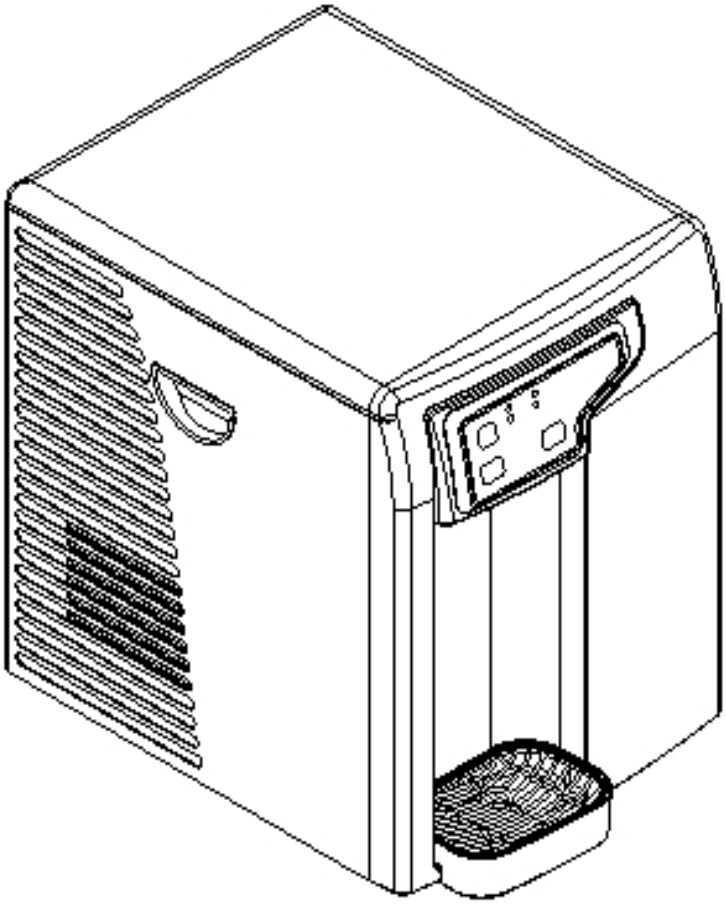
SERVICE MANUAL

for

PureWaterCooler™
by Vertex
Model PWC-900



P/N man-7012

Table of Contents

PWC-900 Cooler
1. Introduction

The PWC-900 line of point of use counter-top coolers are designed to give years of reliable Service. The cooler has a single spigot that dispenses water at 2 different temperature levels – hot and cold temperature water. The cold water is chilled in the “Purechill” ice bath (cold tank). Water is chilled as it runs through a long coiled section of stainless steel tubing sitting in the ice bath. Product water never comes in contact with the atmosphere until the water is dispensed into the users cup. The ice bath can be accessed for cleaning by removing the cooler main top cover (see section 4).

The hot tank is made of stainless steel and holds 1/2 gallon of hot water. It is important not to turn on the hot tank when there is no water in it as this will damage the heating element.

The compressor is a sealed unit and is not serviceable in the field. The compressor can be replaced by a qualified refrigeration technician with proper tools and equipment.
Please consult the factory if the compressor needs servicing.
CAUTION: *If the compressor has been stopped by switching it off or unplugging power*, WAIT 10 MINUTES *before turning the compressor on again. The compressor may stall and burnout if powered back on without waiting.*

Electrical power is required for the cooler to fill the cooler with water.

2. Cooler Set-Up
(for new cooler installation)

Feedwater/Drain Connections

-Feed Connection

2.1 Remove feed water plug (orange) from back of cooler.

2.2 Connect tubing to feed connector on back of cooler.

2.3 WARNING: Do not turn on cooler hot power until cooler tanks are full of water and water can be dispensed from spigot.

2. Cooler Set-Up cont.

2.4 With both hot and cold power switches in the off position, plug the cooler into power.

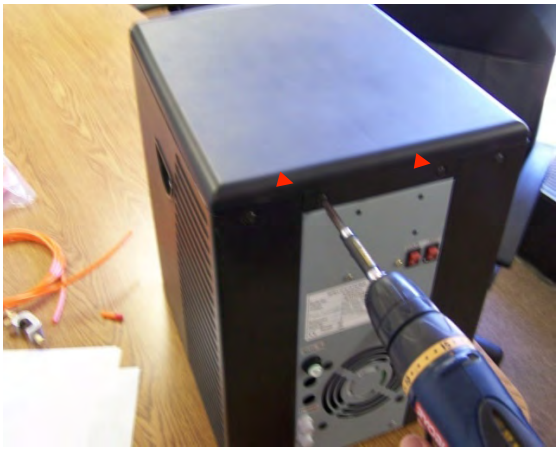
2.5 Press and hold the cold dispense button on the control panel until water begins to flow from the spigot. For the hot tank, press the unlock button, then press and hold the hot dispense button until water dispenses from the hot spigot. This may take a few minutes as the tank must fill completely before the water will dispense. The 1 minute time out may activate if the water takes longer to dispense. If this happens, simply re-press the hot button to continue the hot tank filling process.

2.6 Once both hot and cold buttons dispense water, turn the hot and cold switches on the back of the cooler to the on position. Hot water will be ready quickly, but cold water may take a few hours.

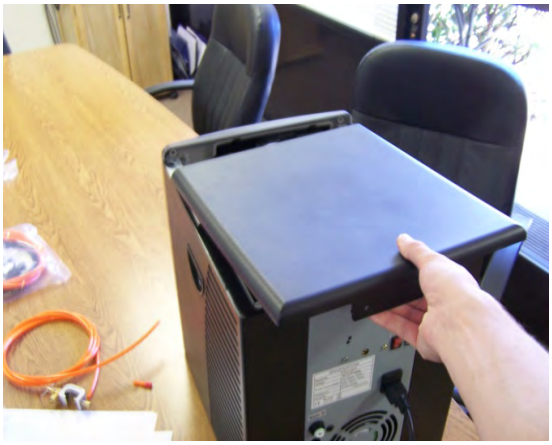
2.7 The cooler is ready for use.

3. Top Cover/Side Panel Removal

3.1 Remove (2) screws on back of cooler top cover



3.2 Slide cover back and lift off.



3.3 Cold tank is now accessible for cleaning and servicing other parts of the cooler.

3.4 Reinstall top cover in reverse order

3. Top Cover/Side Panel Removal

Cont.

3.5 Remove (2) screws on back of cooler side cover.

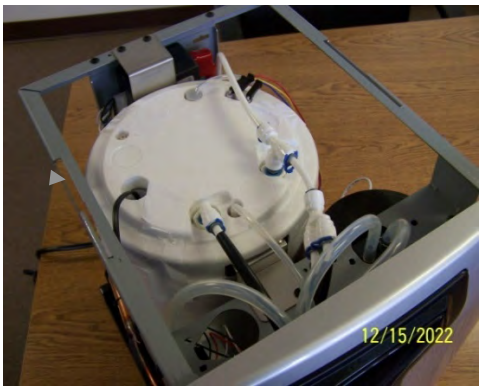

3.6 Slide side cover back about half way off until tab in side cover lines up with slot in cooler frame.


3.7 Once slot and tab are lined up, pull side cover away from cooler.

3.8 Reinstall side panels in reverse order


4. Access Cold Tank

4.1 Remove top and side covers (See section 3)



4.2 Disconnect and emove tubing from both sides of ‘T’ fitting

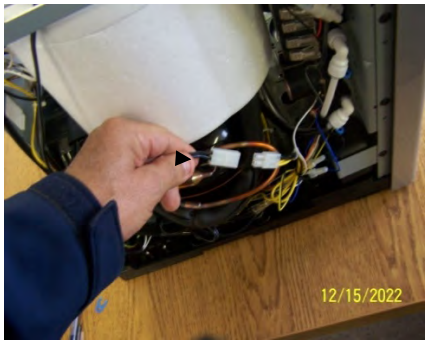
4.3 Remove silicon tube and ¼” tube from fitting

4.4 Remove ‘T’ fitting

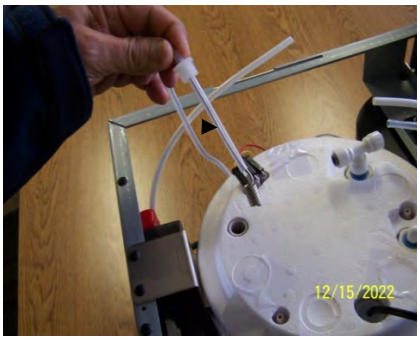
4. Access Cold Tank

cont.

4.5 Disconnect circulation pump connector

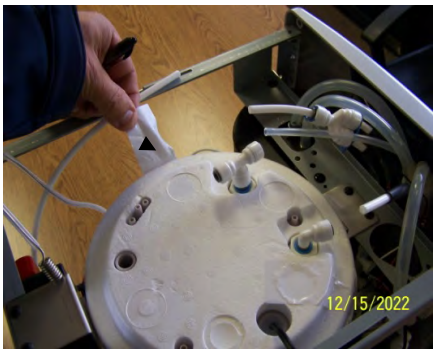


4.6 Remove temperature probe



4.7 Remove ice bath level sensor probes (3).

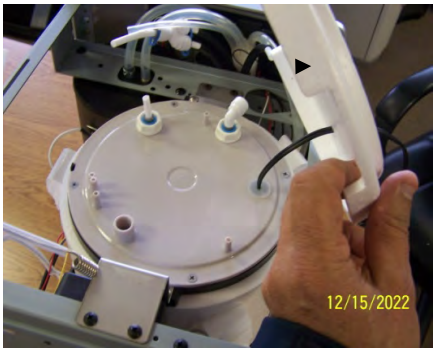
4.8 Peal back tape holding top foam (4 plcs)



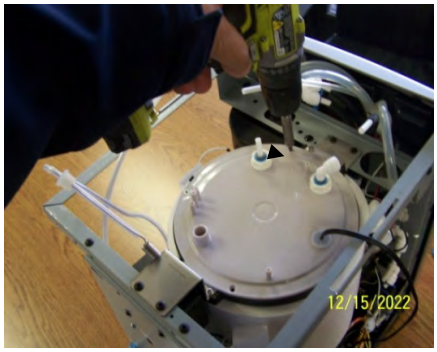
4. Access Cold Tank

cont.

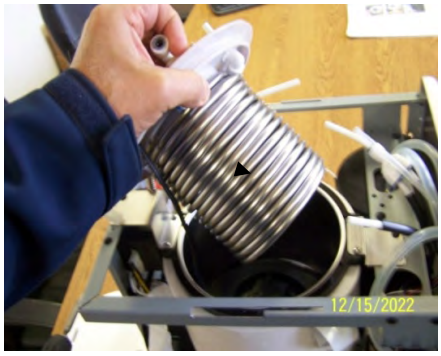
4.9 Remove foam top



4.10 Remove 4 screws securing top/Purechill assembly



4.11 Remove top/Purechill assembly from cold tank



4.12 Remove base/circulating pump assembly from cold tank

4. Access Cold Tank

cont.

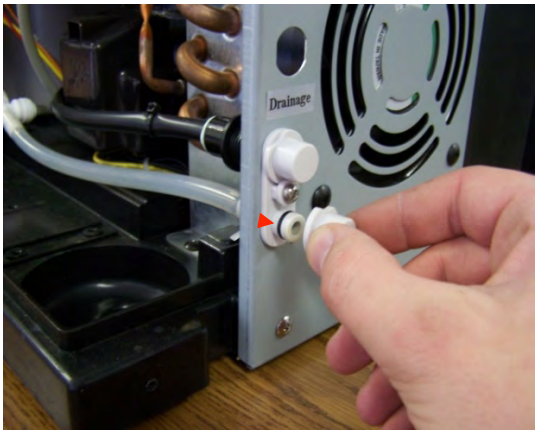
4.13 View of cold tank with top/Purechill assembly and base/circulation pump removed.

4.14 Re-assemble cold tank in reverse order.

4.15 NOTE: When replacing lid, align tab on tank with slot in lid.

5. Removing/Replacing Hot Tank

5.1 Drain water from hot tank by removing bottom drain cap.



5.2 Remove top cover and left side cover (sec. 3)

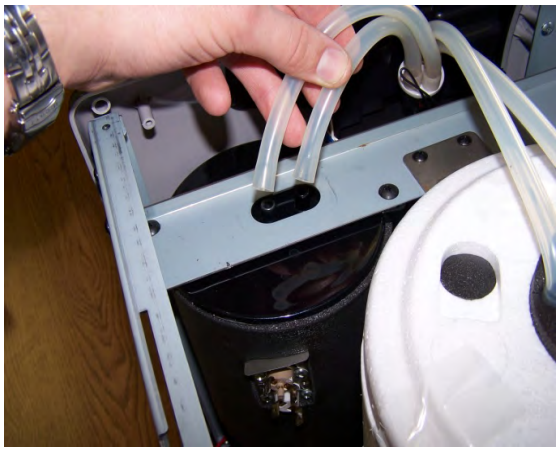
5.3 Remove (4) electrical connectors from hot tank temperature sensors.

5.4 Remove (2) electrical connectors from hot tank heater coil leads.

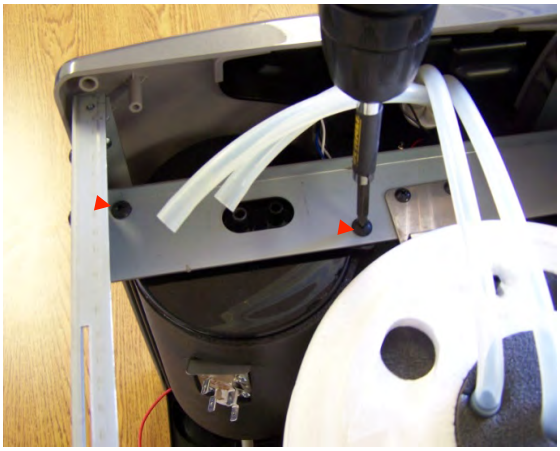
5. Removing/Replacing Hot Tank

Cont.

5.5 Remove (2) tubes from top of hot tank.



5.6 Remove (2) mounting screws.



5.7 Remove hot tank from cooler.

5.8 Remove inlet tubing.

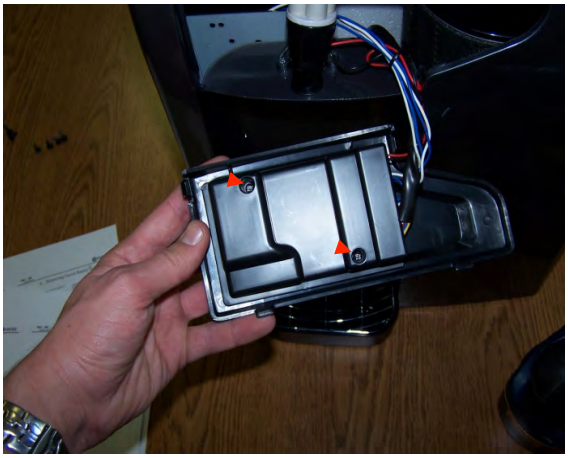
5.9 Assemble hot tank in reverse order.

5.10 Remove thermal sensors from hot tank. Save and install on new hot tank.

6. Remove/Replace Circuit Board

6.1 Remove dispensing control panel by pulling outward from the bottom. Once the panel is loose, remove by pulling down.

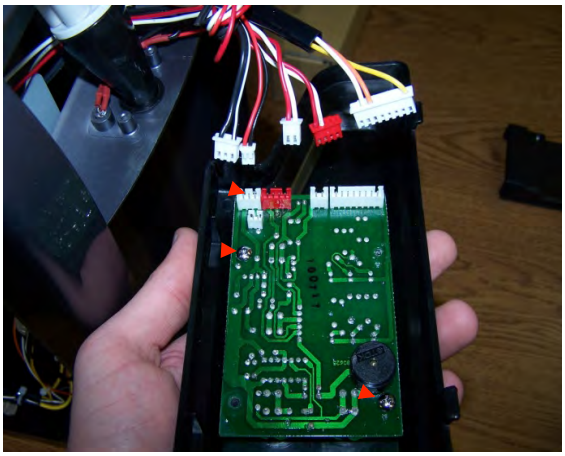
6.2 Remove circuit board cover, by removing (2) screws from the back and pulling the cover off.



6.3 Disconnect (5) electrical connectors from board.

6.4 Remove (2) screws holding circuit board to panel.

6.5 Re-assemble in reverse order

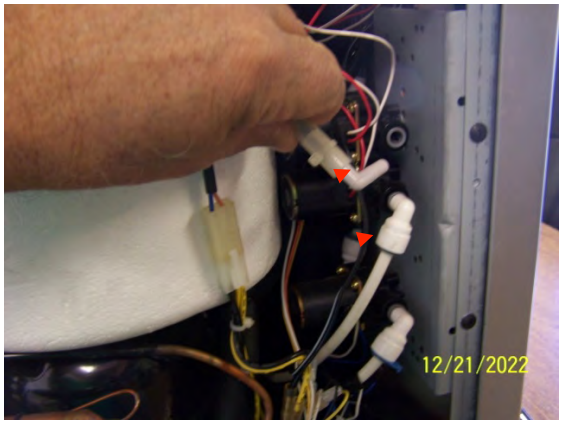


7. Remove/Replace Dispense Solenoids

7.1 Remove top and left side cover of cooler (section 3)

7.2 Remove the control panel, remove the control pane back cover, and disconnect the electrical connectors. (sec. 6) Set control panel aside.

7.3 Locate 3 solenoids on left side of cooler

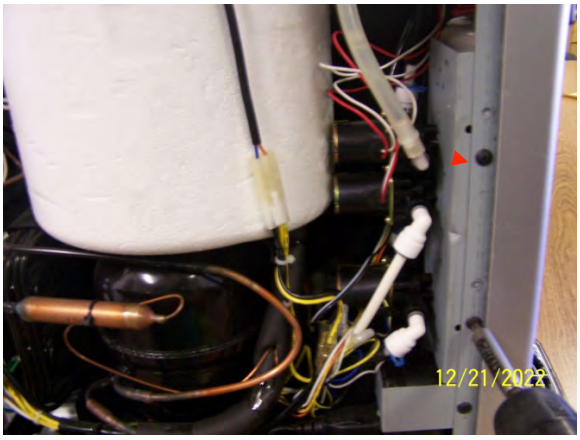


7.4 Remove 3 quick connect fittings from the 3 outlet ports of the 3 solenoids

7. Remove/Replace Dispense Solenoids

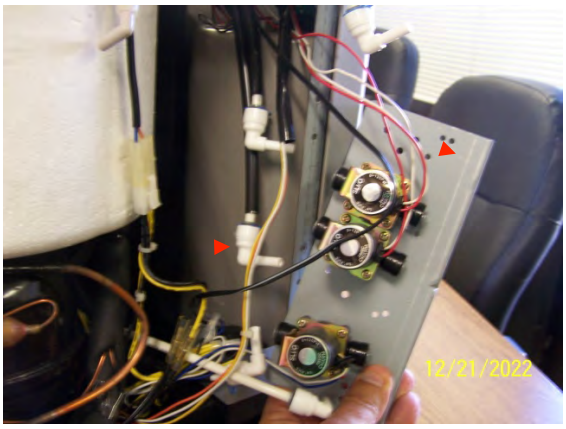
cont.

7.5 Remove 2 screws holding solenoid mounting plate to cooler frame



7.6 Pull mounting plate out to access solenoids

7.7 Remove 3 quick connect fittings from the 3 outlet ports of the 3 solenoids

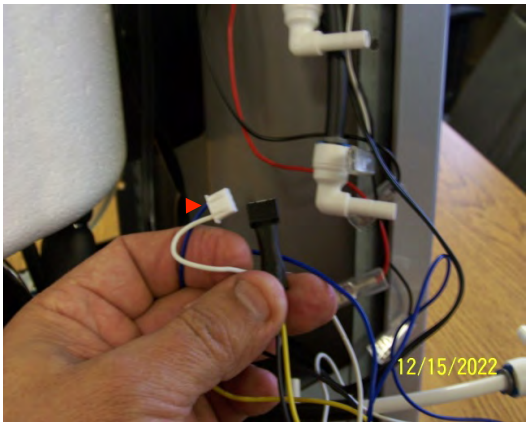


7. Remove/Replace Dispense Solenoids

cont.

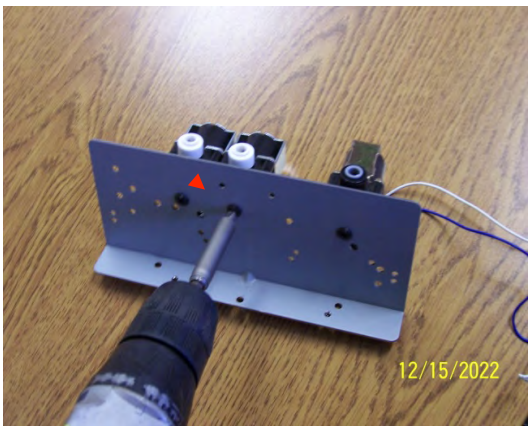
7.8 Remove electrical connectors for hot and cold solenoids from control panel

7.9 Disconnect connector of ice bath fill solenoid



710 Remove solenoids from bracket by removing screws

7.11 Re-assemble in reverse order

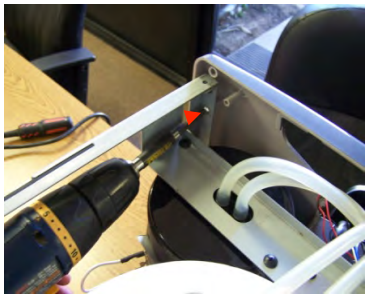


Make note of the following:

a. Water flow through the solenoid is directional. There is an arrow molded in the side of the solenoid body showing water flow direction. Make sure the solenoid is oriented correctly. Water can leak from the solenoid if not installed correctly

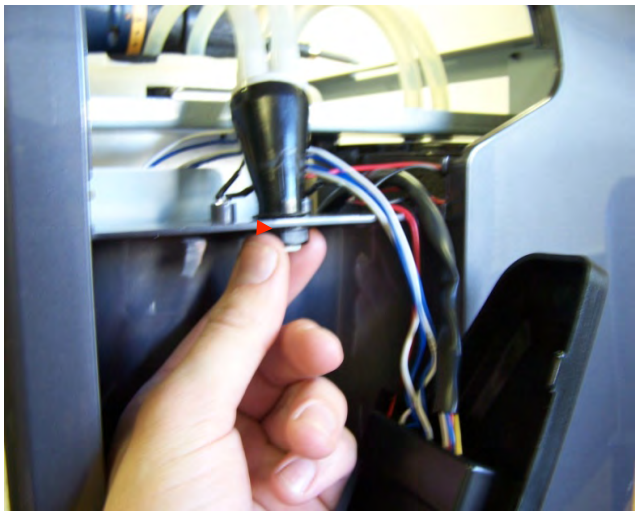
8. Remove Front Panel

8.1 Remove top and side covers of cooler (section 3)



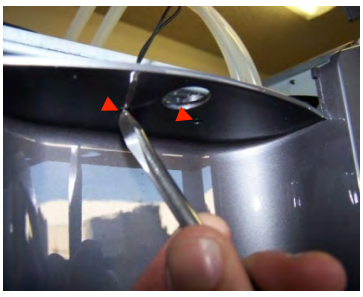
8.2 Remove the control panel (section 6)

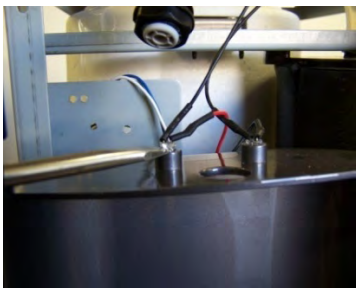
8.3 Remove (2) screws from the top of the front panel. The lower part of the front panel sets on two pins.



8.4 Unscrew spigot nut and remove spigot from front panel.

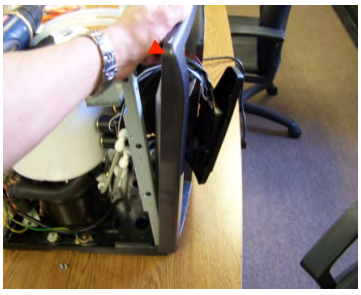
8.5 Using pointed tool such as a flathead screwdriver, push up on the LEDs to unseat them from the front panel. Then, using a flathead screwdriver, pry the LEDs from the front panel.





8.6 Tilt the front panel forward.

8.7 Pass all wiring and the control panel through the opening in the front panel.



8.8 Lift front panel off of the two pins on the base. Remove the panel.

8.9 Re-assemble in reverse order.

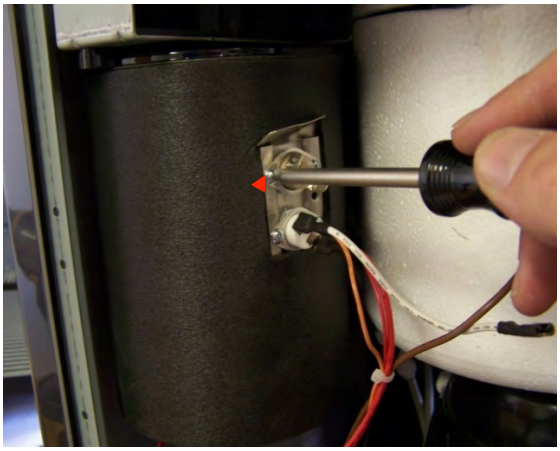
9. Remove/Replace Thermal Sensor

10.0 The hot tank thermal sensors are located on the outside of the hot tank. There are two thermal sensors. The sensor located lower on the hot tank controls the daily operation of the heating element. The upper thermal sensor is an overheat safety switch and cuts power to the hot tank should a malfunction occur and the tank starts to overheat.

10.1 Unplug cooler from power source for this operation.

10.2 Remove right side cover per sec. 3.3

10.3 There are (2) thermal sensors attached with screws to the hot tank. The lower sensor automatically turns the heating element on and off to maintain the water at 180 ºF. The upper sensor is the over temperature sensor. This sensor activates if the temperature on the tank goes over 212 ºF. If this sensor is activated due to a overheat condition, it will cut the power to the heating element. If this happens, it will automatically reset once the temperature decreases.
To check if either thermal sensor is good, use a continuity tester (ohm meter) to check for continuity across the thermal sensor. Before testing, make sure that at least one of the wires is disconnected from the sensor so as not to test continuity across a different part of the system. Make sure the thermal sensor is at ambient temperature for this test. If there is no continuity, replace the sensor.



10.4 To change either sensor, disconnect (2) electrical terminals from sensor.

10.5 Remove (2) screws holding sensor to tank.

10.6 Install new thermal sensor, replace screws, reconnect electrical terminals to sensor.

10.7 Replace right side cover.

10. Cold Tank Temperature Adjustment

11.0 The cold water temperature adjustment is located on the back of the cooler in the middle of the panel. An expansion tube senses temperature in the cold tank and open and closes the thermostat.

11.1 The cold adjustment is a shaft with a screw driver slot on the end.

11.2 To make the water colder, using a screw driver, rotate the shaft clockwise. For warmer water rotate the shaft counter clockwise. There are stops on the adjustment shaft. DO NOT force the control shaft over the stop. If this happens, it will be necessary to replace the temperature controller

270º Travel

STOP ▼

WARMEST

◄

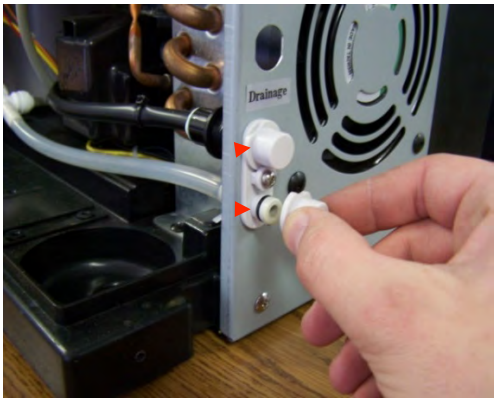
COLDEST

STOP

Normal Travel is 270º

11. Draining Cooler Tanks

Completely draining the tanks is required when shipping the cooler or when one the of the tanks needs replacing. This procedure will allow you to remove all the water from the cooler.



11.1 Hot and Cold Tank Drain: Rotate drain caps until caps are able to be pulled off of the drain port manifold. Remove drain caps. Water will pour from the ports.

11.2 Drain any remaining water in the system by pressing the hot and cold dispense buttons.

11.3 Replace Drain Cap(s).

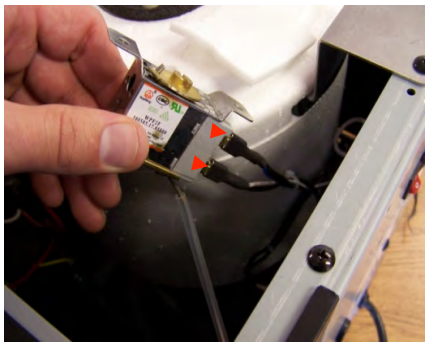
12. Remove/Replace Cold Tank Sensor

12.1 The cold tank sensor is extremely reliable and rarely needs replacing. Its function is to control the cold water temperature by turning the compressor on or off as needed.

11.2 Remove the top cover of the cooler (sec. 3)

11.3 Slowly pull out the sensor.

11.4 Remove (2) screws on back of cooler that hold temperature switch to cooler.



11.5 Pull temperature switch out of cooler and remove (2) electrical connectors.

11.6 The Cold Tank Sensor is now free of the cooler.

11.7 Re-assemble in reverse order.

13. Sanitization Procedure

The sanitization procedure is performed to reduce/eliminate any bacteriological growth in the cooler tanks and dispensing plumbing. Bacteriological growth can be the cause of some taste and odor in the water.

The procedure is as follows:

1. Mix ½ Tsp. of common household bleach (5.25%) in 1 gallon of clean water into a filter housing fixed with ¼" ports.
2. Unplug the cooler from the power source.
3. Drain all water from the cooler tanks.
4. Plumb the filter housing into the inlet water to the cooler.
5. Simultaneously press the hot and cold dispense buttons on the control panel.
6. When the mixture begins to flow from the spigot, release the hot dispense button.
7. When the mixture begins to flow from the spigot again, release the cold dispense button.
8. Let the sanitizing solution stand in the cooler for 10 minutes.
   CAUTION: Leaving the sanitizing solution in the cooler for more than 10 minutes can cause taste problems in the water.
9. While solution stands, disconnect the filter housing from the water line.
10. Drain the cooler completely.
11. Re-plumb fresh tap water to the cooler.
12. Fill the cooler completely with water. Let a few pints of water drain out of the spigot while pressing the hot button and then the cold button.
13. Drain the cooler completely.
14. Repeat steps 12-13, 2-3 times.
15. The cooler is now sanitized and ready for normal use.

14. Trouble Shooting

Water not cold from cold tank

(Water dispenses from spigot but is not cold)

Possible causes	Solution
1. Power switch not On	Make sure cold power switch on the back panel is on.
2. Adjust temperature control	The thermostat temperature control adjustment is located on the back of the cooler. (see section 9)
3. All cold water has been used	Cooler needs time to recover. wait 10-15 minutes until water cools

14. Trouble Shooting

Cont.

No Hot Water from Hot Tank

Possible Causes	Solution
1. Cooler not plugged in	Make sure power cord is plugged into wall socket
2. Power switch not On	Make sure Hot power switch on back panel is on and hot power light on front is illuminated
3. Electrical terminal disconnected	Check to see that both wires are connected to the heating element terminals. These are located at the bottom of the hot tank
4. Heating element failure due to scaling	Check for continuity across hot tank heater terminals. To do this, unplug unit from wall power. Disconnect one of the connector at the heating element terminals (at bottom of tank). Using an ohm meter, check for continuity across the 2 terminals. If there is no continuity (open), the tank must be replaced.

13. Trouble Shooting Cont.

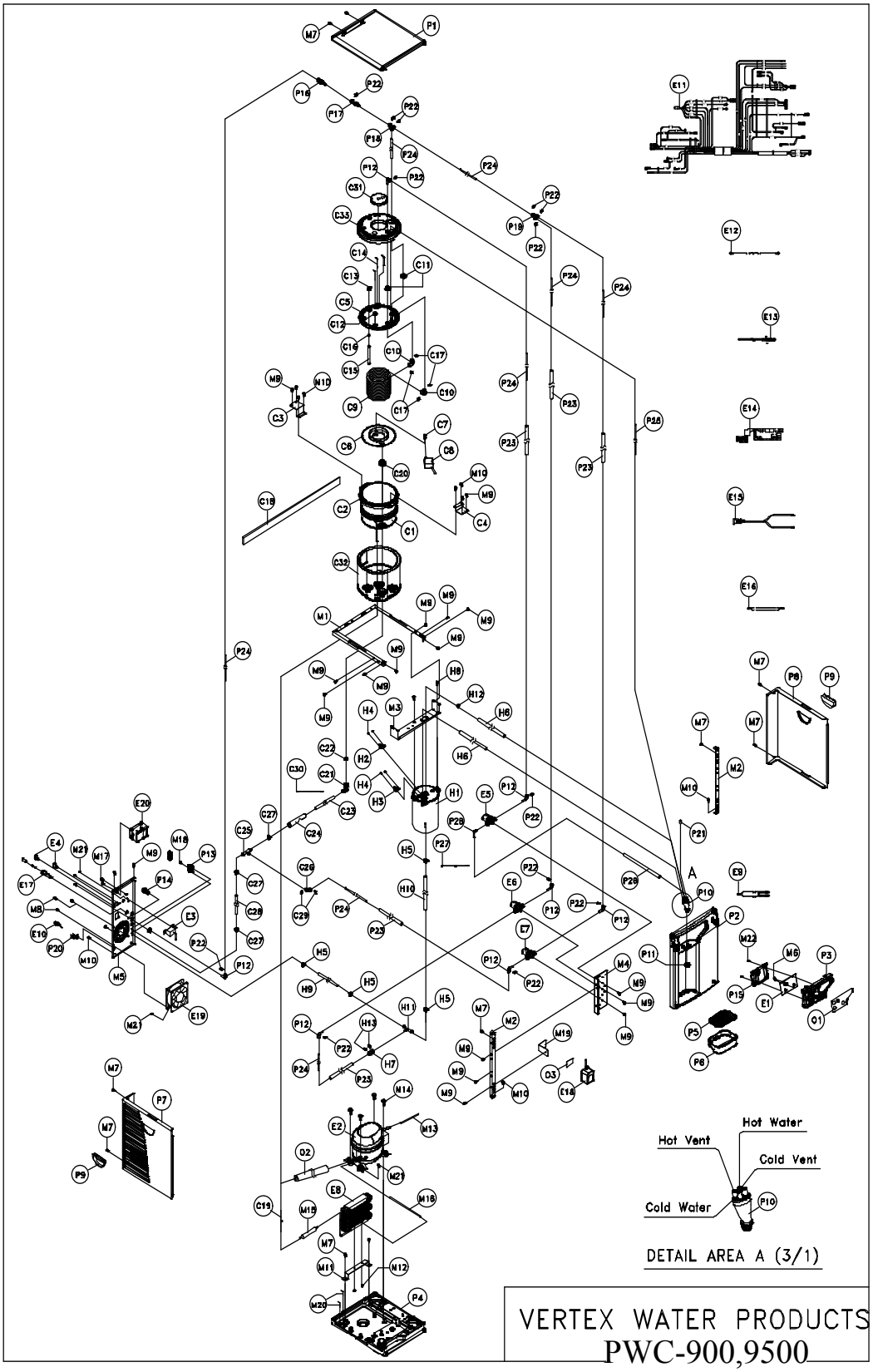
No Hot Water from Hot Tank cont.

Possible causes	Solution
5. Thermal sensor failure	The thermal sensors are attached to the hot tank. The upper sensor is a ? ºC sensor and functions as an over heat safety. The lower sensor is a 82 ºC sensor and controls the heating element function. The lower sensor would be the problem if there was no hot water. To see if the sensor is functioning properly, first unplug the cooler from the wall. remove the terminal from the sensor. Using an ohm meter, check for continuity If there is no continuity (open), replace sensor as per section 9.
6. Hot tank turned on without water in tank	The hot power should never be turned on without water in the tank. If this happens, the upper thermal sensor on the hot tank will switch, cutting power to the hot tank. This is a safety device to prevent the heating element from burning itself out due to dry heating. Once the hot tank cools off the switch will be reset automatically to operating condition. See section 7.

15. Specifications

	PWC-900
Voltage/Frequency	120 VAC/ 60 Hz
Weight (dry)	45 lbs.
Total Water Capacity	1.5 gallons
Hot tank	.5 gallons
Cold tank	1.0 gallons
Room tank	
Power Consumption Total	600 Watts
Hot Tank	500 Watts
Cold Tank	100 Watts
Temperature	
Hot	180 ºF average
Cold (adjustable)	38 ºF average
Refrigerant	R134a 36 mg.

16. Exploded View



17. Parts List

Item No.	Description	Part Number
P1	Top Cover	cl4-9300
P2	Front Panel (silver)	cl4-9301/S
P3	Control Panel Housing	cl4-9302
P4	Base	cl4-9503
P5	Drip Tray Assembly	cl4-9304
P6		
P7	Left Side Panel	cl4-9505
P8	Right Side Panel	cl4-9506
P9	Handle	cl1-9235
P10	4-Way Spigot w/blkhd nut	cl4-9306
P11	Nut, Bulkhead	
P12	1/4" Stem Elbow Fitting	dm-2716
P13	2-Way Drain Fitting	cl4-9307
P14	Bulkhead Fitting, 1/4"	dm-2733
P15	Circuit Board Cover	cl4-9308
P16	Strainer	cl4-9309
P17	Inline Check Valve, 1/4st x 1/4t	cl4-9310
P18	T fitting, 1/4"	dm-2711
P19	Y fitting, 1/4"	
P20	Strain Relief, cord	cl1-9247
P21	Cap, silicon	
P22	Locking clip, fitting	sl-2737
P23	PVC tubing cover	
P24	1/4" tubing, white	tbwh-1501
P25	Silicon Tube, SI-98-170	cl4-9409
P26	Silicon Tube, SI-88-255	cl4-9355
P27		
P28	Elbow fitting, 1/4 stem x 1/4 barb	

Item No.	Description	Part Number
M1	Upper Frame	cl4-9313
M2	Side Rail	cl4-9314
M3	Hot Tank Bracket	cl4-9315
M4	Solenoid Bracket	cl4-9316
M5	Rear Plate	cl4-9317
M6	Screw, 3 x 8	cl1-9231
M7	Screw	cl4-9515
M8	Screw, Fan	
M9	Screw 4 x 8 black	cl1-9216
M10	Screw, Flat Head, 4 x 12	cl2-9054
M11	Condensor Bracket	cl4-9318
M12	Screw, 4 x 7	cl1-9256
M13	Copper Tube	cl4-9319
M14	Mounting Screw, Compressor	
M15	Dryer	cl1-9241
M16	Copper Connection Tube	
M17	Screw	
M18	Drain Fitting Mounting Screw	
M19	Transformer Bracket	cl4-9321
M20	Leak detector probes,20mm	cl4-9520
M21	Screw 4 x 7	cl1-9256
M22	Circuit Board Cover Screw	
M23	Screw	

17. Parts List

continued

Item No.	Description	Part Number
E1	Circuit Board	cl4-9341
E2	Compressor	cl2-9047
E3	Cold Temperature Switch	cl4-9335
E4	Power Switch	cl1-9238
E5	Cold Dispensing Solenoid wh	cl4-9336
E6	Hot Dispensing Solenoid rd	cl4-9362
E7	Solenoid, Ice Bath	cl4-9593
E8	Condenser	cl4-9337
E9	LED Wire	cl4-9339
E10	Power Cord	cl2-9019
E11	Main Wire Harness	cl4-9338
E12	Ground Wire	cl4-9340
E13	Bridge Diode	
E14	Wire Harness	
E15	Transformer Wire	cl4-9340
E16	Leak Detector Wire	
E17	Fuse Holder	cl1-9252
E18	Transformer	cl4-9532
E19	Fan	cl4-9535
E20	Control Module	cl4-9534

Item No.	Description	Part Number
H1	Hot Water Tank Complete Set	cl4-9322
H2	105°C Temp. Controller	cl2-9024
H3	82°C Temperature Sensor	cl1-9257
H4	Screw, 3 x 4	cl1-9258
H5	Tube Clamp	cl4-9329
H6	Silicon Tube SI-88-210	cl4-9410
H7	Screw, 3 x 4	
H8	Mounting Screw, Hot Tank	
H9	Silicon Tube SI-85-95	cl4-9411
H10	Tube Clamp	cl4-9329
H11	Tee Fitting	cl4-9328
H12	Silicon Tube SI-85-245	cl4-9412
H13	Union Connector, 1/4"	dm-2708
H13	Locking Clip	sl-2737

17. Parts List

continued

Item No.	Description	Part Number
C1	Cold Tank Complete Set	cl4-9341
C2	Cold Tank Mtg. Bckt, Plastic	cl4-9351
C3	Rear Cold Tank Bracket	cl4-9342
C4	Front Cold Tank Bracket	cl4-9343
C5	Cold Tank Lid	cl4-9400
C6	Ice Bath Base	cl4-9401
C7	Pump Fitting	cl4-9403
C8	Pump, circulating	cl4-9366
C9	Pure Chill SS Tubing Coil	cl4-9404
C10	Elbow Bulkhead union w/nut	cl4-9405
C11	Nut	
C12	Grommet, pump wire	cl4-9406
C13	Grommet, cold sensor	cl4-9407
C14	Ice Level Sensor Probes,50mm	cl4-9402
C15	Well, Cold Temp. Sensor	cl4-9350
C16	O ring	cl4-9347
C17	Locking Clip	sl-2737
C18	Insulation	cl4-9357
C19	Capilary Tube	cl4-9353
C20	Nut	
C21	Elbow Fitting w/nut, o-ring	cl4-9408
C22	O Ring	
C23	Silicon Tube Sl-85-40	cl4-9413
C24	Insulator	
C25	T fitting, Barb x QC	
C26	Union Elbow fitting	dm-2729
C27	Clamp	cl4-9329
C28	Silicon Tube Sl-85-270	cl4-9414
C29	Locking Clip	sl-2737
C30	Cable Tie	
C31	Insulating Foam	
C32	Cold Tank Foam - Main	
C33	Cold Tank Foam - Top	cl4-9352

Item No.	Description	Part Number
O1	Control Panel Sticker	cl4-9330
O2	Insulated Sleeve	cl4-9331
O3	Self-Adhesive Foam	cl4-9332
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