

Laboratory Storage Tank



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1 THEORY OF OPERATION

A reverse osmosis unit makes a limited amount of water at a time. It is therefore necessary to store it in a storage tank. The laboratory storage tank is equipped with float switches, which will turn a reverse osmosis unit off and on when the water reaches a predetermined point in the storage tank. The distribution pump will operate on a constant curve based on the run percentage "SETPOINT", any unused water will recirculate back to the storage tank.

The pump sends the water to the deionizer or customer provided DI tanks. The water from the DI will pass across a resistivity cell, through the UV disinfection through a filter, and then will be sent to the point of use.

This tank is also equipped with a spray nozzle on the return loop side of the tank. This will continuously spray down the top of the tank with purified water to minimize bacteria growth. During disinfection, the spray nozzle allows disinfectant to reach all parts of the tank for faster disinfections.

The vent filter on the tank is designed to filter the air when water moves in and out of the storage tank. The filter must be immediately replaced if it gets wet.

NOTE: Please read the Operation Manual before operating or servicing the system. Contact AmeriWater Customer Service with any questions at 1-800-535-5585 Monday through Friday 8:00 a.m. to 5:00 p.m. eastern standard time. For after-hours emergencies follow the instructions on the recorded message. Our on-call technician will return your call as soon as possible. This Operation Manual should be kept near the system and used as a reference and troubleshooting guide.

1.1 Models

Models	Description
0046-4090	55 GALLON LABORATORY STORAGE TANK, DIST
	PUMP,RESISTIVITY,UV,FILTER
0040 4000	100 GALLON LABORATORY STORAGE TANK, DIST
0000-4092	PUMP,RESISTIVITY,UV,FILTER

1.2 Dimensions

Please note that spatial dimensions are at nominal and may vary during installation. Variation with rotating components (i.e., tank vent filters) has been taken into consideration.

Models	Height (ins)	Width (ins)	Depth (ins)
00HC-4090	62.75 +/- 12	33.25	37
00HC-4092	70+/- 12	44.75	40 +/- 6

1.3 Performance

Models	# of Float Switches	Tank Volume	Rated Pump Performance*
00HC-4090	3	55	4GPM @ 55PSI
00HC-4092	3	100	4GPM @ 55PSI

*Flows and pressure are adjustable by changing run percentage on variable speed pump

1.4 Electrical Safety and Supply Requirements

Component	Electrical Supply
Grundfos® CME 5-3 pump (MFID 99950443)	1 Phase, 208-230V - 10/+ 6%, 50/60Hz, 1100W / 6.7- 5.6A
Control assembly	1 Phase, 110-120V, 60Hz





2.1 Flow Schematic



3 INSTALLATION

- 1. Locate the storage tank on a firm level floor. For seismic requirements, drill (4) 5/8" diameter holes into the concrete through the mounting holes in the storage tank feet a minimum of 4" deep. Install (4) 5/8" diameter, HILTI KB-TZ Expansion anchors through the 4 holes on the pads to anchor into the ground. A minimum of 4 threads for each anchor must be below the concrete prior to application of 60 ft-lbs of torque.
- 2. Connect the RO product hose to the storage tank's product water inlet.
- 3. Route the float wire 4-pin female connector to the male 4-pin connector hood on the RO and lock in place.
- 4. Connect the discharge from the pump to the DI process inlet (this is 3/4" FPT, hose barb adapters have been provided in 1/2 & 3/4" variants as well as a standard Silex connection).
- 5. Connect the return from the DI process to the tee on the inlet of the UV Light (this is 3/4" FPT, hose barb adapters have been provided in 1/2 & 3/4" variants as well as a standard Silex connection).
- 6. Make a connection from the discharge of the filter to the point of use loop (It is recommended that there be a shut off valve to facilitate maintenance).
- 7. Connect the return from loop to the return fitting on the side of the tank (It is recommended that there be a shut off valve to facilitate maintenance).
- 8. Install the vent filter cartridge into the vent filter housing.
- 9. Install the post filter cartridge (sold separately) into the post filter housing.
- 10. Plug the line cord for the control panel into a dedicated 20 amp 115VAC GFI outlet.
- 11. Plug the pump into a dedicated 220VAC, single phase disconnect.
- 12. Disinfect the system per the instructions in section 6.

4 START-UP 4.1 Pump Start-up

The CME pump must be filled with liquid and vented before start-up or if the pump has been drained. To do so:

- 1. Close the tank-to-pump valve (refer to Section 2 for locations of components).
- 2. Remove priming plug in the pump sleeve (see Figure 1).
- 3. Slowly open the tank-to-pump valve until a steady stream of liquid runs out of the priming port.
- 4. Replace priming plug and tighten securely.
- 5. Start the pump.
- 6. Completely open the tank-to-pump valve.

4.1.1 Adjusting Set-points on the Grundfos® CME Pump

- 1. Press the "OK" button on the controller to wake the screen. The home screen will be displayed on the pump.
- 2. Use the \triangleleft & \blacktriangleright keys to scroll over until the settings menu appears.
- 3. Use the ▼ key to scroll through the settings menu until "Monitoring Functions" is displayed. Press the "OK" key to enter the menu.
- 4. Use the ▼ key to select "Limit-Exceeded Function". Press the "OK" key to enter the menu.
- 5. Use the "OK" key to enter the "Measured" menu. Scroll up to "Not Active" and use the "OK" key to disable the dead head shutoff function.

NOTE: This setting should be turned back on after making the necessary changes to the pump operating speed. Failure to turn the setting on will lead to dry running of the pump on dead end loop systems. This may cause the pump to overheat.

- 6. Use the back button to return to the settings menu.
- 7. Use the ▲ key to scroll up until the "Set-Point" setting is displayed. Press the "OK" key to enter the set-point menu.
- 8. Press the "OK" key to modify the set-point. Use the arrow keys to set the set-point to the desired value. The percentage displayed directly controls the operating speed of the pump (i.e. set-point of 90% will operate the pump at 90% of the maximum speed).
- 9. Use the back button to return to the settings menu. Scroll to "Monitoring Function" using the ▼ key. Press the "OK" key to enter the menu.



Fi Drain plug Priming



- 10. Use the ▼ key to scroll down to "Limit-Exceeded Function". Press the "OK" key to enter the menu.
- 11. Use the ▼ key to select "Limit" and adjust the limit to approximately one PSI over the operating point of the pump at the new speed using the arrow keys.
- 12. Use the back button to return to the "Limit-Exceeded Function" menu. Use the ▲ key to select "Measured". Press OK to enter the menu.
- 13. Select "Discharge Pressure" from the menu.
- 14. The pump shall now operate with no surging during operation. Shut the ball valve located after the pump discharge and verify that the pump shuts off at dead head.

NOTE: If the pump begins switching on and off after setting the shutoff limit, navigate to Limit 1 Exceeded \rightarrow Limit and increase the shut off pressure in one PSI increments until the pump functions as intended.

15. Open the discharge valve and return the system to normal operation.

4.2 System Start-up

- 1. Verify that all connections have been made on the system.
- 2. Ensure that the drain valve on the bottom of the tank is closed and the valve to the pump inlet is open.
- 3. Start the RO to add water to the storage tank.
- 4. Power on the system.
- 5. Allow the UV light and resistivity meter to complete the self diagnostic tests.
- 6. Turn on devices downstream from the storage tank.
- 7. Verify that the post filter inlet and outlet gauges have less than a 10 PSI drop across them.
- 8. Use the return flowmeter to adjust the pump operating percentage "SETPOINT" to obtain the desired flow during operation (see Section 4.1.1 to adjust the "SETPOINT").

5 OPERATION

The distribution pump will operate on a constant curve based on the run percentage "SETPOINT", any unused water will recirculate back to the storage tank (see Section 4.1.1 to adjust the "SETPOINT"). The tanks are equipped with a recirculation header that contains a pressure relief valve, spray bar, dump valve, pressure gauge, temperature gauge, and sample port. The pressure relief valve works to maintain water pressure under its set-point. The spray bar returns water from the distribution loop back to the storage tank using spray nozzles to prevent stagnant water.

The laboratory storage tanks are equipped with three float switches: high-level, mid-level, and base-level. All three float switches are close on rise and the high and mid-level floats tie into the RO. The high-level float closing turns off the RO, while the mid-level float opening turns the RO on to request more water. The base-level float connects to the CME distribution pump to act as a kill switch to prevent the pump from operating when there is no water (running dry).

All CME pumps provided from AmeriWater have been factory set to control mode "Controlled" (see paragraph below) and have been programmed to operate on a constant curve at the rated flow mentioned previously. These models also use a pressure transducer to monitor the discharge pressure during operation. The transducer allows the pump to recognize when the pump is operating under a dead head condition (no water usage). Under this condition, the pump will shut off based on a maximum pressure limit allowed at the pump discharge. To increase or decrease the speed at which the pump operates, follow steps outlined in Section 4.1.1. The number of starts and stops via the power supply must not exceed four times per hour. When switched on via the power supply, the pump starts after approximately five seconds.

NOTE: All changes to set-points are possible with the pump operating.

In control mode "Controlled," the pump will adjust its performance, i.e., pump discharge pressure, to the desired set-point for the control parameter. In control mode "Uncontrolled," the pump will operate according to the constant curve set.

5.1 Grundfos® CME 5-3 Control



Figure 2 – CME 5-3 Control Panel

Control panels functions are described in the table below (reference Figure 2 for Position number):

Pos.	Symbol	Description

1	\bigcirc	Grundfos® Eye: This shows the operating status of the pump. See Section 5.1.1 for more information.
2		Graphical Colour Display: Displays information and menus
3	(F)	Back Button: Returns user to previous menu
4	$\langle \rangle$	Left and Right Arrows: With these buttons, the user can navigate between main menus, displays and digits. When the menu is changed, the display always shows the top display of the new menu.
	\otimes	Up and Down Arrows: Buttons used to change values. Additionally, these buttons you can navigate between submenus.
	OK	OK: Saves changed values, resets any alarms and expands the value field. It also enables radio communication with Grundfos® GO and other products of the same type. When you try to establish radio communication between the pump and Grundfos® GO or another pump, the green indicator light in Grundfos® Eye flashes. A note also appears in the pump display stating that a wireless device wants to connect to the pump. Press on the pump control panel to allow radio communication with Grundfos® GO and other products of the same type.
5		Power: This makes the pump ready for operation or starts and stops the pump. <i>Start:</i> If the button is pressed when the pump is stopped, the pump only starts if no other functions with higher priority have been enabled. <i>Stop:</i> If the button is pressed when the pump is running, the pump always stops. The "Stop" text next to the button is on.
6		Home: This button returns the user to the main menu.

5.1.1 Grundfos® Eye

The operating condition of the pump is indicated by the Grundfos® Eye. See **Figure 3** for a list of possible indications the pump.

Grundfos Eye	Indication	Description
00000	No lights are on.	The power is off. The pump is not running.
<u> </u>	The two opposite green indicator lights are rotating in the direction of rotation of the pump when seen from the non-drive end.	The power is on. The pump is running.
00000	The two opposite green indicator lights are permanently on.	The power is on. The pump is not running.
<u> </u>	One yellow indicator light is rotating in the direction of rotation of the pump when seen from the non-drive end.	Warning. The pump is running.
	One yellow indicator light is permanently on.	Warning. The pump is stopped.
	The two opposite red indicator lights flash simultaneously.	Alarm. The pump is stopped.
	The green indicator light in the middle flashes quickly four times.	This is a feedback signal which the pump gives in order to ensure identification of itself.
	The green indicator light in the middle flashes continuously.	Grundfos GO or another pump is trying to communicate with the pump. Press on the pump control panel to allow communication.
00000	The green indicator light in the middle is permanently on.	Remote control with Grundfos GO via radio. The pump is communicating with Grundfos GO via radio connection.
00000	The green indicator light in the middle flashes quickly while Grundfos Go is exchanging data with the pump. It takes a few seconds.	Remote control with Grundfos GO via infrared light. The pump is receiving data from Grundfos GO via infrared communication.

Figure 3 - Grundfos® Eye Indicators

5.2 Default Pump Program

GRUNDFOS 'GO' PROGRAM SETUP				
PARAMETER	VALUE	PARAMETER	VALUE	
SETPOINT	30%	ANALOG INPUT 2	NOT ACTIVE	
OPERATING MODE	NORMAL	DIGITAL INPUT 1	EXT STOP	
CONTROL MODE	CONSTANT CURVE	DIGITAL INPUT/OUTPUT		
PIPE-FILLING FUNCTION	NOT ACTIVE	>MODE	DIGITAL INPUT	
BUTTONS ON PRODUCT	ACTIVE	>FUNCTION IF INPUT	NOT ACTIVE	
STOP FUNCTION	NOT ACTIVE	>FUNCTION IF OUTPUT	NOT ACTIVE	
CONTROLLER		PULSE FLOWMETER		
>Кр	0.5	>VOLUME PER PULSE	0 ltr	
>Ti	0.5 s	PREDEFINED SET POINT	NOT SET	
OPERATING RANGE		EXTERNAL SETPOINT FUNCTION	NOT ACTIVE	
>MINIMUM	13%	SIGNAL RELAY 1	NOT ACTIVE	
>MAXIMUM	100%	SIGNAL RELAY 2	NOT ACTIVE	
RAMPS		LIMIT 1 EXCEEDED		
>RAMP UP TIME	1.0 s	>MEASURED	DISCHARGE PRESSURE	
>RAMP DOWN TIME	1.0 s	>LIMIT	52.0 PSI	
NUMBER	1	>HYSTERESIS BAND	20.0 PSI	
RADIO COMMUNICATION	ACTIVE	>LIMIT EXCEEDED WHEN	ABOVE LIMIT	
ANALOG INPUT1		>ACTION	STOP	
>FUNCTION	FEEDBACK SENSOR	>DETECTION DELAY	0 s	
>MEASURED	DISCHARGE PRESSURE	>RESTART DELAY	0 s	
>SIGNAL TYPE	4-20 mA	LIMIT 2 EXCEEDED	NOT ACTIVE	
>SENSOR UNIT	PSI	STANDSTILL HEATING	NOT ACTIVE	
>MINIMUM	0.0	MOTOR BEARING MONITOR	ACTIVE	
>MAXIMUM	145.0			

6 DISINFECTION

- 1. Disconnect the storage tank from the DI process.
- 2. Remove the 0.2-micron filter (if installed).
- 3. Prepare DI process for disinfection:
 - a. If using the Silex deionizer, simply remove the packs from the system and set aside.
 - b. If using DI tanks, remove the inlet and outlet connections from the DI tanks and jumper these together.
- 4. After preparing the DI process:
 - a. If disinfecting the loop, ensure that all devices downstream are off line and removed during the disinfection process. If disinfecting the loop with ozone, reference the Ozone Disinfection System manual, 98-0121.
 - b. If only disinfecting the tank, remove from the loop and install the short disinfection jumper hose between the filter outlet and return from the loop. It will be necessary to loosen the worm gear clamps during installation and removal to these connections. Ensure clamps are tightened prior to applying pressure to the system.
- 5. Fill tank with 50 gallons of water from the disinfected RO.
- 6. Add ¹/₂ gallon of bleach.
- 7. Turn on the pump and allow this to recirculate for 30-60 minutes.

NOTE: The introduction of the bleach solution in to the UV light will trigger a temporary low UV condition. This is due to the bleach "clouding" the water in the chamber.

- 8. Drain the water from the system and add 50 gallons of water from the disinfected RO.
- 9. Allow this to recirculate for a minimum of 30 minutes or until there is no chlorine detected at any of the points of use.
- 10. Drain the tank and replace with a new 0.2-micron filter.
- 11. Reconnect to the DI process and return to service.

7 FAULT FINDING

CAUTION: This section provides general details for diagnosing possible faults that may occur during normal operation. Some of the remedial actions can only be carried out by qualified personnel. Do not attempt to carry out any action if it involves inspecting / replacing an electrical / mechanical component without first contacting AmeriWater for advice. Please be aware that the unit / system may still be under pressure and contain water at scalding temperature under certain fault conditions. When investigating any alarm, take appropriate precautions to prevent possible injury. NEVER attempt to dismantle the unit under these conditions. Always contact AmeriWater for advice.

Fault	Cause	Remedy
	Insufficient water.	Check water supply / suction pipe.
	Overheating due to excessive liquid temperature.	Supply cooler liquid to pump.
	Overheating due to seized-up	Remove inlet and outlet piping
	Too low / high supply voltage.	Check the supply voltage and correct the fault, if possible.
The pump does not start.	No electric supply.	Connect the electric supply.
	No water consumption.	Open a tap. Check that the height between the top point of the discharge pipe and the pump does not exceed fifty feet.
	Pump is in alarm condition.	Reset the pump by means of the appropriate button (refer to Section 5.1).
The nume doos not stop	Existing pipework is leaking / defective.	Repair the pipework.
	Nonreturn valve is blocked / missing.	Clean the valve or fit a new nonreturn valve.
	Dry running.	Check the water supply / suction pipe.
	Overheating due to excessive liquid temperature.	Supply cooler liquid to pump.
The pump cuts out during operation.	Overheating caused by high ambient temperature, overloaded motor, and / or seized-up motor / pump.	Check current draw on motor. Check for binding of pump. Check adequate inlet water supply.
	Too low supply voltage.	Check the supply voltage and correct the fault, if possible.
The pump starts and stops too	Leakage in suction pipe or air	Check the water and the
rrequently.	in water.	Supply/Suction pipe.
The pump gives electric shocks.	Defective ground connection.	connection to the pump in accordance with local regulations.

7.1 Fault Finding Chart for Grundfos® CME Pump

7.2 Alarms and Events

If the pump does not start when the fault has been corrected, or if the fault cannot be corrected, contact AmeriWater or Grundfos for further information.

7.2.1 Grundfos® CME Pump Alarms

As mentioned in Section 5.1.1, the alarm indicator light will be shown, as well as the "Status" tab in the "Home" menu of applicable models. The alarm conditions are also listed in the pump's alarm log. The pump will not resume operation until the alarm has been reset. After supply failure, the pump will automatically revert to its previous operating condition.

8 REMINDER FOR ADJUSTING THE SET-POINT

An alarm lock occurs when the water quality goes below the low set-point creating an alarm. For the alarm condition to clear, the water quality must rise above the high set-point. When adjusting the set-point, it is suggested to set the high set-point range 1 to 5 mega Ohms above the low set-point to offset the alarm lock.

8.1 Setting Set-Points on Resistivity Controller

- 1. Press and hold the SET-POINT button on the resistivity controller and press the ADJUST button.
- 2. Release both buttons. –LO- will be displayed momentarily, followed by the current low set-point value.
- 3. The LCD's highest digit will be displayed first. To change this, press the SET-POINT button until the desired first digit is displayed.
- 4. Toggle to the next lower digit by depressing the ADJUST button.
- 5. Depress SET-POINT to change to the desired value and ADJUST to go to the next lowest digit.
- 6. Continue these sequences until the desired –LO- set-point value is entered.
- 7. Press the ADJUST button. –HI- will be displayed momentarily, followed by the current high setpoint value.
- 8. The value can be adjusted in the same manner as the –LO- set-point.

8.2 Adjusting Relay Resistivity Time Delay

The delay on the relay timer can be set from 0-120 seconds to allow for rinse up of the equipment. To modify the settings, take the following steps.

- 1. Press and hold DELAY then press the ADJUST button.
- 2. Release both buttons. The display's hundreds digit will flash.
- 3. To change this digit, press DELAY button repeatedly until the desired number is achieved.
- 4. Press the ADJUST button to toggle to the tenths digit.
- 5. To change this digit, press the DELAY button repeatedly until the desired number is achieved.
- 6. Press the ADJUST button to toggle to the final digit.
- 7. Press the DELAY button repeatedly until the desired number is achieved.
- 8. The monitor will automatically return to its normal operating modes after a short interval. Any changes made will be automatically saved.

8.3 Using the Resistivity Relay

The resistivity controller has an on-board single pole, double throw relay that is rated at 1 amp @ 28VDC and 0.5 amp at 120VAC. This has both normally open and normally closed contacts, allowing for control both above and below the set-points.

The relay acts simply as a switch. When the water quality is above the set-point (Green LED), the relay is in a de-energized state and there is a completed circuit between the COM and NC terminals of the relay. If the water quality is below the set-point (Red LED), the relay is energized completing the circuit between the COM and NO terminals, while simultaneously disconnecting the COM / NC circuit. **Figure 4** shows the connection location for the relay in the resistivity controller.



Figure 4

9 MAINTENANCE

Item	Manufacturer Recommendations	
Vent Filter Replace the vent filter annually or when the filter cartridge gets wet or plu		
Disinfection	It is recommended that a disinfection of the storage tank be performed as needed.	
Post Filter	Replace the post-filter annually or whenever the pressure differential between the inlet and the outlet gauges reads 10 PSI or greater.	
UV Lamp	Replace the UV lamp after 9000 run hours or annually, whichever comes first.	
UV Quartz Sleeve	It is recommended to clean the quartz sleeve annually.	
Resistivity Meter	It is recommended to verify the accuracy of the resistivity meter annually.	

9.1 UV Lamp Replacement

The UV lamp must be replaced after 9000 hours of operation or annually to ensure adequate disinfection. The controller on the UV light will indicate when it is time to change the lamp (**Figure 5**). Failure to change the UV lamp when indicated will result in inadequate disinfection.





Turn off the water from the system and relieve the pressure by opening the sample port on the bottom of the filter housing.



Turn the unit off and remove the line cord from the power source.



Remove the lamp connector by squeezing the plastic locking tabs on the side of the connector.



Remove the lamp in upward direction from the chamber and lamp connector base. Always hold the lamp at the ceramic ends.

MAINTENANCE





Carefully insert the lamp into the reactor vessel

Attach the connector to the lamp and note that the connector will only allow correct installation in one position.



Ensure that the connector is fully seated onto the UV lamp.

Push the lamp connector against lamp connector base together until an audible click is heard. Repressurize the system to check for leaks.



Close the sample port on the filter housing and turn the water source back on.

Replace the line cord into the power source.

Hold down the timer reset button and reapply power to the controller until you see rSET, then release timer reset button. A 5 second delay will occur until you hear an audible tone and LED display will read once again 365

Disinfect per the instructions in section 6.

9.2 UV Quartz Sleeve Cleaning / Replacement

2



Drain the chamber by using the drain port.



Remove the bottom retaining nut, floating spring, and O-ring.



Clean the quartz sleeve with a cloth soaked in CLR, vinegar or some other mild acid and then rinse with water. **Note:** If sleeve cannot be cleaned completely or it is scratched or cracked, then replace the sleeve. Reinstall the quartz sleeve in the chamber allowing the sleeve to protrude an equal distance at both ends of the chamber. Slide supplied O-rings onto each end of the quartz sleeve. Reinstall the top and bottom retaining nuts, floating spring, and Orings respectively. • When service is complete, assemble the prerequisites in the reverse order of disassembly.

Plug in controller and

verify the POWER-ON LED

display is illuminated and controller power-up sequence operates.

Remove the top retaining

nut and O-ring.

7

16

3

1 2

Y

6

4



Carefully, remove O-ring adhering to the quartz sleeve. Remove the quartz sleeve.



Push the lamp connector against lamp connector base together until an audible click is heard. Re-pressurize the system to check for leaks.

9.3 UV Sensor Cleaning / Replacement

Mineral deposits and sediment may accumulate on the sensor window over time, decreasing the UV energy detected. If the UV controller indicates that the UV intensity is low, one cause may be a stained quartz sleeve and / or sensor window.

WARNING: The UV sensor is an extremely sensitive and fragile instrument. Extreme care is required when handling. The sensor window is constructed from quartz, which is extremely fragile. Use caution when handling the sensor to ensure that you do not chip or break this quartz window.

Prerequisites:

Remove and clean the quartz sleeve. **NOTE:** The quartz sleeve and UV sensor should be cleaned at the same time.









Disconnect the UV sensor from the controller by disconnecting the sensor cable.

Remove the UV sensor by grasping the body of the sensor and rotating it counter-clockwise.

Submerge only the end of the sensor in the commercial scale remover for 30 minutes. cotton swab and spray with water.

Re-insert the UV sensor until a water-tight seal is achieved.

9.4 Resistivity Meter Calibration

The resistivity meter should never require calibration. It is recommended to verify the accuracy of the resistivity meter annually by comparing the value shown on the meter against a sample from the post filter sample port and analyzing this with a known good hand meter. In the event that the reading cannot be verified within 5% accuracy, calibration can be performed as follows.

- 1. Open the access door to the electrical enclosure and remove the 4 screws on the rear of the resistivity meter.
- 2. Remove the cover and locate the calibration trimmer (Figure 6), CAL/R16, on the lower edge of the circuit board.
- 3. With the unit plugged in and running, allowing the resistivity display to stabilize.
- 4. If the displayed reading on the unit differs from the handheld reading, turn the calibration trimmer, CAL/R16, with a small fine screwdriver until the reading agrees.
- 5. Replace the enclosure's rear cover and close the electrical enclosure.



Figure 6

10 TROUBLESHOOTING GUIDE

Symptom	Possible Cause	Correction
High Bacteria	UV light quartz sleeve	Clean sleeve with scale cleaner
Counts	dirty	Replace quartz sleeve
Water Appears "Milky"	Air in water line	Run water until air is purged
"Lamp Life Expired" Error on UV Controller	Lamp expired	Replace UV lamp
"Sensor Failure" Error on UV Controller	No signal to UV controller	 Ensure sensor cable is properly connected to controller Disconnect sensor for 5 seconds to re-set sensor Replace UV sensor
"Interlock Open" Error on UV Controller	Lamp connector not fully seated	Ensure that the lamp connector is fully seatedVerify locking clip is in place
"Lamp Failure" Error on UV Controller	Lamp is not providing signal to the controller	 Verify engagement of the lamp to the lam connector Lamp connection contacts are corroded Lamp expired - replace
"Low Level UV" Error on UV Controller	Insufficient UV for adequate disinfection	 Clean quartz sleeve and sensor lens Replace UV Lamp Replace UV sensor
Red Alarm Light Illuminated on Pump	Pump has an alarm condition	 Pump has ran dry – add water to storage tank Pump is over temperature – allow to cool then restart Overloaded motor – will attempt to restart every 30 minutes for a 24-hour period. Replace if not corrected. Seized up pump - will attempt to restart every 30 minutes for a 24-hour period. Replace if not corrected

11 REPLACEMENT PARTS



12 REPLACEMENT INSTRUCTIONS 12.1 Preparation

- 1. Power down unit and remove the line cord from the power source.
- 2. Turn off the incoming water to the storage tank.
- 3. Close the outgoing and return valves on the loop.
- 4. Relieve the pressure in the system by opening the relief valve on the post filter sample port.
- 5. Drain the tank (if necessary).

12.2 Pump Replacement

- 1. Prepare for replacement by following the instructions in section 12.1.
- 2. Remove the 4 bolts that secure the pump to the base of the storage tank and set aside for use on the replacement pump.
- 3. Place a small catch basin beneath the union on the pump discharge and detach this from the pump, allowing the water to drain.
- 4. Detach the union from the pump inlet.
- 5. Remove the fittings from the pump for re-use on the replacement pump.
- 6. Remove all packing material from the replacement pump and place on the base of the storage tank in the same orientation as the original pump.
- 7. Prepare fittings removed from the original pump with Teflon tape and install into the replacement pump.
- 8. Connect the unions to the pump inlet and discharge.
- 9. Secure the pump to the base with the original bolts.
- 10. Close the sample port on the filter housing, open all valves to the loop and return water to the device.
- 11. Return the line cord to the power source.
- 12. Fill the storage tank with 50 gallons of water and prime the pump.
- 13. Disinfect per the instruction in section 6.

12.3 Resistivity Cell Replacement

- 1. Prepare for replacement by following the instructions in section 12.1.
- 2. Open the controller cover to gain access to the resistivity controller.

- 3. Loosen the 4 screws on the rear panel of the access cover to gain access to the terminal strip.
- 4. Remove 5 wires for the resistivity cell from terminals 7-11 on the terminal strip.
- 5. Loosen the strain relief on the controller and pull the resistivity cell wires out of the box.
- 6. Remove the resistivity cell from the tee at the base of the UV light.
- 7. Prepare the threads of the replacement cell with Teflon tape and install into the tee.
- 8. Route the wires through the strain relief and into the resistivity controller.
- 9. Install the wires into the terminal block in the following order:
 - White to terminal 7
 - Black to terminal 8
 - Shield to terminal 9
 - Red to terminal 10
 - Green to terminal 11
- 10. Replace the access cover on the resistivity meter and tighten the strain relief.
- 11. Close the access panel and return the line cord to the power source.
- 12. Close the sample port on the post-filter, open all valves to the loop and return water to the device.
- 13. Disinfect the system per the instructions in section 6.

12.4 Resistivity Controller Replacement

- 1. Power down the unit and remove the line cord from the power source.
- 2. Open the controller access cover.
- 3. Loosen the 4 screws on the rear panel of the resistivity meter access cover to gain access to the terminal strip.
- 4. Remove the resistivity cell wires and pull free from the resistivity controller.
- 5. Remove the input power lines from the terminal strip and pull free from the controller.
- 6. Loosen the fasteners used to hold the controller into the electrical enclosure and slide out.
- 7. Install the replacement controller into the existing opening on the electrical enclosure and fasten in place.
- 8. Remove the rear access panel from the controller.
- 9. Router the wires from the resistivity cell as well as main power into the controller to facilitate convenient connection to the terminal strips.
- 10. Place the main power to the terminal strip in the following order:

- Hot wire to terminal 1
- Neutral wire to terminal 2
- Ground wire to terminal 3.
- 11. Install resistivity cell wires into the terminal block in the following order:
 - White to terminal 7
 - Black to terminal 8
 - Shield to terminal 9
 - Red to terminal 10
 - Green to terminal 11
- 12. Replace the rear access panel and close the electrical enclosure.
- 13. Reinstall the line cord to the power source.
- 14. Close the sample port on the post-filter, open all valves to the loop and return water to the device.

13 WARRANTY

The buyer has a one-year warranty on all equipment and parts, excluding non-durable components (e.g., filter cartridges, reverse osmosis membranes, filter media, consumable chemicals, etc.); provided that the system is not subject to abuse, misuse, alteration, neglect, freezing, accident or negligence; and provided further that the system is not damaged as the result of any unusual force of nature such as, but not limited to, flood, hurricane, tornado, or earthquake.

The warranty covers the replacement of equipment and/or parts only. The warranty <u>does not</u> cover labor charges or travel expenses resulting from the service of equipment. The manufacturer is excused if failure to perform its warranty obligations is the result of strikes, government regulation, materials shortages, or other circumstances beyond its control.

To obtain warranty service, notice must be given to the manufacturer within 30 days of the discovery of the defect.

There are no warranties on the AmeriWater system beyond those specifically described above. All implied warranties, including any implied warranty of merchantability or of fitness for a particular purpose are disclaimed to the extent they might extend beyond the above periods. The sole obligation of the manufacturer under these warranties is to replace or repair the component or part which proves to be defective within the specified time period, and the manufacturer is not liable for consequential or incidental damages. No dealer, agent, representative, or other person is authorized to extend or expand the warranties expressly described above.

Some states do not allow limitations on how long an implied warranty lasts or exclusions or limitations of incidental or consequential damage, so the limitations and exclusions in the warranty may not apply to you. This warranty gives you specific legal rights, and you may also have other rights, which vary from state to state.

CALIFORNIA PROPOSITION 65

\Lambda WARNING

This product can expose you to chemicals such as vinyl chloride (used in the production of PVC) or Nickel (used in the production of stainless steel), that are known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov.

Dear Valued Customer,

California Proposition 65 (Prop 65) is the Safe Water and Toxic Enforcement Act of 1986. The State of California began enforcing amendments to California Prop 65 at the end of August 2018. Prop 65 requires manufacturers to provide a clear and reasonable warning to residents of California about chemicals used in products that they purchase that are included on the Prop 65 Chemical List. The chemicals included on the list are chemicals that are known to the State of California to cause cancer, birth defects, or other reproductive harm. One such chemical is Vinyl Chloride, a compound used to produce Polyvinyl Chloride (PVC). The AmeriWater system you have purchased may contain PVC or stainless steel parts.

While warnings are only required in the State of California, AmeriWater has initiated the use of Prop 65 labeling for all products to ensure compliance with California regulations. Please note that the above warning does not necessarily mean that the product that you have purchased is unsafe. Products that have been cleared for market by FDA have been determined to be safe and effective by the United States Food and Drug Administration. The warning is simply a requirement by the State of California. If you wish to obtain additional information, please visit: p65warnings.ca.gov. You may also contact your AmeriWater representative if you have any questions.

Thank you for your understanding and we look forward to continuing to serve you.