
ULTIMA™ 888

Installation Manual



For models produced after September 1, 1998

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Important Safety Information

- If you are not sure that your electrical outlet is properly grounded or that the circuit protection is correct, have it checked by a qualified electrician.
- Operate indoors only.
- The area must be well ventilated.
- **WARNING:** Disconnect from the power source before assembling, adjusting or servicing this appliance.
- **NEVER** immerse the distiller in water or any other liquid.
- **NEVER** operate the distiller with a damaged cord or allow the cord to become exposed to hot surfaces.
- **DO NOT** use an extension cord or any adapters.
- **DO NOT** let children play with the distiller.
- Wait at least 30 minutes after the distiller is off before draining the boiling chamber.
- Important Notice: This distiller is designed to be used only with Pure Water accessories and replacement components.

For the Record

The model and serial number are found on the back panel. You should record all the necessary information below for future reference.

Date: _____

Model: Ultima 888 _____ ULTIMA Serial #: _____

Cooler Model: _____ Cooler Serial #: _____

ULTIMA 888 Specifications

Note: All figures are approximate.

Dimensions: 14" (35.5 cm) wide x 16" (40.6 cm) deep x 18" (45.7 cm) high

Electrical:	<u>watts</u>	<u>voltage</u>	<u>cycles</u>	<u>amps</u>
	920	100	50	9.0
	920	120	60	7.7
	920	240	50	3.8

Production: Approximately 0.33 US Gallons (1.25 liters) per hour at specified operation voltages.

Tank Capacities: Distiller Feedwater Tank— 2.5 US Gallons (9.5 liters)
 Distiller Distillate Tank — 2.5 US Gallons (9.5 liters)
 Dispenser Reservoir — 2.5 Room, 1.7 Cold US Gallons (19 liters)
 Dispenser Hot Tank (3 Temp Model — 0.5 US Gallons (3.8 liters)

Operating Parameters

The ULTIMA 888 unit has been designed to function within specific environmental parameters. Operation outside of these parameters will nullify any design or manufacturing warranties.

- Feedwater Requirements (for automatic operation):
 - a. Treated municipal drinking water. If suspended solids are present, a sediment filter must be used before the mini-softener.
 - b. Minimum pressure is 20 PSI.
 - c. Maximum pressure is 100 PSI.

- Ambient air/surface temperatures operating range is 50°-90° F (10°-32° C).

- The ULTIMA 888 is not designed for the outdoor environment nor exposure to direct sunlight.

Suitable Location for Installation

The location where the ULTIMA 888 is placed in an office or home is very important. Several factors must be considered:

1. Plumbing. When possible, the unit should be placed near plumbing lines, we recommend all units should be plumbed in, if possible, to provide the most convenience for the customer.
2. Warm Air/Noise. The ULTIMA 888 system produces two by-products when operating — warm air, and some low-level noise. When possible, the system should be located away from desks or work stations. However, the unit may be equipped with an optional timer to control the operation schedule of the system. With the timer, the unit may be set to operate during non-office hours or at night.

Note: *This will be true only for small offices. Where a large number of people are served by one unit, the unit may need to be operated on demand and without the timer being engaged.*

3. Environmental-Vandalism. In applications where vandalism may be a problem, do not place the unit in an uncontrolled or hostile environment. However, the following precautions may be taken to prevent any misfortune.
 - Utilize a lock-in cap. Two holes may be drilled into the top cap through which plastic pins are inserted to prevent unwanted cap removal.
 - Place lock-in protectors on fittings to prevent unwanted disconnection of tubing.
 - Use torx-type bolts on dispenser attachment brackets.

Getting to Know the Ultima 888

Front View

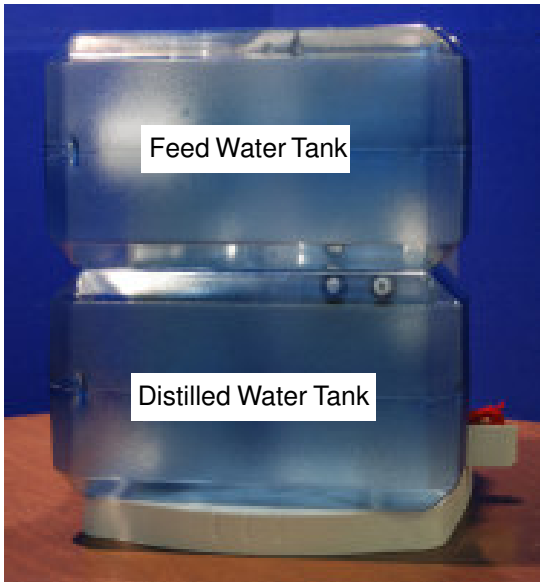


Figure 1

Back View

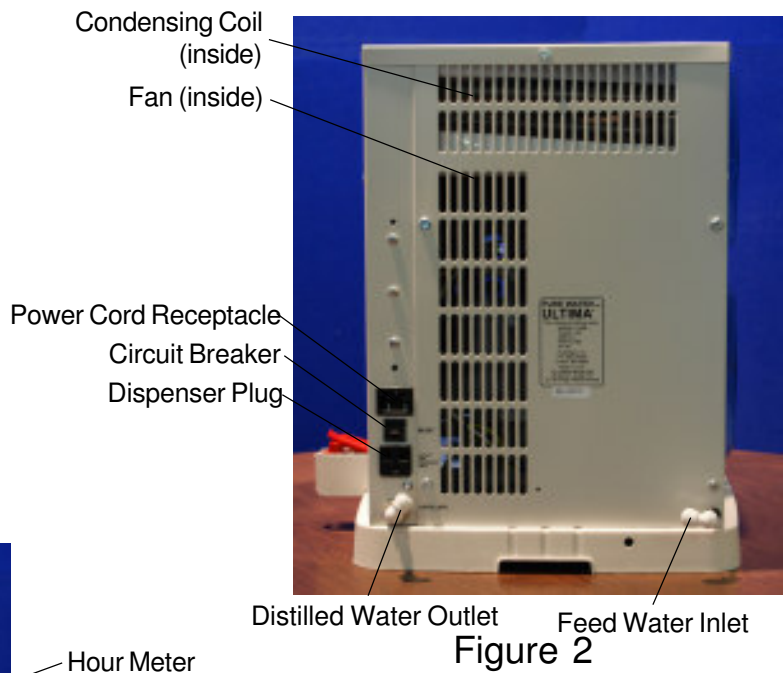


Figure 2

Side View



Figure 3

Getting to Know the Cooler

Cook and Cold Model (2 Temp)



Figure 4

CAUTION: If you have tilted or laid the cooler down, let it stand 24 hours in the upright position before turning any power on. Otherwise damage can be caused to the cooling system.

The coolers that are used with the Ultima 888 are a unique design. Since there is no 5 gallon bottle with this system, we have chosen to use a cooler that has a reservoir with a 5 gallon capacity inside the cooler itself. Both the 2 temperature and the 3 temperature models have a 5 gallon reservoir. The 3 temperature model also has an internal reservoir for hot water storage as well.

The hot water tank is located at a lower point on the cooler than the hot tank faucet. This means that once the hot tank is filled with water, then it will always have water in the tank. There are 2 very important points to remember about the hot tank:

1. Turn the hot tank switch off until the 5 gallon reservoir is filled, and all of the air in the tank has been released by opening the hot tank until water flows.

Hot, Cook and Cold Model (3 Temp)



Figure 5



Figure 6

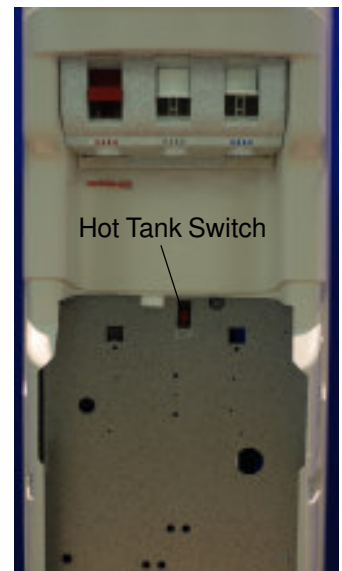
2. If you are storing coolers that have had water in them, or could potentially freeze, drain all of the water out of the cooler. This must include draining water from the hot tank with the hot tank drain located on the back of the cooler.

Child-Proof Hot Faucet
(Squeeze together and pull down for flow)



Figure 7

Hot Tank Drain (on back)

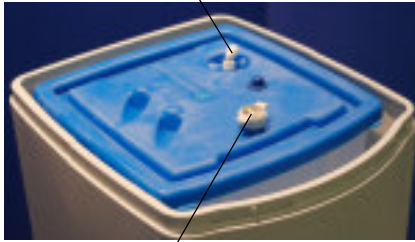


Hot Tank Switch

Figure 8

Getting to Know the Cooler

Reservoir Top
Distilled Water Inlet (1/4")



Air Filter
Figure 9

The internal components of the cooler are designed to be removed very easily. This allows for sterilization and/or replacement very user-friendly. The main component that you will have to deal with is the reservoir.

Double-Floats

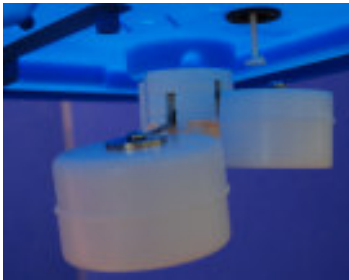


Figure 10

Water from the Ultima 888 will pass through the post filter and enter the reservoir through a 1/4" fitting on the top of the reservoir. This fitting is connected to a double-float assembly. A double float is used to ensure long term reliability in the cooler.

If you open the reservoir you will notice a blue baffle at about the mid-tank level. Water for the room temperature and hot tanks will be drawn from above the baffle, and the water below the baffle will be chilled for the cold temperature faucet.

Below the baffle



Figure 13

2 Temp Assembly



Figure 11

3 Temp Assembly



Figure 12

Temperature Baffle
Hot Temperature Inlet



Room Temperature Inlet
Figure 14

Getting to Know the Minisoft

The mini-softener is a small water conditioner which utilizes the same cationic exchange resin as do larger residential and commercial water softeners.

Most water supplies contain calcium and magnesium ions that are caused by water contacting limestone in the ground. Calcium and magnesium are often referred to as the hardness minerals. When hard water is heated, these minerals combine with anions and precipitate from the solution forming scale. This scale increases the maintenance and decreases the life of your product and thus, the mini-softener is used to eliminate this scale.

Your mini-softener consists of special resin beads which attract certain ions from the water. When new, the resin in the mini-softener has sodium ions on it. As hard water flows through the exchange resin, the calcium and magnesium ions are captured by the resin, while sodium ions are released. Thus, calcium and magnesium ions are exchanged for sodium ions. (Two sodium ions per one Calcium or Magnesium ion.)

When there is no more room on the resin beads to attract calcium and magnesium, the resin will become exhausted and will need to be recharged. This is achieved by passing a highly-concentrated salt solution through the resin. Whole-house water softeners have automated controls which regularly rinse the resin with a concentrated brine.

Because of the relatively small volume of water that passes through the ULTIMA unit, the mini-softener can last for many months before it needs to be recharged. It has been designed to be replaced in the field and returned to the dealer for servicing. This makes it simple and inexpensive. It can be recharged and returned to service.

Ion exchange resins should not be allowed to dry out. Hence, new mini-softeners come with small plugs in the inlet and outlet. If a mini-softener is to be exchanged, it is a good idea to loop a length of tubing from the inlet to the outlet. This keeps the resin wet and reduces spillage of water.

To calculate the number of gallons that can pass through the Mini-Softener use the following calculation:

$$\begin{array}{c} 2800 \text{ Grains Capacity (of the minisoft)} \\ \text{DIVIDED BY} \\ \text{Number of Grains per gallon in the water} \\ \text{EQUALS} \\ \text{Total number of gallons that the minisoft can soften before regeneration} \end{array}$$

How the ULTIMA 888 Works

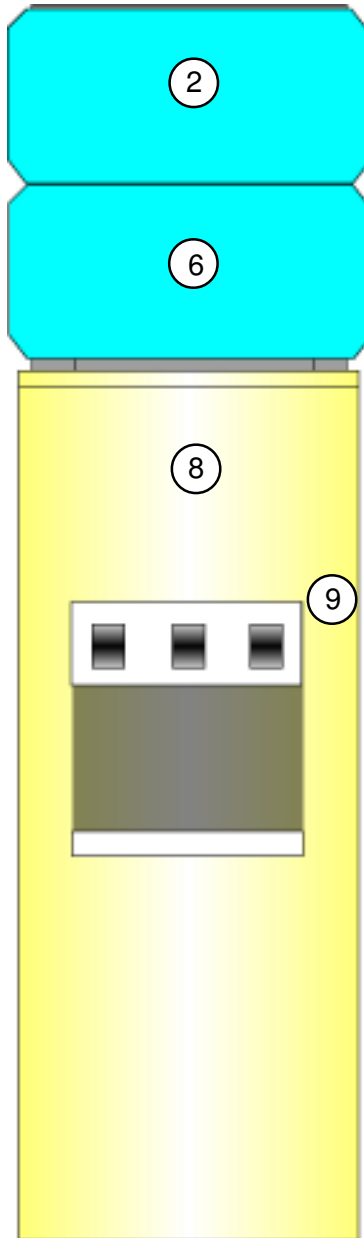


Figure 15

Raw water moves through a mini-softener (1), which removes hardness scale and minimizes maintenance of the boiling chamber, and is then stored in the Feed Water Tank (2).

Water is drawn from the Feed Water Tank into the Level Control Housing attached to the Boiling Tank. The level control housing maintains the proper level of water in the boiling tank. During the process of distillation, the water is boiled in the boiling tank (3). Steam rises and passes through a stainless steel condensing coil (4). A fan (5) cools the steam in the condensing coil and turns it to high-purity water, free of virtually all contaminants. The distilled drinking water is stored in the Distilled Water Tank (6).

The water then passes through a post filter (7); either a carbon filter to enhance the taste and remove any Volatile Organic or Inorganic Compounds.

Upon demand, the distilled water flows from the Distilled Water Tank into the dispenser (8), which has an additional 19 liter (5 gallon) storage system. Hot, cold, and room temperature water can be dispensed at your convenience through three separate faucets (9).

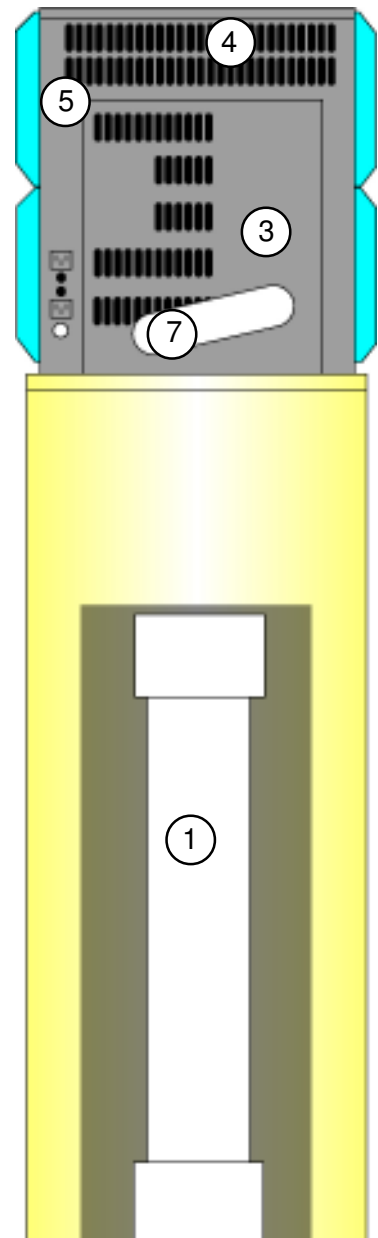


Figure 16

ULTIMA 888 Flowchart

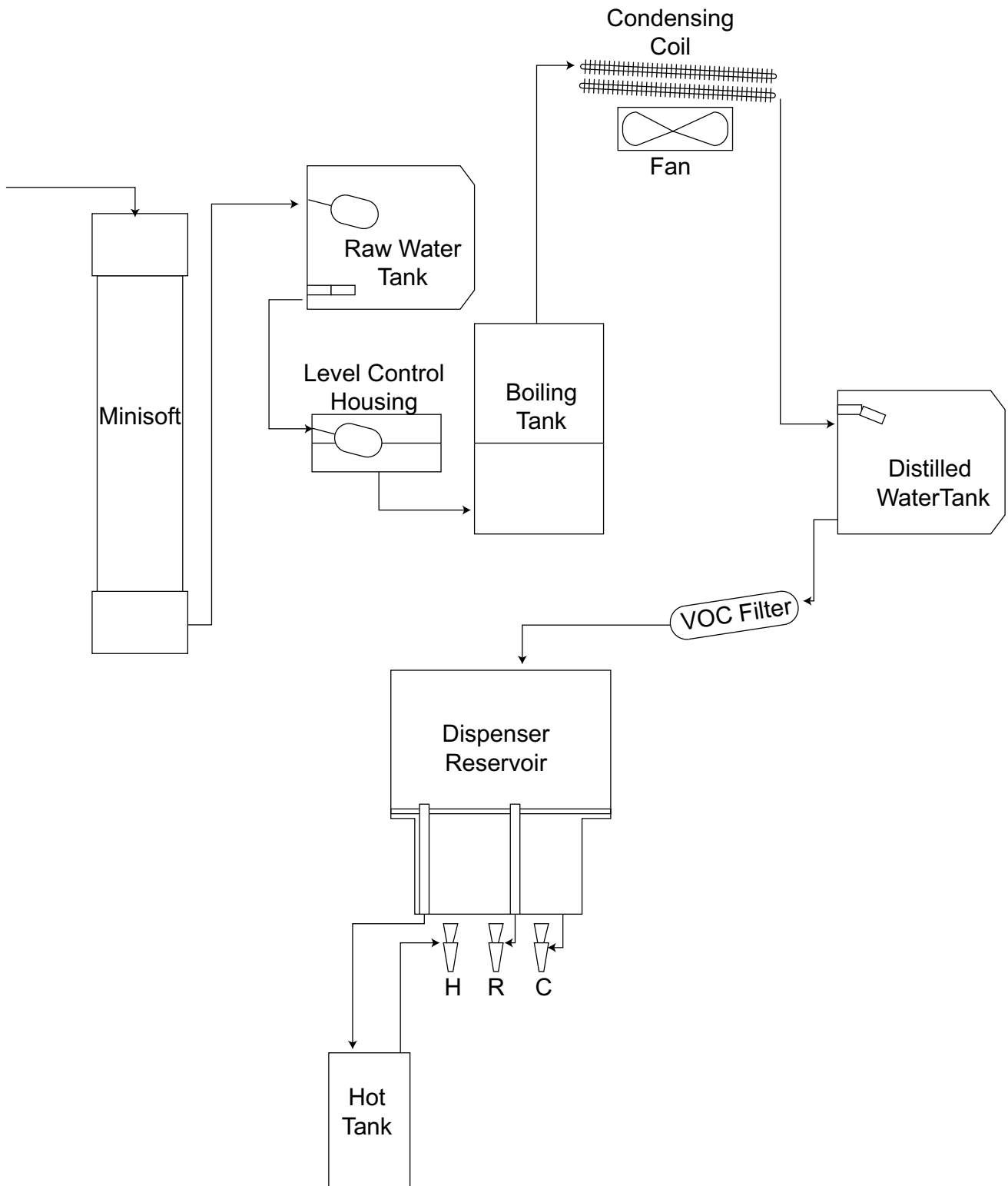


Figure 17

Preparing for Installation . . .

Checklist

- Rinse and Sterilize the Cooler Reservoir (See Page 12).
- Set-up Ultima on Cooler.
- Rinse MiniSoft (See Page 13).
- Rinse the VOC Filter
- Operate Unit (24 hours minimum).
- Check output water for TDS and taste.
- Check water temperatures from each faucet on dispenser.
- Check for debris in tanks.
- Clean exterior or tanks and unit.
- Drain unit completely before transporting (top tank, lower tank, boiler, and cooler) See Page 6 Figure #7 if you have a 3 temperature dispenser.

Preparing for Installation . . .

Sterilizing the Dispenser

Note: *The reservoir of the Aqua Bar dispenser must be cleaned and disinfected prior to delivery.*

1. Remove the Reservoir from the cooler by pulling up. (Figure 18)
2. Plug Hot tank tube (if you are using 3 temperature model)
3. Remove top blue Cover.
4. Mix a solution of one teaspoon of bleach to two gallons of water. Add to the tank. Note: Rubber gloves should be worn during the procedure.
5. Wash the inside of the reservoir and the baffle with the solution. Note: Do not allow the sanitizing solution to remain in the tank more than five minutes.
6. Drain the solution through the cold water faucet.
7. Rinse the reservoir with two gallons of purified water and drain the water through the cold water faucet.
8. Remove the plug from the hot tank tube.
9. Completely fill the reservoir with purified water. Drain the water from the reservoir through all faucets.
10. Ensure all tanks are thoroughly drained.
11. (3 Temp Models) Put sterilizing solution into the hot tank, then drain out at the hot tank drain.
12. Clean the baffle with a solution of bleach and water. Rinse thoroughly with purified water and reinstall in the dispenser.

2 Temperature



Figure 18

3 Temperature

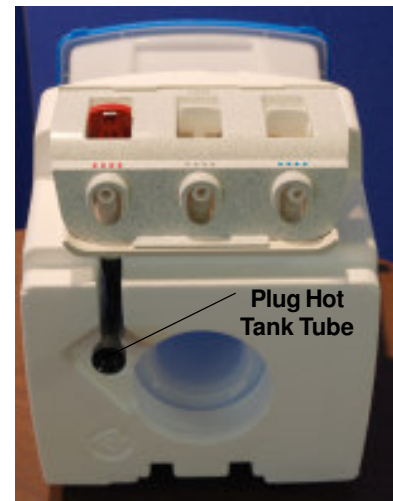


Figure 19

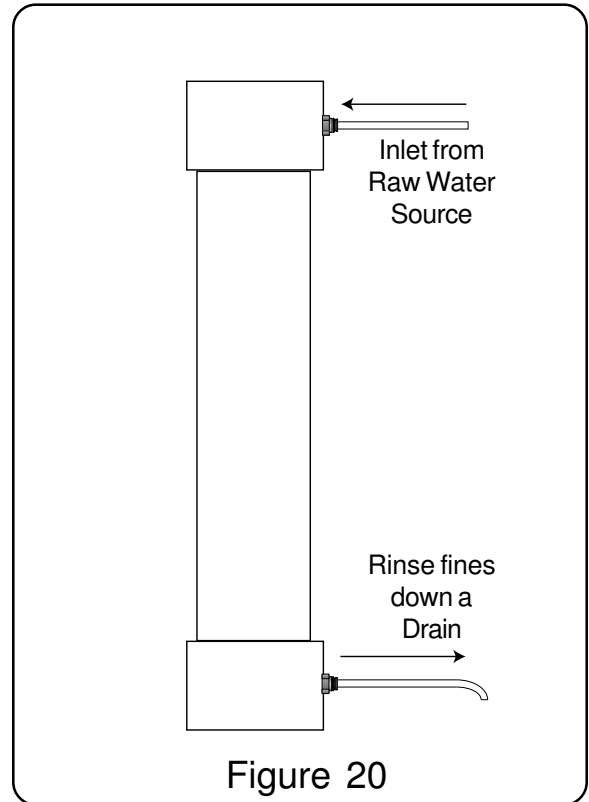
Preparing for Installation . . .

Preparing the MiniSoft

The mini-softener may contain fines or particles of resin which are small enough to pass through the mini-softener and be carried to the boiling tank in the feed water. These are a result of shipping.

We recommend you rinse the fines from the softener prior to installing the ULTIMA unit at the customers location. To rinse the fines:

1. Remove the mini-softener from the packaging carton and inspect the unit and fittings for possible shipping damage. Remove the small plugs from the inlet and outlet fittings. To remove the plugs from the fittings, follow the instructions on page 6.
2. Cut and connect a piece of 1/4" tubing from the Feed Water to the top of the mini-softener.
3. Cut and connect a piece of 1/4" tubing from the base of the mini-softener to the drain.
4. Allow approximately 8 liters (2 gallons) to flow out of the tubing to a drain until it is clean and free of resin fines.
5. Remove the piece of tubing from the top of the mini-softener. Connect tubing from the inlet to the outlet on the minisoft (This will prevent the minisoft from drying out which can cause damage to the resin). The softener is now ready to be transported to the installation site.



Preparing the VOC Post Filter

Included with each ULTIMA unit is a V.O.C. post filter. The post filter serves to improve the taste of the water, and remove any stray volatile contaminants from distillation.

1. Remove the post filter from the package.
2. Connect the speedfit elbow with a piece of 1/4" tubing to a distilled water source.
3. Run Distilled water through the filter until there is a clear stream of water.

Installation of the ULTIMA 888 . . .

Note: In this section, we give instructions for using a saddle tapping valve to connect a waterline to the Ultima 888 distiller. The saddle-tapping valve and tubing is not included with the Ultima 888, but can be ordered from Pure Water under part #9514 for the saddle-tapping valve, and 9526-25R for 1/4" tubing.

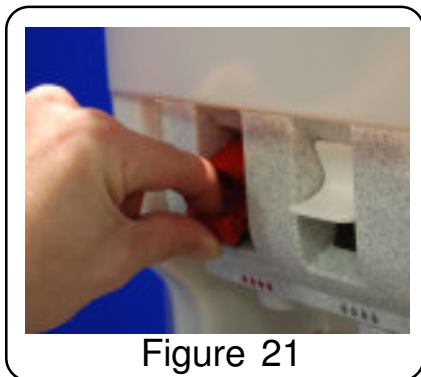
1. Connect the Saddle Tapping Valve to a waterline (Follow instructions with the valve.)
2. Install the 1/4" tubing from the saddle tapping valve or utility hook-up to the top fitting of the mini-softener.
3. Cut and connect a piece of 1/4" tubing from the bottom fitting on the mini-softener to the Feed Water Inlet on the ULTIMA unit.
4. Open the saddle tapping valve completely. Check for leaks.
5. Important instructions for 3 temperature coolers:

The cooler must be full of distilled water and all air out of the tanks and lines before turning the hot tank on. Make sure that the hot tank power switch is in the off position. To access this switch the bottom front panel on the dispenser must be removed. Figure 22.

Once the dispenser is full of water (24 hours), then the air can be released from the cooler by holding the faucet open on each of the temperature faucets. For the hot tank, the faucet must be held for up to 2 minutes for water to flow out of the dispenser. Figure 21.

Note: The hot tank Faucet is designed to be child-resistant, to open, squeeze the two parts together and then push down.

Once water flows out of the hot tank faucet, turn the hot tank power switch to the ON position.



Ready for Operation . . .

When the unit is ready for operation, you can either use the optional timer control or the unit in the on demand mode.

Before operating, ensure the following:

- Water supply is on.
- Saddle tapping valve or utility hook-up is open.
- No leaking at the waterline or fittings.
- Dispenser is plugged into the ULTIMA unit.
- Unit is plugged into a power source.
- Registration card is completed and returned to Pure & Secure LLC.
- There are no air blockages in the tubing.

Note: Use wire ties to tidy up the cords and tubing at the back of the unit.

Note: The Hot Water Tank Drain Valve is located at the lower right on the rear of the unit. If you need to drain the hot water tank entirely, simply open the valve by turning it counterclockwise. After the water has drained, be sure to close the valve.

Quick-Connect Fittings. . . .

We have selected a special type of fitting that is a rapid, simple and secure way to connect tubing. It is very important that the tube being used has a squarely cut end, and that the tube cross section is circular and not oval. Cutting with a very sharp blade is recommended.

The fitting consists of:

- a. The body.
- b. An o-ring to seal against the tubing. (single or double)
- c. A collet that grips the tubing and holds it in place.

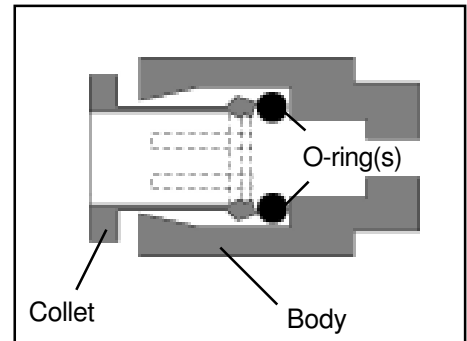


Figure 23A

CONNECTING

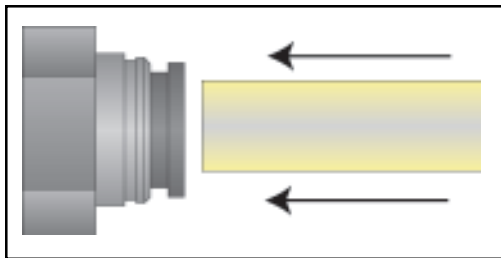


Figure 23B

To Connect:

- a. Push the tubing firmly into the fitting.
- b. Pull to confirm that it has been secured.
- c. Push the tubing firmly into the fitting again.

To Disconnect:

Note: Make sure that the water to the connection is turned off and that there is no water pressure in the line or fitting before disconnecting.

- a. Push the tubing firmly into the connector.
- b. With your fingers or suitable tool, push and hold the collet against the fitting body.
- c. Pull the tubing free.

DISCONNECTING

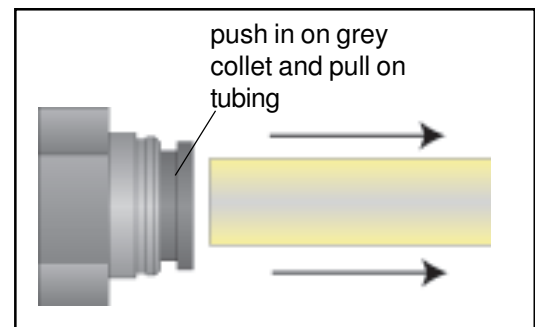
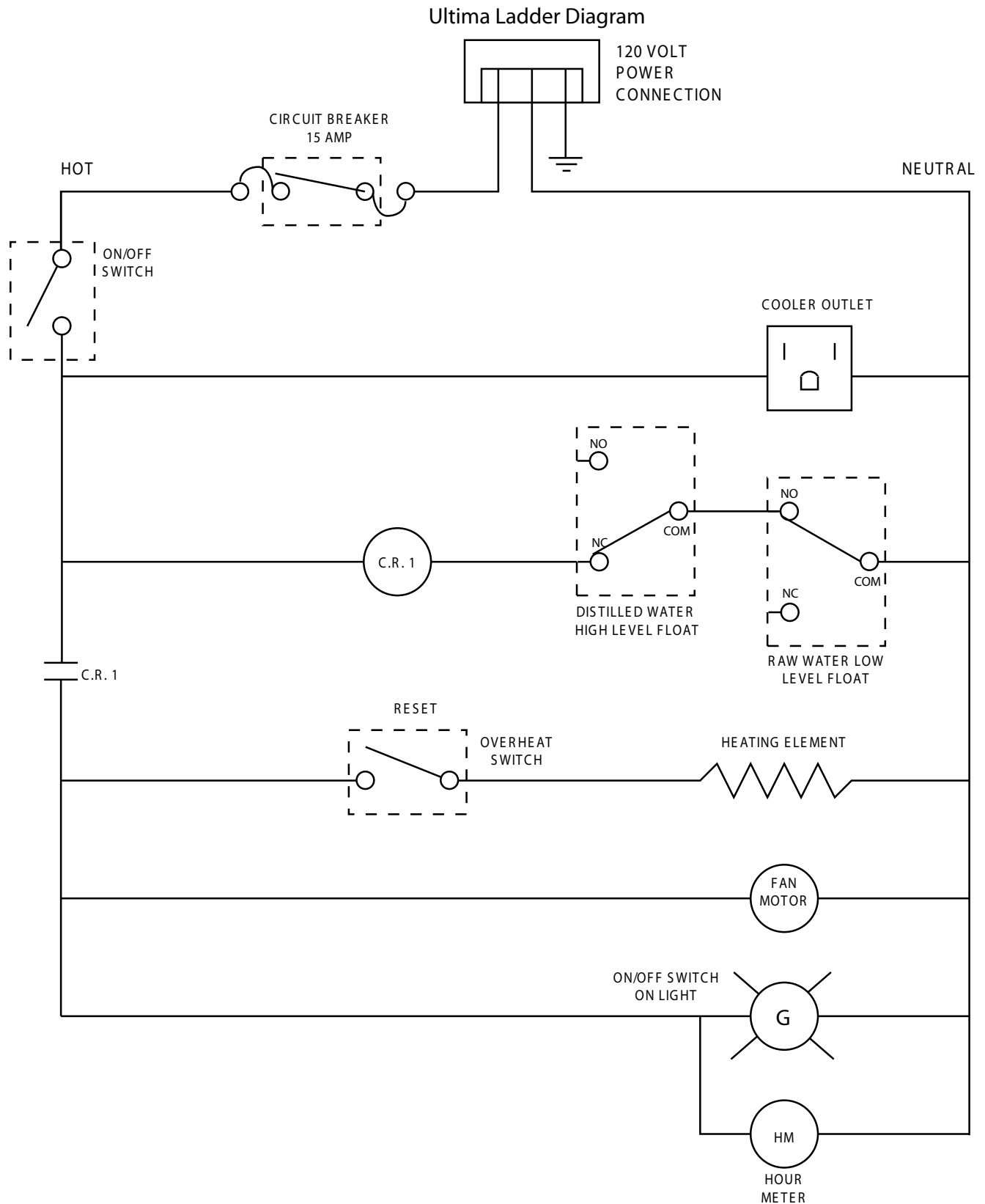


Figure 23C

Electrical Ladder Diagram



Trouble Shooting Guide

Symptom	Probable Cause	Solution
Unit does not operate.	Unit not plugged in.	Plug unit into power source.
	Power failure, circuit breaker, fuse blown	Reset breaker. Replace fuse.
	No water in top tank	Fill the top tank.
	Lower tank is full tank.	Drain some water from lower tank.
	Timer control has turned the unit off.	Turn knob one click counterclock wise.
Unit runs, but exhaust air is cold.	Air blockage in the feedline from the mini-softener.	Disconnect tubing from the level control housing, lower to restart the flow. Reinsert tubing into unit.
	Heating element failure.	Replace the heating element
Top tank overflows.	Feed pressure is too great.	Install a pressure regulator.
Saddle tapping valve leaks.	Loose clamp.	Tighten clamp screws. DO NOT crush the source water tubing.
	Tubing deformed.	Replace damaged area of tube.
Leak at fitting.	Tubing not pushed completely into fitting.	Push tubing into fitting past the o-ring seal.
	Defective tube.	Cut damaged area from tube or replace the tube.
	Worn or damaged o-ring.	Replace o-ring.
Water has bad taste or smell.	Post filter is depleted.	Replace post filter. Drain distilled water completely.

Symptom	Probable Cause	Solution
Water overflows the level control housing when the distiller is off.	Float valve stuck or failed.	Adjust or replace the float valve.
Water overflows the level control housing when the heater is on.	Blockage in the boiler outlet or condensing tubing or connector.	Replace or modify blocked part.
Water in level control housing, but not in boiling chamber.	Restrictor blockage.	Clean and replace.
Dirt in raw water tank.	Excess sediment in feed water.	Clean Tank. Install a sediment filter in the water line before the mini-softener.
Water overflows or leaks from dispenser.	Float valve in dispenser is obstructed or faulty valve.	Adjust or replace float valve.
Dispenser not cooling.	Coolant gone from compressor.	Remove and deliver to dispenser manufacturer's approved service center.

