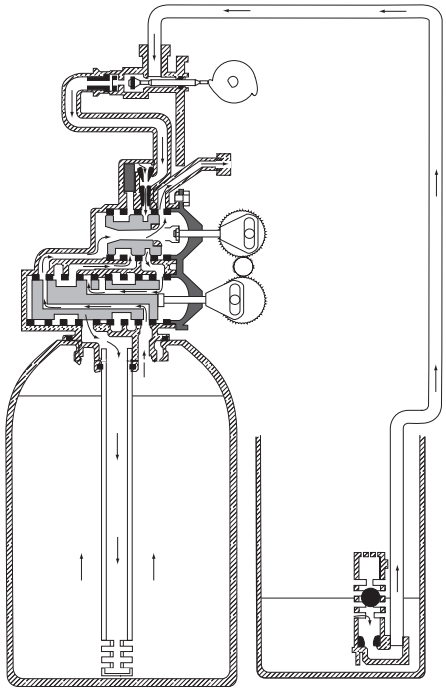


In Service Position, Tanks Switched

Backwash Position

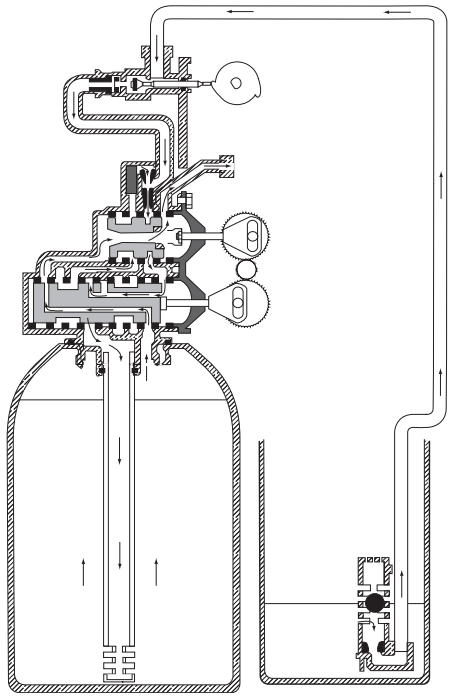


Brine Draw Position

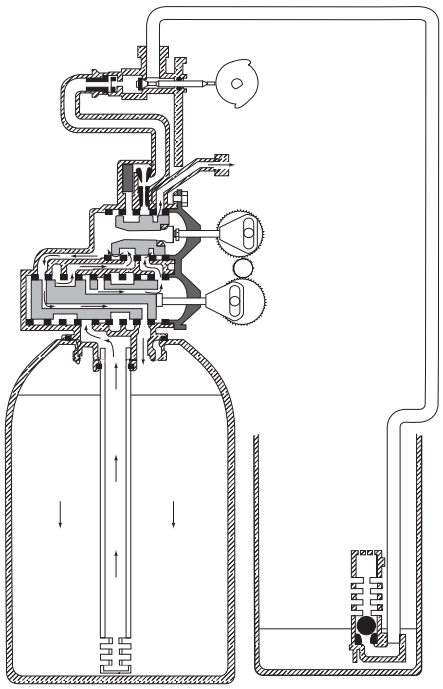


WATER CONDITIONER FLOW DIAGRAMS *continued*

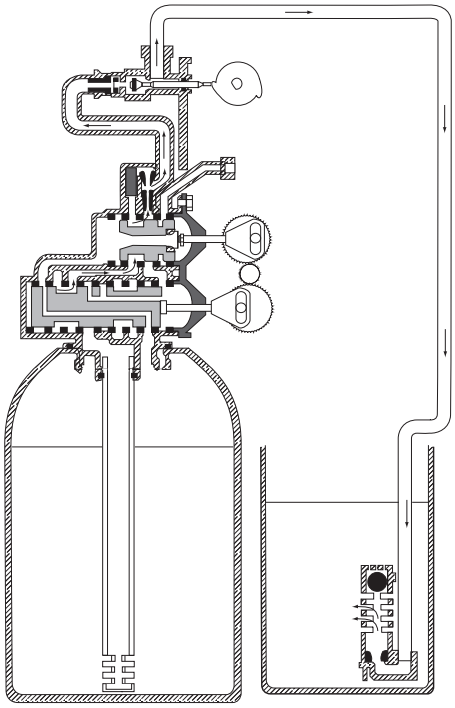
Slow Rinse Position



Rapid Rinse Position



Brine Tank Fill Position



SERVICE ASSEMBLIES

Brine Line Flow Controls (9000/9100):
60022-12 .....BLFC, .125 GPM, 5000/5600/9000/9100
60022-50 .....BLFC, .50 GPM, 5000/5600/9000/9100
60350.....Brine Valve Assy, 9000/9100

Bypass Assemblies:
60040SS.....Bypass Valve, 5600, 3/4" NPT
60041SS.....Bypass Valve, 5600, 1" NPT
60049.....Bypass Plastic Assy

Injector Assemblies (9000/9100):
61794-XXXX.....Injector Assembly
(specify size of injector)

	Tank Dia.	Injector	DLFC	BLFC
61794-0624	8"	Brown #000	1.5	0.125
61794-0634	9"	Brown #000	2.0	0.125
61794-0644	10"	Brown #000	2.4	0.125
61794-0562	12"	Violet #00	3.5	0.5

Meter Assemblies (9000/9100):
15078-01 .....Adapter, 1" Coupling
60086.....Meter Assy, 5600/9000/9100, 3/4" Std/ Range
60087.....Meter Assy, 5600/9000/9100, 3/4", Ext
60389.....Meter Assy, 9000/9100, 1"
60389NP.....Meter Assy, 9000/9100, 1", N/P
60389-20 .....Meter Assy, 9000/9100, 1", BSP/Metric
60390.....Meter Assy, 9000/9100, 1", Ext
60390NP.....Meter Assy, 9000/9100, 1", Ext, N/P
60390-20 .....Meter Assy, 9000/9100, 1", Ext/BSP/ Metric
60612.....Meter Assy, 9000/9100, 1", Std Range, HW 150°
60612NP.....Meter Assy, 9000/9100, 1", Std Range, HW 150°, NP
14038.....Meter Cap Assy
15150.....Meter Cap Assy, Ext
15218.....Meter Cap Assy
15218NP.....Meter Cap Assy, Std, NP
15237.....Meter Cap Assy, Ext
15237NP.....Meter Cap Assy, Ext, NP
13509.....Impeller, Meter
13509-01 .....Impeller, Celcon, HW 150°

Piston, Seal & Spacer Kits:
61785.....9100TS Upper Piston Kit
61786.....9100TS Lower Piston Kit

Second Tank Assemblies (9000):
14202-01 .....Screw, Hex Wsh Mach, 8-32 x 5/16 18-8 S.S.
13255.....Clip, Mounting
15078-01 .....Adapter Assy, 1" Coupling
14864-01 .....Adapter, 9000/9100, 2nd Tank, Machd w/O-rings
14864-01NP .....Adapter, 9000/9100, 2nd Tank, Machd, NP
15823-06 .....Yoke Assy, 6" Tank & 6" Tube
15823-06NP .....Yoke Assy, 6" Tank, NP 6" Tubes
15823-12 .....Yoke Assy, 6" - 12" Tank, 8 1/2 Tube
15823-12NP .....Yoke Assy, 6" - 12" Tank, NP 8 1/2" Tubes
15823-14 .....Yoke Assy, 14" Tank, 10 1/2" Tube
15823-14NP .....Yoke Assy, 14" Tank, NP 10 1/2" Tube
15823-16 .....Yoke Assy, 16" Tank, 12 1/2" Tube
15823-16NP .....Yoke Assy, 16" Tank, NP 12 1/2" Tube

Second Tank Assemblies (9100):
60425-12 .....Tube Assy, 9100, 6-12" Tanks
60425-16 .....Tube Assy, 9100, 13-16" Tanks
14865.....Adapter Assy, 2nd Tank, 9100
61419.....Kit, 1.05" Distributor Adapter

Tools:
12763.....Stuffer Tool Assy, 5600/9000
13061.....Puller Assy, Port Ring
13759.....Tool, DLFC Retainer

Valve Body Assembly (9100):
40688.....Valve Body Assy, 9100
18303.....O-ring, -336
18569.....Retainer, Tank Seal

Cover Assembly (9100TS):
61787.....Cover Assembly, 9100TS

Water, inc.

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