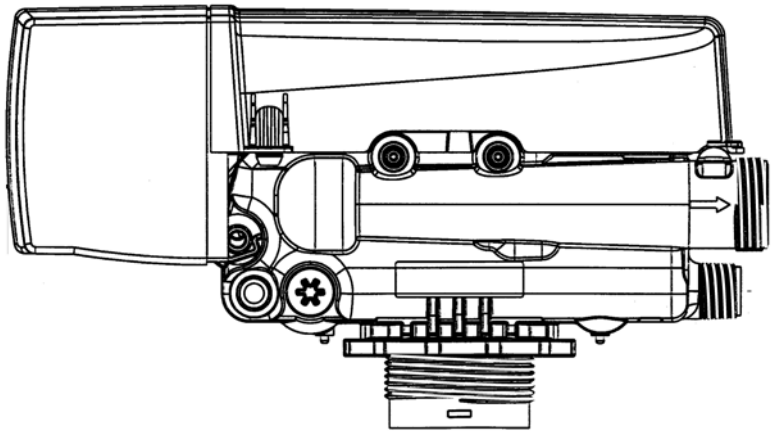
Autotrol® Brand Performa™ ProSoft Controls

Water Conditioning Control System
Home Owner Installation, Operation, and Maintenance Manual



For sales or service questions please contact your local dealer:

Your Local Dealer Is:

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Safety Information

This water conditioner's control valve conforms to WQA NSF/ANSI-44 for the specific performance claims as verified and substantiated by test data.

- Please review this entire Installation and Operation manual before installing unit.
- As with all plumbing projects, we recommend that this Water Conditioning Unit be installed by a trained professional water treatment dealer. Please follow all local codes for plumbing this unit.
- Inspect this unit carefully for carrier shortage or shipping damage before beginning installation of unit.
- This system is not intended to be used for treating water that is microbiologically unsafe or of unknown quality without adequate disinfection before or after the system.
- This system is to be used only for potable water.
- Use only lead-free solder and flux, as required by federal and state codes, when installing soldered copper plumbing.
- Use caution when sweat joining metal pipes near this water conditioning system. Heat can adversely affect the plastic used in this system and bypass valve.
- Use only silicone grease for lubrication of this unit.
- Use only the power transformers supplied with this conditioning systems control valve unit.
- Do not allow this water conditioning unit to freeze. Damage from freezing will void this water conditioning unit's warranty.
- Do not store flammable or volatile chemicals near this water conditioning unit.

Contact your local Professional Water Dealer for system service, and to obtain Autotrol brand replacement parts for this control valve unit.

Superior Operation

- Direct acting system functions independently of water pressure. No pistons or diaphragms that require a minimum water pressure to operate.
- Five-cycle operation provides for downflow conditioned water, upflow backwash, downflow brining and slow rinse, downflow fast rinse, and refill of the brine tank.
- Valve discs are held closed by water pressure and are leak tight. Valve seats are in a vertical position, which is the position least vulnerable to plugging.
- System operation cannot get out of phase or sequence. The control always returns to a fixed conditioned water position after regeneration.
- Bypass water is automatically available during regeneration.

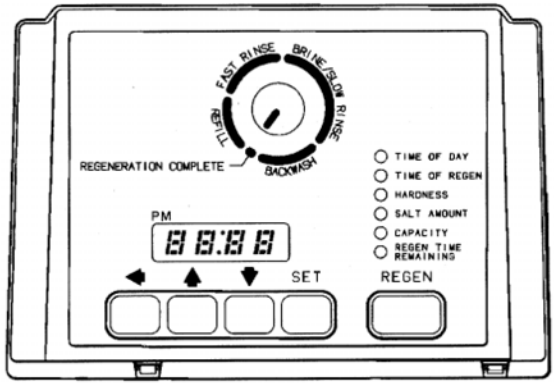


Figure 1 Control

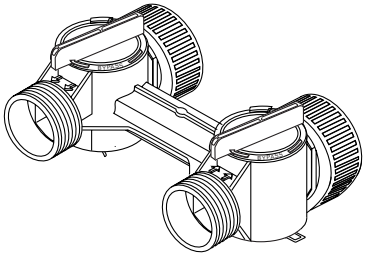


Figure 2 Optional Bypass

Introduction

The Performa series control incorporates five cycles during operation, (Figure 3) and is responsible for directing the flow of water during all phases of regeneration. The water conditioner consists of a control valve, mineral tank, resin and a salt storage tank. During the service cycle, hardness contaminants are removed from the water by the resin bed. The regeneration process consists of backwash, brine and slow rinse, fast rinse and brine refill cycles. During the regeneration process the hardness contaminants are removed from the resin bed and flushed to the drain, while the resin bed is regenerated with brine. A description of each cycle and its function is listed below:

1. **Service (Downflow):**

   Untreated water is directed down through the resin bed and up through the riser tube. The hardness ions attach themselves to the resin and are removed from the water. The water is conditioned as it passes through the resin bed.

2. **Backwash (Upflow):**

   The flow of water is reversed by the control valve and directed down the riser tube and up through the resin bed. During the backwash cycle, the bed is expanded and debris is flushed to the drain.

3. **Brine/Slow Rinse (Downflow):**

   The control directs water through the brine injector and brine is drawn from the salt tank. The brine is then directed down through the resin bed and up through the riser tube to the drain. The hardness ions are displaced by sodium ions and are sent to the drain. The resin is regenerated during the brine cycle. Brine draw is completed when the air check closes.

4. **Fast Rinse (Downflow):**

   The control directs water down through the resin bed and up through the riser tube to the drain. Any remaining brine residual is rinsed from the resin bed.

5. **Brine Refill (Downflow):**

   Brine refill occurs at the end of the regeneration cycle. Softened water is directed to the salt tank at a controlled rate, to create brine for the next regeneration.

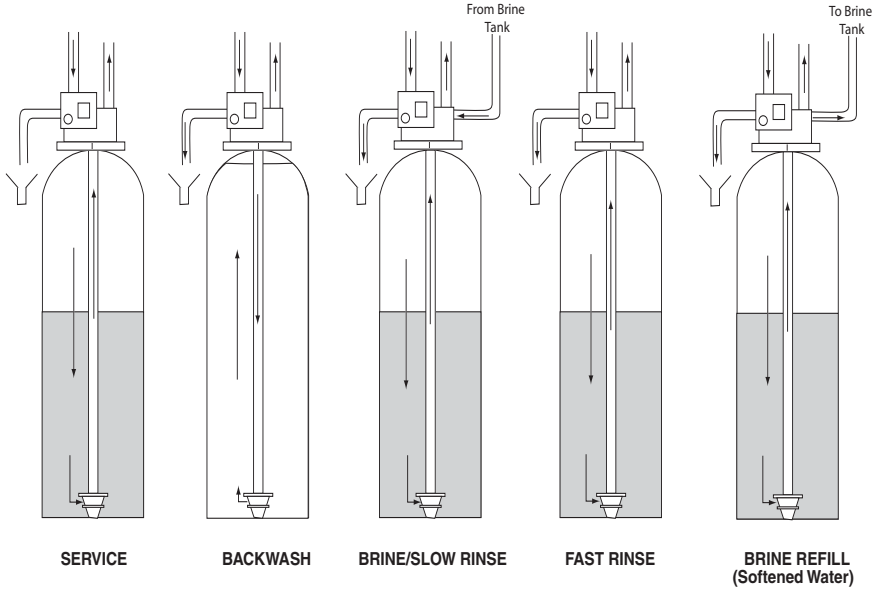


Figure 3

Installation

All plumbing must conform to local codes.

Inspect unit carefully for carrier shortage or shipping damage.

Location Selection

1. The distance between the unit and a drain should be as short as possible.
2. If it is likely that supplementary water treating equipment will be required, make certain adequate additional space is available.
3. Since salt must be added periodically to the brine tank, the location should be easily accessible.
4. Do not install any unit closer to a water heater than a total run of 10 feet (3 m) of piping between the outlet of the conditioner and the inlet to the heater. Water heaters can sometimes overheat to the extent they will transmit heat back down the cold pipe into the unit control valve.

   Hot water can severely damage the conditioner. A 10-foot (3-m) total pipe run, including bends, elbows, etc., is a reasonable distance to help prevent this possibility. A positive way to prevent hot water from flowing from heat source to the conditioner, in the event of a negative pressure situation, is to install a check valve in the soft water piping from the conditioner. **If a check valve is installed, make certain the water heating unit is equipped with a properly**

rated temperature and pressure safety relief valve. Also, be certain that local codes are not violated.

5. Do not locate unit where it or it's connections (including the drain and overflow lines) will ever be subjected to room temperatures under 34°F (1°C) or over 120°F (49°C).
6. Do not install unit near acid or acid fumes.
7. The use of resin cleaners in an unvented enclosure is not recommended.

Water Line Connection

The installation of a bypass valve system is recommended to provide for occasions when the water conditioner must be bypassed for hard water or for servicing.

The most common bypass systems are the Autotrol® Series 1265 bypass valve (Figure 4) and plumbed-in globe valves (Figure 5). Though both are similar in function, the 1265 Autotrol bypass offers simplicity and ease of operation.

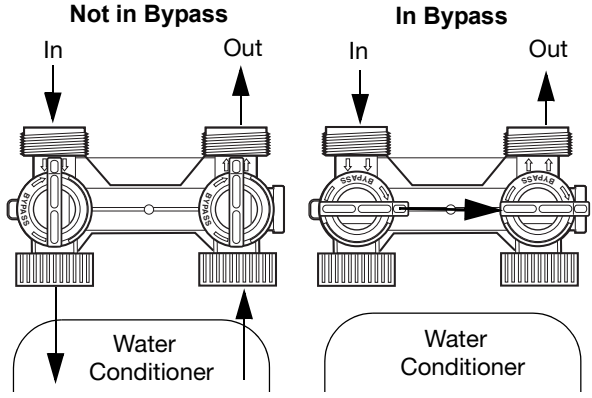


Figure 4 Autotrol Series 1265 Bypass Valve

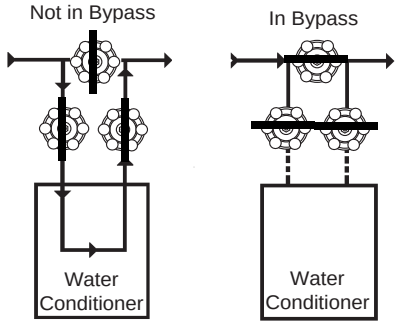


Figure 5 Typical Globe Valve Bypass System

Drain Line Connection

1. Ideally located, the unit will be above and not more than 20 feet (6.1 m) from the drain. For such installations, use an appropriate adapter fitting (not supplied), to connect 1/2-inch (1.3-cm) plastic tubing to the drain line connection of the control valve.
2. If the unit is located more than 20 feet (6.1 m) from drain, use 3/4-inch (1.9-cm) tubing for runs up to 40 feet (12.2 m). Also, purchase appropriate fitting to connect the 3/4-inch tubing to the 1/2-inch NPT drain connection.
3. If the unit is located where the drain line must be elevated, you may elevate the line up to 6 feet (1.8 m) providing the run does not exceed 15 feet (4.6 m) and water pressure at conditioner is not less than 40 psi (2.76 bar). You may elevate an additional 2 feet (61 cm) for each additional 10 psi (0.69 bar).
4. Where the drain line is elevated but empties into a drain below the level of the control valve, form a 7-inch (18-cm) loop at the far end of the line so that the bottom of the loop is level with the drain line connection. This will provide an adequate siphon trap.
5. Where the drain empties into an overhead sewer line, a sink-type trap must be used.

IMPORTANT: Never insert drain line into a drain, sewer line or trap. Always allow an air gap between the drain line and the wastewater to prevent the possibility of sewage being back-siphoned into conditioner.

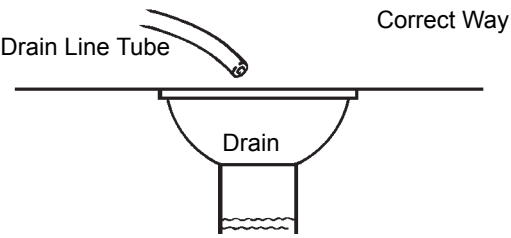


Figure 6

Note: Standard commercial practices have been expressed here. Local codes may require changes to these suggestions.

Brine Line Connection

It will be necessary to install the brine tube and line to a fitting installed on the air check. Teflon* tape all threaded connections.

Be sure all fittings and connections are tight so that premature checking does not take place. Premature checking is when the ball in the air check falls to the bottom before all brine is drawn out of the brine tank. See **Placing Conditioner into Operation** section.

**Teflon is a registered trademark of E.I. DuPont de Nemours and Company, Inc.*

Overflow Line Connection

In the absence of a safety overflow and in the event of a malfunction, the BRINE TANK OVERFLOW will direct “overflow” to the drain instead of spilling on the floor where it could cause considerable damage. This fitting should be on the side of the cabinet or brine tank.

To connect overflow, locate hole on side of brine tank. Insert overflow fitting (not supplied) into tank and tighten with plastic thumb nut and gasket as shown (Figure 7). Attach length of 1/2-inch (1.3-cm) I.D. tubing (not supplied) to fitting and run to drain. Do not elevate overflow line higher than 3 inches (7.6 cm) below bottom of overflow fitting. Do not tie into drain line of control unit. Overflow line must be a direct, separate line from overflow fitting to drain, sewer or tub. Allow an air gap as per drain line instructions (Figure 6).

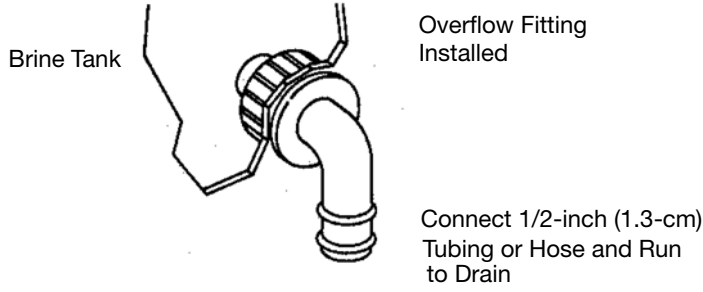


Figure 7

Low Voltage Transformer

Use only the included transformer for powering the 900 series timers. Connect the plug of the transformer secondary cable to the mating socket on the control (see Figure 8).

Be certain that the transformer is plugged into a correct voltage source that is not controlled by a wall switch.

Increasing the Length of the Transformer Cord

If it is necessary to extend the length of the transformer cord, an optional 15-foot (4.6-m) extension is available (see Figure 9).

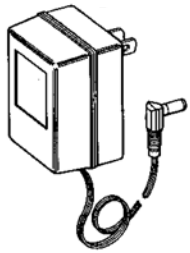


Figure 8

Figure 9

Disinfection of Water Conditioners

The materials of construction of the modern water conditioner 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.

Thus, your conditioner may need to be disinfected after installation. Some conditioners will require periodic disinfection during their normal life. Consult your installing dealer for more information on disinfecting your conditioner.

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

Application

These materials are satisfactory for use with polystyrene resins, synthetic gel zeolite, greensand 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
   a. Polystyrene resin; 1.2 fluid ounce per cubic foot.
   b. Non-resinous exchangers; 0.8 fluid ounce per cubic foot.
2. Brine tank conditioners
   a. Backwash the conditioner and add the required amount of hypochlorite solution 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 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) per cubic foot.
2. Brine tank conditioners
   a. Backwash the conditioner and add the required amount of hypochlorite to the brine well of the brine tank. The brine tank should have water in it to permit the chlorine solution to be carried into the conditioner.
   b. Proceed with the normal regeneration.

Placing Conditioner into Operation

Initial Start-Up

After the water conditioning system is installed, the conditioners should be disinfected before they are used to treat potable water. Refer to the **Disinfection of Water Conditioners** section in this manual. Complete the following steps to place the conditioner into operation:

1. Remove the rear valve cover by pulling back on the tab located on the lower rear edge of the cover. Next, lift the cover off the valve.

**Clorox is a trademark of the Clorox Company.*

2. Grasp the camshaft and rotate it **COUNTERCLOCKWISE** (as viewed from the front of the control) until the indicator on the regeneration cycle indicator points directly to the word **BACKWASH**.
3. Fill the mineral tank with water. Turn the water supply off and place the bypass valve(s) into the “not in bypass” position. Open the water supply valve **very slowly** to approximately the 1/4 open position.

IMPORTANT: If the water supply valve is opened too rapidly or too far, resin may be lost. In the **BACKWASH** position, you should hear air escaping slowly from the drain line.

4. When all of the air is purged from the tank (water begins to flow steadily from the drain), slowly open the main supply valve all the way. Allow the water to run into the drain until clear. Turn off the water supply and wait for about five minutes to allow all trapped air to escape from the tank.
5. Add water to the brine tank (initial fill). With a bucket or hose, add approximately 4 gallons (15 liters) of water to the brine tank. If the tank has a salt platform above the bottom of the tank, add water until the level is approximately 1 inch (25 mm) above the platform.
6. Open the water supply valve slowly to the fill open position. Carefully rotate the camshaft **COUNTERCLOCKWISE** until the indicator on the regeneration cycle indicator points directly to the center of the **REFILL** position and hold there until the water flows through the brine line into the brine tank. Do not run for more than two minutes. Rotate the camshaft **COUNTERCLOCKWISE** until the indicator points to the center of the **BRINE/SLOW RINSE** position.
7. Check that water is being drawn from the brine tank. The water level in the brine tank will recede very slowly. Observe the water level for at least three minutes. If the water level does not recede or if it goes up refer to the **Troubleshooting** section in this manual.
8. When the water is being drawn from the brine tank, rotate the camshaft **COUNTERCLOCKWISE** until the indicator points to **REGEN COMPLETE**. Run water from a nearby faucet until the water is clear and soft.

Connecting the Control

The control has default values for most parameters that were set at the factory, but there are key items that need to be entered at the time of installation.

The following sections will help determine what these values should be before applying power to the control. When the conditioner is operational, complete the following steps to connect the Model 900 series control:

- Connect the control to the wall transformer cable. The power connection is located on the underside of the control on the left side (refer to Figure 1). Insert the barrel style connector into the power plug.
- Plug the wall-mount transformer into an electrical outlet that is not controlled by a wall switch.

- If the cord length of the transformer is too short, an optional 15-foot low voltage extension cord may be purchased (contact your retail dealer for details).

General Conditioner Information

How Your Conditioner Works

In general, your water conditioner works in the following manner. Hard water flows into the conditioner and through the resin bed where calcium and magnesium hardness minerals are exchanged. The conditioned water flows out of the resin bed into your plumbing system. After a certain amount of hard water has passed through the conditioner, the resin cannot remove any more minerals. This resin state is called exhaustion and indicates that the resin needs to be regenerated. The regeneration process restores the conditioner's ability to soften water. The control monitors the amount of water that flows through the conditioner and automatically calculates when to regenerate the resin bed.

Model 960 Control Front Panel

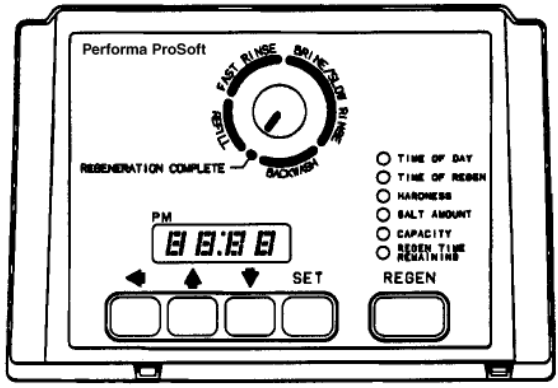


Figure 10

The main components of the Model 960 control front panel are:

- Regeneration Cycle Indicator
- Green Indicator Lights
- Four-Digit Display
- Programming Push Buttons
- REGEN Push Button

Refer to Figure 10 or your conditioner for the location of these features.

The front panel incorporates several important features which allow you to know the status of your water conditioner. These features are:

- **Regeneration Cycle Indicator.** The white indicator points to the status of the conditioner. Soft water is available when the indicator points to **REGENERATION COMPLETE**. Other positions indicate that the conditioner is regenerating the resin bed and only hard water is available.
- **Four-Digit Display.** The four-digit red LED display shows system information such as time of day, gallons of conditioned water available, time the conditioner will regenerate, or any error alarms.
- **Green Indicator Lights.** The green indicator lights are located at the right of the control panel.
    - TIME OF DAY
    - TIME OF REGEN
    - HARDNESS
    - SALT AMOUNT
    - CAPACITY
    - REGEN TIME REMAINING

When a green light is on next to one of the six control legends, the LED display provides information pertaining to that legend. When conditioned water is available, the display alternates between TIME OF DAY and CAPACITY and the corresponding green lights alternate between these control legends.

- **Programming Push Buttons.** The programming buttons are located at the bottom of the panel under the display. Use the buttons to look at or change the conditioner settings.
- **REGEN Push Button.** The **REGEN** button is located at the bottom of the panel below the six indicator lights. Press the button to start a regeneration of the water conditioner.

Note: If you press the button again a minute or more after regeneration begins, a second regeneration will start when the first regeneration is complete. The display freezes with the REGEN TIME REMAINING information. After the first regeneration is complete, the second regeneration begins immediately. The display will alternate between the TIME OF DAY and REGEN TIME REMAINING.

960 Control General Information

In certain problem water applications, your installing dealer may lock the settings on your water conditioner, to ensure continued optimal operation. In this case, please contact your installing dealer to change settings as necessary.

Use the four programming push buttons to change any of the control settings. Settings can only be changed if the regeneration cycle indicator is pointing at **REGENERATION COMPLETE**. If you try to change a setting when the cycle indicator is in any other position or if the setting is not valid, the control beeps to let you know that the new setting has been ignored.

To change a setting: Press the down arrow [⇓] button until the green light is illuminated next to the control setting you want to change. That control setting value shows on the display. Press the **SET** button and the far right number on the display starts flashing. If you want to change the number, press the up arrow [⇑] button to increase the number or the down arrow [⇓] button to decrease the number. To skip the number without changing, press the left arrow [⇐] button.

Note: If you press and hold either the up arrow [⇑] button or the down arrow [⇓] button for more than one second, the flashing number will scroll up or down.

When the number is correct, press the left arrow [⇐] button. The first number stops flashing and the next number starts flashing. You can only change the flashing number. Continue changing numbers until you reach the desired setting. Press the **SET** button. The numbers stop flashing and the control accepts the new setting. After approximately 30 seconds, the control starts alternating the display between TIME OF DAY and CAPACITY.

Note: If a beep sounds, the new setting is not accepted because it was outside the range of allowable values. The old setting will be shown on the display.

Time of Day Clock

The control uses the Time of Day clock and the amount of conditioned water remaining to decide when to begin a regeneration. When a regeneration is necessary and the Time of Day clock is at the same time as the Time of Regeneration setting, the control starts the regeneration.

When the green light is on next to the TIME OF DAY legend, the display is showing the time that the control thinks is correct. If you need to change the Time of Day, refer to the instructions later in this section. The Time of Day displays time in hours and minutes separated by a colon[:]. When the colon is flashing on and off, water is flowing through the conditioner. There is a small red dot in the upper left corner near the p.m. letters to indicate p.m. for 12-hour clocks. When the dot is off, the time is a.m. You can set the clock for any time, a.m. or p.m.

Complete the following steps to change the Time of Day:

1. Press the down arrow [⇓] button until the green light next to the TIME OF DAY legend is on.
2. Press the **SET** button and the minute number on the display starts flashing. If you want to change this number, press the up arrow [⇑] button to increase the number or the down arrow [⇓] button to decrease the number. To skip the number without changing, press the left arrow [⇐] button.
3. When the number is correct, press the left arrow [⇐] button. The first number stops flashing and the next number starts flashing. You can only change the flashing number.
4. Continue changing numbers until you reach the desired setting.

5. Press the **SET** button. The number stops flashing and the control accepts the new setting. After approximately 30 seconds, the control starts alternating the display between TIME OF DAY and CAPACITY.

Note: If a beep sounds, the new setting is not accepted.

Reminder: The control does not keep time during a power outage but will resume its time, keeping from the time of day power was lost. A short power outage should not cause a problem. If the outage is several hours, the control will regenerate at the wrong time of day. All other memory is stored in the NOVRAM and maintained during power outage.

Time of Regeneration

The control uses the Time of Regeneration to decide when to begin a regeneration. When a regeneration is necessary and the Time of Day clock is at the same time as the Time of Regeneration setting, the control starts regeneration. The factory setting for Time of Regeneration is 2:00 a.m. If this time is inconvenient, you can select any other time of day. Remember that soft water is not available during a regeneration of the water conditioner. Time of Regeneration can be set for any time, a.m. or p.m.

Note: The control may be programmed for an immediate regeneration option. In this case, the control does not wait for the Time of Regeneration but regenerates when the remaining capacity reaches zero. Contact your dealer for more information regarding this option.

Complete the following steps to change the Time of Regeneration:

1. Press the down arrow [⇓] button until the green light next to the TIME OF REGEN legend is on.
2. Press the **SET** button and the minute number on the display starts flashing. If you want to change this number, press the up arrow [⇑] button to increase the number or the down arrow [⇓] button to decrease the number. To skip the number without changing, press the left arrow [⇐] button.
3. When the number is correct, press the left arrow [⇐] button. The first number stops flashing and the next number starts flashing. You can only change the flashing number.
4. Continue changing numbers until you reach the desired setting.
5. Press the **SET** button. The number stops flashing and the control accepts the new setting. After approximately 30 seconds, the control starts alternating the display between TIME OF DAY and CAPACITY.

Note: If a beep sounds, the new setting is not accepted.

Hardness Setting

The Hardness Setting refers to the amount of hardness minerals in your water before it is conditioned. The control uses this setting to calculate how many gallons of water can be conditioned before a regeneration is necessary.

Your water treatment dealer tested the water at the time of installation and entered a Hardness Setting in the control. We recommend that you consult your dealer or have your water retested before changing this setting.

You can see the Hardness Setting the dealer entered by pressing the down arrow [⇩] button until the green light next to the HARDNESS legend is on. The number on the display is the measure of water hardness in grains per gallon (milligrams per liter for metric).

Complete the following steps to change the Hardness Setting:

1. Press the down arrow [⇩] button until the green light next to the HARDNESS legend is on. The setting range is 3 to 250 grains/gallon (30 to 2500 milligrams/liter for metric).
2. Press the **SET** button and the first number starts flashing. If you want to change this number, press the up arrow [⇧] button to increase the number or the down arrow [⇩] button to decrease the number. To skip the number without changing, press the left arrow [⇦] button.
3. When the number is correct, press the left arrow [⇦] button. The first number stops flashing and the next number starts flashing. You can only change the flashing number.
4. Continue changing numbers until you reach the desired setting.
5. Press the **SET** button. The number stops flashing and the control accepts the new setting. After approximately 30 seconds, the control starts alternating the display between TIME OF DAY and CAPACITY.

Note: If a beep sounds, the new setting is not accepted.

Reminder: Whenever the HARDNESS or CAPACITY setting is changed, you should regenerate the conditioner by pressing the **REGEN** button.

Salt Setting

The Salt Setting refers to the total amount of salt, in pounds, that the control uses during a regeneration of the resin bed. The amount of salt used in a regeneration determines the amount of water that the conditioner softens between regenerations. If this setting is changed, it may be necessary to change the Capacity Setting as well. Refer to Table 2 for SALT and CAPACITY information.

Complete the following steps to change the Salt Setting:

1. Press the down arrow [⇩] button until the green light next to the SALT legend is on. The display shows a number with a zero or a five to the right of the decimal point, no other number can be entered in this position. The setting range is 0.5 to 99.5 pounds (0.1 to 25.5 kilograms for metric).
2. Press the **SET** button and the first number starts flashing. If you want to change this number, press the up arrow [⇧] button to increase the number or the down arrow [⇩] button to decrease the number. To skip the number without changing, press the left arrow [⇦] button.

3. When the number is correct, press the left arrow [←] button. The first number stops flashing and the next number starts flashing. You can only change the flashing number.
4. Continue changing numbers until you reach the desired setting.
5. Press the **SET** button. The number stops flashing and the control accepts the new setting. After approximately 30 seconds, the control starts alternating the display between TIME OF DAY and CAPACITY.

Note: If a beep sounds, the new setting is not accepted.

If the control does not display this setting, your dealer has disabled it. Some municipalities require that the Salt Setting cannot be adjusted. Contact your dealer for additional information.

Capacity Setting

The Capacity Setting refers to the kilograins of hardness that can be removed by the conditioner between regenerations. Your dealer entered this setting when the control was installed. Please consult with your dealer before changing this setting.

Table 1 – Suggested Salt Settings (Pounds of Salt for Various Size Conditioners)

Kilograins of Hardness Capacity Setting	0.5 ft^3	0.75 ft^3	1.0 ft^3	1.25 ft^3	1.5 ft^3	1.75 ft^3	2.0 ft^3	*2.5 ft^3	*3.0 ft^3	*3.5 ft^3
12	4.5	-	-	-	-	-	-	-	-	-
16	9.0	5.0	-	-	-	-	-	-	-	-
20	-	8.5	6.0	-	-	-	-	-	-	-
24	-	14.0	8.5	7.0	-	-	-	-	-	-
30	-	-	15.0	11.0	10.0	-	-	-	-	-
32	-	-	18.5	13.0	11.0	9.0	-	-	-	-
35	-	-	-	17.0	13.0	11.0	10.0	-	-	-
40	-	-	-	23.0	18.0	14.0	13.0	-	-	-
48	-	-	-	-	28.0	22.0	18.0	14.0	-	-
60	-	-	-	-	-	-	30.0	23.0	18.0	-
72	-	-	-	-	-	-	-	35.0	26.0	23.0
78	-	-	-	-	-	-	-	-	30.0	28.0
81	-	-	-	-	-	-	-	-	36.0	30.0
90	-	-	-	-	-	-	-	-	45.0	38.0
95	-	-	-	-	-	-	-	-	-	42.0
105	-	-	-	-	-	-	-	-	-	56.0

*Consult factory for specific settings information.

Complete the following steps to change the Capacity Setting; refer to Table 2:

1. Press the down arrow [⇓] button until the green light next to the CAPACITY legend is on. The setting range is 0.1 to 140.0 kilograins (0.1 to 14.00 kilograms for metric).
2. Press the **SET** button and the first number starts flashing. If you want to change this number, press the up arrow [⇑] button to increase the number or the down arrow [⇓] button to decrease the number. To skip the number without changing, press the left arrow [⇐] button.
3. When the number is correct, press the left arrow [⇐] button. The first number stops flashing and the next number starts flashing. You can only change the flashing number.
4. Continue changing numbers until you reach the desired setting.
5. Press the **SET** button. The number stops flashing and the control accepts the new setting. After approximately 30 seconds, the control starts alternating the display between TIME OF DAY and CAPACITY.

Note: If a beep sounds, the new setting is not accepted.

Reminder: Whenever the HARDNESS or CAPACITY setting is changed, you should regenerate the conditioner by pressing the **REGEN** button.

If the control does not display the Capacity Setting, your dealer has disabled it. Some municipalities require that the Salt Setting be disabled, which also disables the Capacity Setting. Contact your dealer for additional information.

Water Conditioner Regeneration

Your water conditioner regenerates for one of two reasons:

- The control determines that the conditioner does not have enough capacity remaining to satisfy your soft water needs for the next day.
- The **REGEN** button was pressed.

In either case, the REGENERATION INDICATOR makes one complete counterclockwise rotation and returns to **REGENERATION COMPLETE**. The indicator pauses at some or all of the different positions shown on the label around the indicator. The display alternates between TIME OF DAY and REGEN TIME REMAINING, as indicated by the green lights next to the legends. Regen Time Remaining is shown in minutes on the display. When the indicator reaches **REGENERATION COMPLETE** and the time remaining is zero, the regeneration is complete, conditioned water is available for use, and the control starts alternating the display between TIME OF DAY and CAPACITY. **No settings can be changed during a regeneration.** The settings can be viewed, but the control beeps and ignores any attempt to change settings.

Automatic Regeneration

The control makes regeneration decisions based on the amount of water that has flowed through the conditioner. The control uses the Hardness and Capacity settings to calculate the number of gallons (cubic meters for metric) which can be conditioned. At the Time of Regeneration, the control updates the average usage for the previous day and adjusts the reserve capacity accordingly. The reserve is kept at a minimum for optimum economy. The control reacts to a sudden increase in water usage. If a day's usage is more than double the current average, the control anticipates that a second day of high usage is likely to occur. The high usage amount is used as the reserve when the control performs the regeneration computation.

The Guest Cycle option and the Calendar Override option may override this computation. Refer to the **Additional Features** section in this manual or contact your dealer for more information about these options. The factory setting for Time of Regeneration is 2:00 a.m. You can change this time. Refer to the **Time of Regeneration** section in this manual for additional information.

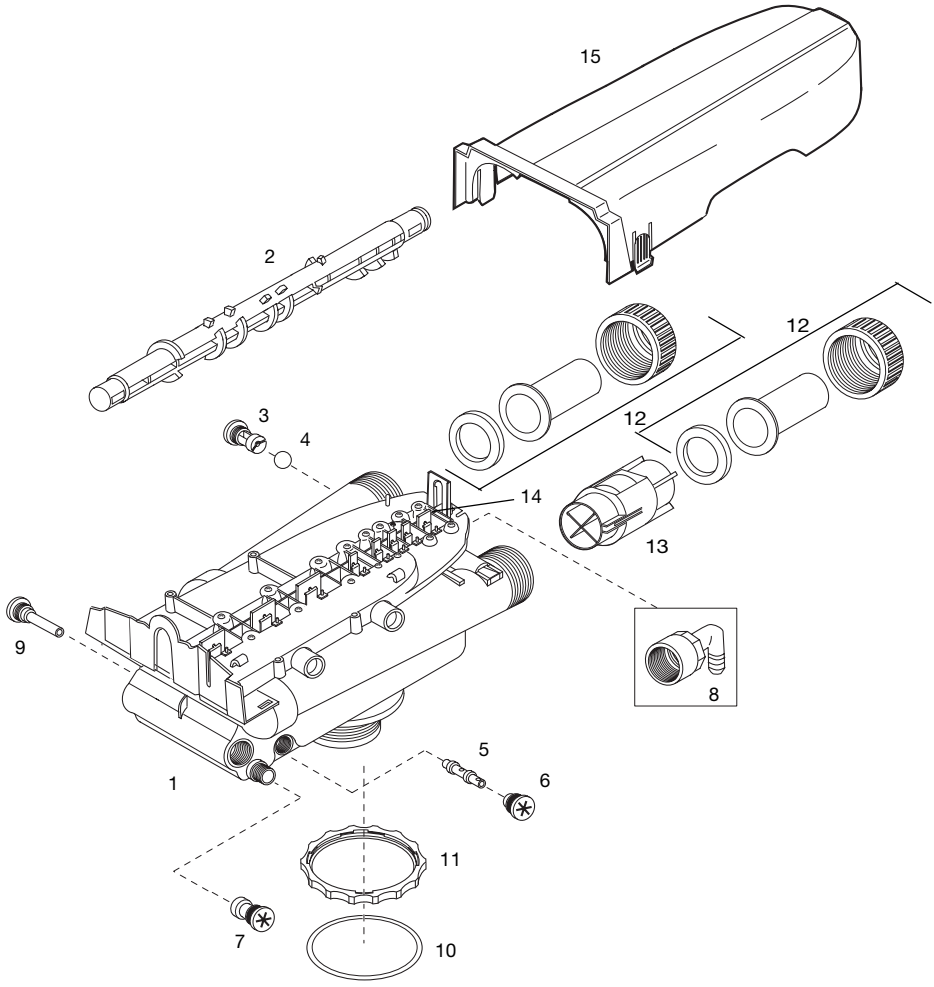
Manual Regeneration (Guest Cycle)

To initiate a guest regeneration, press the **REGEN** push button. This button is located on the front of the control. When you press the **REGEN** button, the control performs a full regeneration of the conditioner. You can use this feature if you need a large amount of conditioned water but the capacity remaining is low.

Note: If you press this button again a minute or more after regeneration begins, a second regeneration will start when the first regeneration is complete. The display shows only the REGEN TIME REMAINING information.

268/960 Replacement Parts

Contact your local dealer for parts and service.

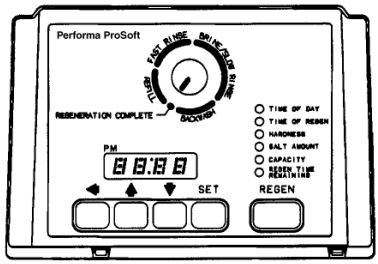


268/960 Series Valve Body and Tank Adapter Module

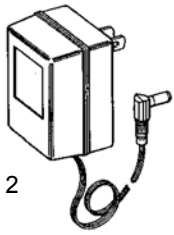
Code	Part No.	Description	Qty.
1	1035807	Valve Assembly, w/o Flow Controls	1
2	1035615	960 Standard Camshaft:	1
3		Drain Control Assembly:	1
	1000209	No. 7 (1.2 gpm; 4.5 Lpm)	
	1000210	No. 8 (1.6 gpm; 6.1 Lpm)	
	1000211	No. 9 (2.0 gpm; 7.6 Lpm)	
	1000212	No. 10 (2.5 gpm; 9.5 Lpm)	
	1000213	No. 12 (3.5 gpm; 13.2 Lpm)	
	1000214	No. 13 (4.1 gpm; 15.5 Lpm)	
	1000215	No. 14 (4.8 gpm; 18.2 Lpm)	
4	1030502	Ball, Flow Control	1
5		Injector Assembly:	1
	1032970	“A” Injector - White	
	1032971	“B” Injector - Blue	
	1032972	“C” Injector - Red	
	1030272	“D” Injector - Green	
6	1000269	Injector Cap Assembly:	1
7		Brine Refill Control	1
	1000222	.33 gpm	
8	1002449	Drain Fitting Elbow (3/4” hose barbed)	1
9	1000226	Screen/Cap Assembly	1
10	1010429	O-Ring	1
11	1035622	Tank Ring	1
12		Plumbing Adapter Kits:	1
	1001606	3/4-inch Copper Tube Adapter Kit	
	1001670	1-inch Copper Tube Adapter Kit	
	1041210	1-1/4-inch Copper Tube Adapter Kit	
	1001608	22-mm Copper Tube Adapter Kit	
	1001613	3/4-inch CPVC Tube Adapter Kit	
	1001614	1-inch CPVC Tube Adapter Kit	
	1001615	25-mm CPVC Tube Adapter Kit	
	1001769	3/4-inch NPT Plastic Pipe Adapter Kit	
	1001603	1-inch NPT Plastic Pipe Adapter Kit	
	1001604	3/4-inch BSPT Plastic Pipe Adapter Kit	
	1001605	1-inch BSPT Plastic Pipe Adapter Kit	
	1001611	3/4-inch BSPT Brass Pipe Adapter Kit	
	1001610	1-inch NPT Brass Pipe Adapter Kit	
	1001612	1-inch BSPT Brass Pipe Adapter Kit	
13	1033444	Turbine Assembly	1
14	1001580	Spring, Flapper Valve	
15	1030372	Cover	1
*		Valve Disc Kit:	
	1041174	Standard	
	1041175	Severe Service	

Replacement Parts

960 ProSoft Control

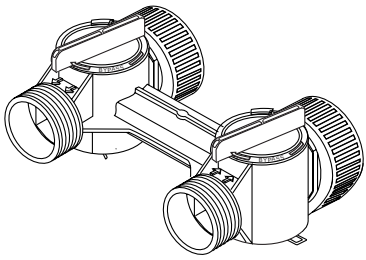


1



2

1265 Bypass Valve



3

Performa Series Accessories

Code	Part No.	Description	Qty.
1		960 ProSoft Control	1
2		Transformer	1
	1000810	Japanese	
	1000811	North American	
	1000812	Australian	
	1000813	British	
	1000814	European	
*	1030234	Transformer Extension Cord 15 foot (4.5 m)	1

1265 Bypass Valve

3	1040930	Bypass Body Assembly with Install Kit	1

Tube Adapter Kits

*	1001606	3/4-inch Copper Tube Adapter Kit	1
*	1001670	1-inch Copper Tube Adapter Kit	1
*	1041210	1-1/4-inch Copper Adapter Kit	1
*	1001608	22-mm Copper Tube Adapter Kit	1
*	1001613	3/4-inch CPVC Tube Adapter Kit	1
*	1001614	1-inch CPVC Tube Adapter Kit	1
*	1001615	25-mm CPVC Tube Adapter Kit	1
*	1001769	3/4-inch NPT Plastic Pipe Adapter Kit	1
*	1001603	1-inch NPT Plastic Pipe Adapter Kit	1
*	1001604	3/4-inch BSPT Plastic Pipe Adapter Kit	1
*	1001605	1-inch BSPT Plastic Pipe Adapter Kit	1
*	1001611	3/4-inch BSPT Brass Pipe Adapter Kit	1
*	1001610	1-inch NPT Brass Pipe Adapter Kit	1
*	1001612	1-inch BSPT Brass Pipe Adapter Kit	1
*	1040547	90-degree Elbow Adapter Kit	1

*Not Shown

Troubleshooting

Your water conditioning system is designed and manufactured for efficient, low maintenance service. However, If problems do occur, this section provides a list of possible causes and solutions. We recommend that you contact your water treatment professional.

Refer to Table 4 to help identify the cause of a problem. You can solve some problems yourself, such as low salt in the salt storage tank or a blown household fuse. However, some problems require installer or dealer assistance.

Alarms

The control continuously monitors itself and sounds an alarm if it detects something wrong. The alarm is a beep that is on for one second and then off for nine seconds. When the alarm sounds, the display shows the letters Err with a number from 1 to 4. Table 3 lists Err numbers, a description of each Err, the cause of the Err, and solutions. To silence the alarm, press any button on the control. If the error still exists, the control will go back to the alarm condition after 30 seconds.

Important: Service procedures that require the water pressure to be removed from the system are marked with a **!** after the possible cause. To remove water pressure from the system, put the bypass valve or three-valve bypass into the bypass position and open the rinse drain valve (the fifth valve back from the control) with a screwdriver, Figure 11. Restore system water pressure when the service work is completed.

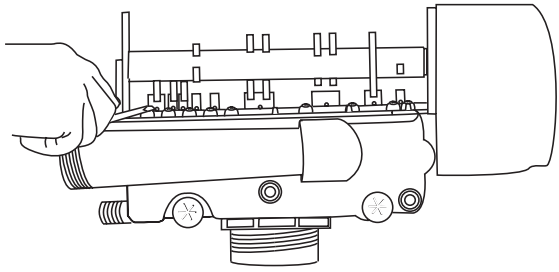


Figure 11

Table 2 - Alarms

Indication	Description	Cause	Solution
Err1	Electronics Failure.	Control settings need reprogramming.	Contact dealer.
Err2	Home switch closed when it should be open.	Faulty motor, circuit board or switch. Camshaft has been manually rotated during a regeneration.	Attempt a manual regeneration. If error persists, contact dealer.
Err3	Home switch open when it should be closed.	Faulty motor, circuit board, or switch. Camshaft has been manually rotated out of the “regeneration complete” position.	Contact dealer. Control will turn the motor on and drive camshaft back to proper position.
Err4	Improper control settings.	One or more settings out of the allowable range.	Contact dealer to adjust hardness and capacity settings.

Table 3 - 960 Troubleshooting Procedures

Problem	Cause	Solution
Hard Water at the Tap.	a. Low or no salt in the salt storage tank. b. Salt setting too low to accommodate water hardness or water usage. c. Unit did not regenerate. d. Plugged injector **!** e. Air check valve prematurely closed.	a. Refill the salt storage tank and manually initiate a regeneration. b. Change the salt setting (contact dealer). c. Check power. d. Clean injector and screen (contact dealer). e. Replace or repair air check if needed. Check brine line connections. Contact dealer.

Problem	Cause	Solution
Loss of power to the system.	a. Transformer unplugged. b. Fuse blown, circuit breaker open, or circuit switched off.	a. Connect power. b. Correct the electrical problem.
Control does not regenerate automatically.	a. Transformer unplugged. b. Defective control.	a. Plug transformer into outlet; plug transformer cable into control. b. Contact dealer.
Control regenerates at the wrong time of day.	a. Clock set incorrectly.	a. Reset clock settings.
Control does not draw brine.	a. Low water pressure. b. Restricted drain line. c. Injector or injector screen plugged **!** d. Injector defective **!** e. Air check prematurely closed.	a. Increase water pressure. b. Remove restriction. c. Clean injector and screen. d. Replace injector. Contact dealer. e. Inspect or replace air check if needed. Check brine line connections.
Brine tank overflow.	a. Air leak in brine line to air check. b. Salt setting too high.	a. Check all connections in brine line for leaks. b. See Table 1 for suggested salt settings (contact dealer).
System using more or less salt than salt setting.	a. Inaccurate setting.	a. Correct salt setting. Refer to the **Salt Setting** section in this manual.
Flowing or dripping water at drain line after regeneration.	a. Valve failure.	a. Contact dealer.

*Not Shown

Maintenance Record

Date Installed _____

Installed By:_____ Phone Number:_____

Work Performed	Date

Valve Specifications

Working Pressure . . . . . 20-120 psi (1.38 - 8.27 bar)
Standard 12 Volt Transformer Input Electrical Rating . . . . . 115V 60 Hz
Optional 12 Volt Transformer Input Electrical Rating . . . . . 115V 50 Hz, 230V 50 Hz, 230V 60 Hz, 100V 60 Hz, 100V 50 Hz
Operating Ambient Temperature . . . . . 34 °F to 120 °F (1 °C to 49 °C)
Operating Water Temperature . . . . . 34 °F to 100 °F (1 °C to 38 °C)

This softener conforms to WQA NSF/ANSI-44 standard for the specific performance claims as verified and substantiated by test data. The softener is a DIR efficiency rated system, which also complies with specific performance specifications intended to minimize the amount of regenerate brine and water used in its operation. Efficiency of the softeners shall specify its validity only at the stated salt dosages above. Efficiency rated softeners shall have a rated salt efficiency of not less than 3350 grains of total hardness exchange per pound of salt (based on NACl equivalency), and shall not deliver more salt than its listed rating. The efficiency is measured by a laboratory test described as Standard NSF/ANSI-44. The test represents the maximum possible efficiency that the system can achieve. Operational efficiency is the actual efficiency achieved after the system has been installed. It is typically less than the efficiency due to individual application factors including water hardness, water usage, and other contaminants that reduce the softener's capacity. System testing utilized sodium chloride regenerant specifically formulated for water conditioning units. The softener is not intended for treating water that is microbiologically unsafe or of unknown quality without adequate disinfecting before or after the system. Please see inside of service manual for user responsibility and parts and service availability.

For service or parts, please contact your local professional water treatment dealer.

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