

LC 25 Water Softener  
With 400 Series Control  
Water Conditioning Control System  
Dealer Installation, Operation, and Maintenance Manual



## Installation

All plumbing and electrical connections must conform to local codes. Inspect the unit carefully for carrier shortage or Shipping damage.

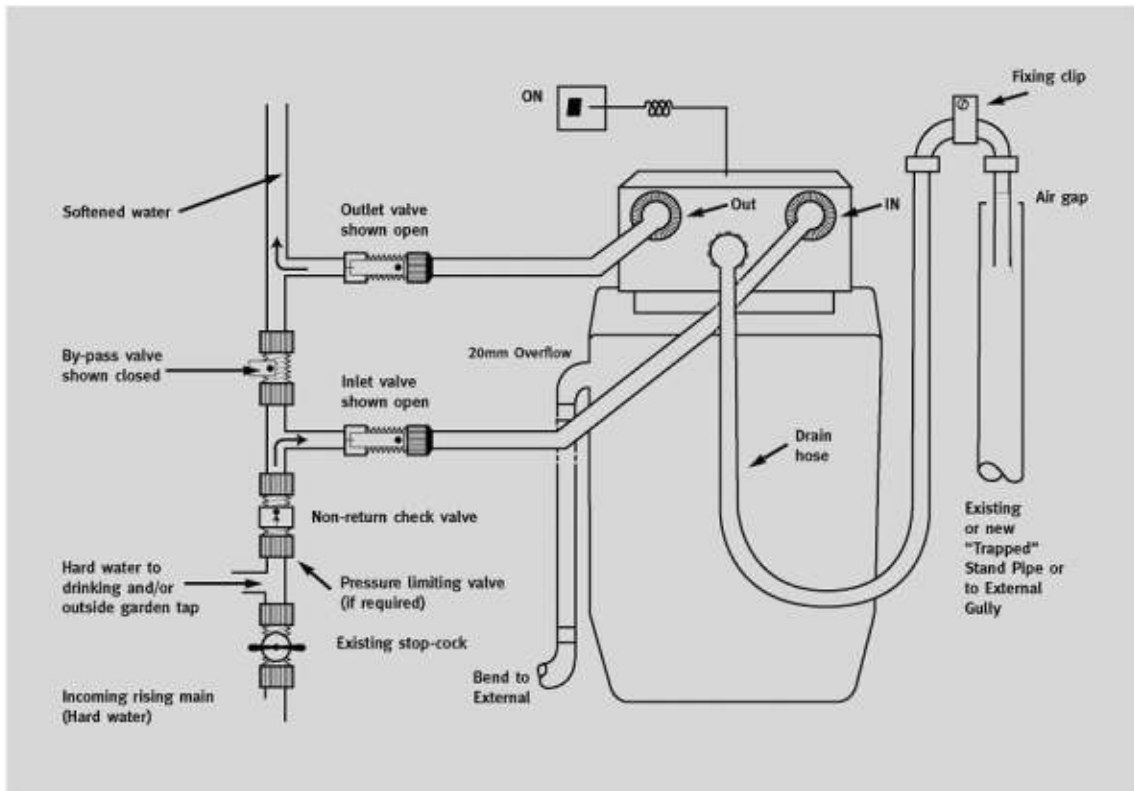


Fig 1

## 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 treatment equipment will be required. Make sure adequate additional space is available.
3. Since salt must be added periodically to the brine tank, the location must be easily accessible.
4. There should be at least 10 feet (3 m) of piping between the outlet of the conditioner and the inlet to the heater. Water heaters can sometimes overheat and 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 from happening. To prevent hot water flowing from heat source to the conditioner, in the event of a negative pressure situation, install a check valve in the treated water piping from the Conditioner.

**If a check valve is installed, make sure the water heating unit is equipped with a properly rated temperature and pressure safety relief valve. Also, make sure that local codes are not violated.**

5. Do not locate the unit where it or its 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 the 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 untreated water or for servicing.

## Drain Line Connection

**Note:** Standard commercial practices are followed here. Local codes may require changes to the following suggestions.

1. Ideally located, the unit is above and not more than 20 feet (6.1 m) from the drain. For such installations, using an appropriate adapter fitting, connect 1/2-inch (1.3-cm) plastic tubing to the drain line connection of the control valve.
2. 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 the 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).

**Note:** Where the drain empties into an overhead sewer line, a sink-type trap must be used.

**IMPORTANT:** Never insert the drain line into a drain, sewer line, or trap. Always allow an air gap between the drain line and the wastewater to prevent the sewage from back siphoning into the conditioner.

## Overflow Line Connection

Do not elevate the overflow line higher than 3 inches (7.6 cm) below the bottom of the overflow fitting. Do not connect to the drain line of control unit. The overflow line must be a direct, separate line from the overflow fitting to the drain, sewer.

## Placing Conditioner into Operation

After all of the previous steps have been completed, the unit is ready to be placed into operation. Follow these steps carefully.

1. Remove the control valve cover

**Note:** The following steps will require turning the indicator knob (Figure 2) to various positions.

Manually rotate the camshaft **COUNTERCLOCKWISE** only until the indicator

Knob points to required position. (See the manual regeneration sections for each control's manual operation.)

2. Rotate the indicator knob **COUNTERCLOCKWISE** until it points directly to the word **BACKWASH**.

3. Fill the media tank with water.

A. With the water supply off, place the bypass valve(s) into the "not in bypass" position.

B. 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, media may be lost. In the 1/4 open position, you will hear air escaping slowly from the drain line.

C. When all of the air has been purged from the tank (water begins to flow steadily from the drain), open the main supply valve all of the way.

D. Allow the water to run to the drain until it is clear.

E. Turn off the water supply and let the unit stand for about five minutes. This allows all of the trapped air to escape from the tank.

4. Add water to the regenerant tank (initial fill). With a bucket or hose, add water to the regenerant tank. Approximately 10 Litres.  
Do not add regenerant at this time.

5. Place the unit into operation.

A. With the water supply valve completely open, carefully advance the indicator knob

**COUNTERCLOCKWISE** to the center of the **REFILL** position. Hold the indicator knob at this position until water starts to flow through the regenerant line into the regenerant tank. Do not run the unit for more than one or two minutes.

B. Advance the indicator knob **COUNTERCLOCKWISE** until it points to the center of the **DRAW/SLOW RINSE** position.

C. With the indicator knob in this position, check to see if water is being drawn from the regenerant tank. The water level in the regenerant tank recedes very slowly. Observe the water level for at least three minutes. If the water level does not recede, or if it goes up, reference the Troubleshooting section.

D. Advance the indicator knob **COUNTERCLOCKWISE** to the **SERVICE** or **CONDITIONED WATER** position and run water from a nearby tap until the water is clear and soft.

6. Add the regenerant. Sodium Chloride is normally used as the regenerant.

### Electrical Connection

**12 VAC:** Plug in the transformer and connect the jack plug to the rear or underside of the timer housing.

### 440i Control Settings



water hardness ppm	100	150	200	250	300	350	400
capacity between regens.	12.9	8.6	6.5	5.2	4.3	3.7	3.2
People Days Based on 4 Persons		13	10	8	6	5	5

Figure 2

### Programming

1. Set the number of days of regeneration on the skipper wheel (Figure 2)
  - Pull all of the skipper pins outward (away from the control).
  - Rotate the skipper wheel until day arrow points to the number of current day or number 1.
  - Depress the skipper pin(s) at the day(s) for which regeneration is required.
2. Set the time of day.
  - Grasp the timer knob and pull it outward.
  - Rotate it in either direction until the timer arrow points to the actual time of day.
  - Release the timer knob.

**Note:** With the time of day properly set, the conditioner regenerates at about 2:30 a.m. If you prefer to have the unit regenerate at an earlier or later time, simply set the current time-of-day accordingly (e.g., to have the unit regenerate at 4:30 a.m.—two hours later—set the clock Two hours earlier than the actual time of day.)

**Note:** The Timer Locking Pin should always be horizontal (Figure 2) during operation.

### Manual Regeneration

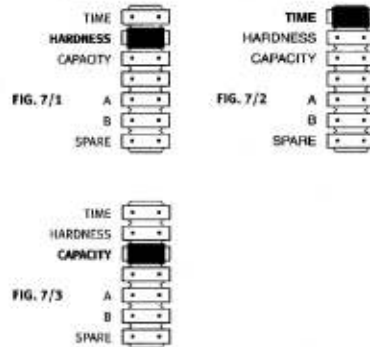
Electricity is used only to run the control and to rotate the camshaft. All other functions are operated by water pressure. Therefore, in the event of a power outage, all the regeneration positions may be dialed manually by depressing the indicator knob and turning **COUNTERCLOCKWISE** (Figure 2) the following cycle times should be used for proper regeneration:



## 460i Control Settings



Figure 3



### SET THE PROGRAMMER

Obtain your water hardness from your local water authority, or alternatively purchase a Test Kit from your supplying retailer.

To set the programmer refer to instructions on facial panel.

Carefully remove the control valve cover by lifting gently under the front edge.

Depress and turn black pointer knob (Fig.3) on the control, anticlockwise using broad headed screwdriver, to the backwash position. Assist this movement by simultaneously turning the camshaft with your other hand.

Close the by-pass valve as Fig. 1. Open inlet valve partially by turning. The blue resin vessel should now be heard to fill with water. Air in the resin vessel and valve will be evacuated out of the drainpipe.

When water starts running from the drain, open the inlet valve fully and allow to run for three minutes.

Turn pointer knob anticlockwise to a point just before the FAST RINSE REFILL position.

Switch on power supply. Check that clock motor can be heard running.

Allow motor to run pointer knob anticlockwise to SOFTENED WATER position. Allow approximately 10 minutes.

Fill brine storage tank with salt to a level not exceeding 75mm below the bottom of the salt lid opening. Granular or tablet salt is

suitable. The salt will be dissolved and gradually used by the machine. A visual check should be carried out on a 3 to 6 weekly interval

(depending on usage). Top up as necessary. Always ensure a minimum salt level of 125mm exists above the base of the cabinet.

Fully open outlet valve as Fig. 1. You now have softened water.

Set the time of day (see Adjustment of Timer).

### ADJUSTMENT OF TIMER

Open the smoked access window

The hardness and capacity have been set at the factory. Unless you need to alter the hardness for your area (it is set to 17 GPG (Grains Per Gallon) or 300 p.p.m.), no further adjustment should be made.

If for any reason you should wish to alter the time or hardness proceed as follows.

The use of a pair of small needle nose pliers or tweezers will aid in moving the jumper.

With the "jumper" on the top 2 pins next to the word "TIME" (Fig. 4), set the time-of-day to the closest hour by depressing the black TIME SET BUTTON

If you need to adjust the hardness, pull the jumper off the top 2 pins and place it on the next set of pins next to the word **HARDNESS** (Fig. 4). Depress the black **TIME SET BUTTON** until the correct hardness is displayed. The hardness range is from 1 to 99 grains per gallon.

To change the water hardness from parts per million or mg/l to grains per gallon as displayed use this formula:

Divide the p.p.m. by 17.1 to get the G.P.G.

Capacity is pre-set - do not alter.

Return the jumper to the top set of pins next to the word "**TIME**" and close the access door. The bottom 3 sets of pins are used for factory testing and are not used in normal operation. The jumper must **NOT** be left on any pins other than the top pair next to the word "**TIME**". Failure to do this will cause the unit not to operate.

In the event that the hardness or capacity setting must be changed, simply follow steps 1 through 6. The new information will be entered when the jumper is returned to the top 2 pins next to the word "**TIME**".

Manual Regeneration. Push in black pointer knob Fig. 3, until click is heard. This will start regeneration. It takes approximately 59 minutes to complete a full regeneration.

**BACKWASH**—10 minutes

**DRAW/SLOW RINSE**—25 minutes

**FAST RINSE/REFILL**—5 minutes

Do not exceed 10 minutes for the **FAST RINSE/REFILL** cycle as this causes excessive regenerant usage during the next regeneration and possibly a regenerant residue in the treated water.

## **Preventive Maintenance**

### **Injector Screen and Injector**

Clean the injector screen and the injector once a year:

1. Unplug the wall-mount transformer.
2. Shut off the water supply or put the bypass valve(s) into the bypass position.
3. Relieve system pressure by opening valve No. 7 (at rear) with a screwdriver.
4. Remove the injector screen and injector cap with a screwdriver.
5. Clean the injector screen using a fine brush. Flush it with water until clean.
6. Pull the injector straight out using needle-nose pliers.
7. Flush water into the injector screen recess of the valve body to flush debris out through the injector recess.
8. Clean and flush the injector with water.
9. Lubricate the O-rings on the injector, injector cap, and injector screen with silicone lubricant **only!**
10. Reinstall the injector, injector cap, and injector screen.

**IMPORTANT:** Do not over tighten the plastic cap. Seat the cap lightly into position. Over tightening may cause breakage of the plastic cap that may not be immediately visible.

11. Plug the wall-mount transformer into the outlet. Reset the clock, if necessary.
12. Slowly open the water supply valve or return the bypass valve(s) to the "service" position.