



Installation Manual



WHRO-700 Whole-House Reverse Osmosis System Standard and "MAX" Systems

For questions regarding this system, please contact Water Control Corporation.

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Table of Contents

PRE-PLUMBED COMPONENTS	4
LOOSE COMPONENTS.....	4
ITEMS NEEDED TO COMPLETE INSTALLATION	4
SYSTEM DIAGRAM	5
TYPICAL INSTALLATION DIAGRAM.....	6
INSTALLATION NOTES.....	7
INSTALLATION PROCEDURE	7
START-UP STEPS	8
PUMP DETAILS	9
SYSTEM OPERATION.....	9
Table 1.0 – Inlet Water Supply Parameters	10
SYSTEM RECOVERY	10
Table 2.0 - Setting Product Water vs Drain Water Flow Ratio	10
CONTAMINANT REJECTION	11
MEMBRANE LIFE	11
MAXIMIZING MEMBRANE ELEMENT LIFE.....	11
TROUBLESHOOTING.....	11
Table 3.0 - Booster Pump Flow and Pressure Capabilities	12
MAINTENANCE	12
FILTER/MEMBRANE REPLACEMENT	13
BULK CARBON FILTER CARTRIDGE INSTALLATION & REPLACEMENT	14
INITIAL INSTALLATION.....	14
CARTRIDGE REPLACEMENT	14
PERFORMANCE LOG	15
WARRANTY	16
APPENDIX A – TAKING WATER QUALITY MEASUREMENTS	17
APPENDIX B – WIRING SCHEMATIC	17
APPENDIX C – FIELD WIRING.....	18
APPENDIX D – OZONE SANITIZING SYSTEM OPERATION INSTRUCTIONS.....	18



NOTE: Use included TDS tester to test water quality quarterly (every 3 months). Verify a minimum 80% TDS reduction between inlet (raw) water and outlet (product) water.



IMPORTANT: Do not use where the water is microbiologically unsafe or of unknown quality without adequate disinfection before or after the system.

PRE-PLUMBED COMPONENTS

- Electrically actuated shut-off valve
- Ozone generator (sanitizing system)
- Aluminum skid
- Inlet and delivery water pressure gauges
- Reverse osmosis system
- Product & drain flow meters
- TDS meter (handheld)
- Delivery pump
- Control panel with single point power connection

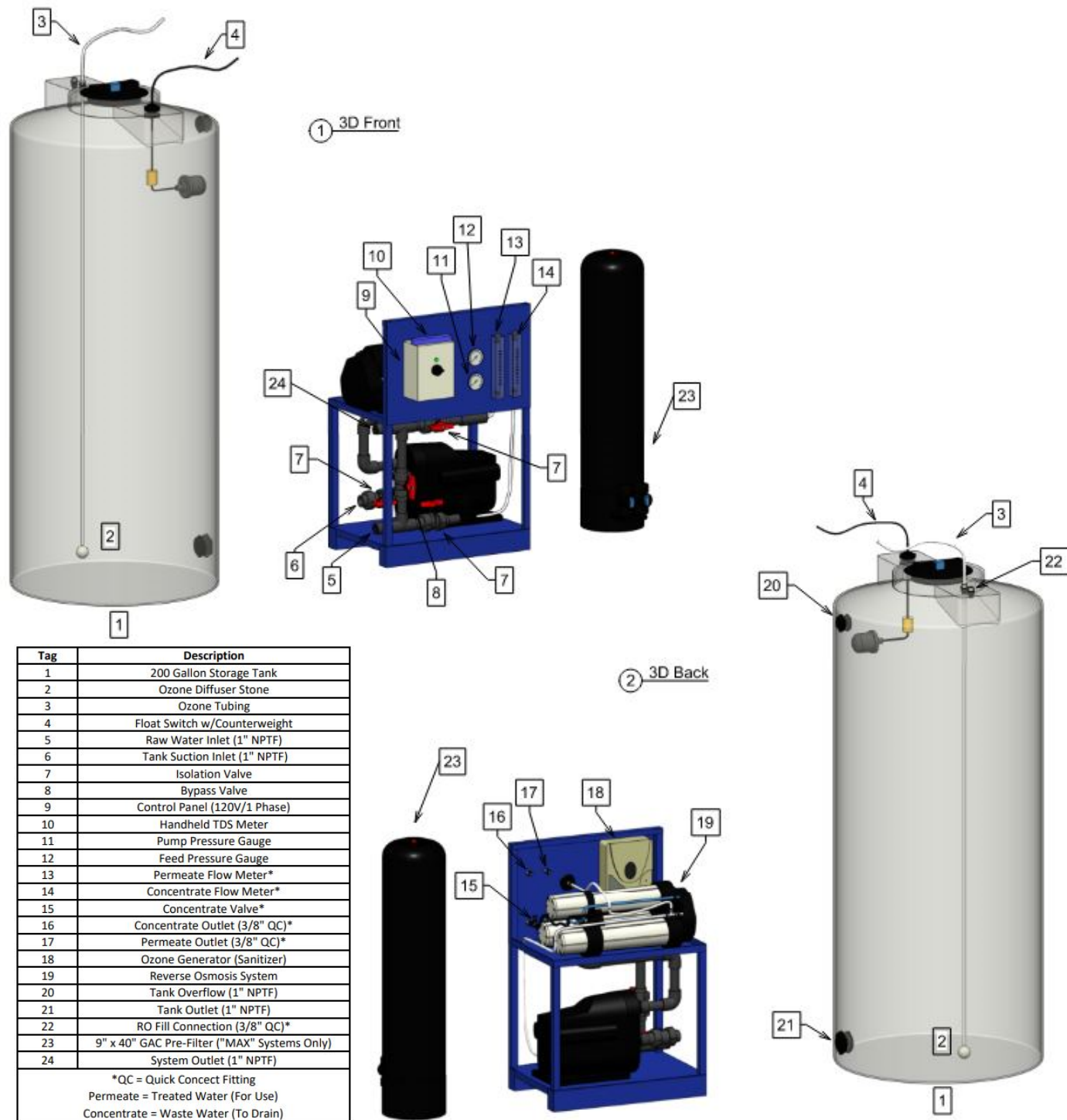
LOOSE COMPONENTS

- 200 Gallon Storage Tank (NSF/ANSI Standard 61) with the following pre-installed components:
 - Float switch
 - Ozone tubing
 - 1" tank outlet and overflow connection
- 2.75" x 17" Sediment pre-filter
 - Includes PS3038333 filter cartridge (5 micron carbon block)
 - This cartridge is sufficient for well water installations and city water with low levels of chlorine
- 9" x 40" Chlorine/chloramine pre-filter (WHRO-700MAX Systems Only)
 - Includes FST-5418-RC filter cartridge (GAC media)
 - Recommended for city water applications treated with chlorine
 - Required for city water applications treated with chloramine
- (2) RO elements
- 3/8" product water (blue) tubing
- Silicone lubricant packets
- Spare ozone dispersion stones

ITEMS NEEDED TO COMPLETE INSTALLATION

- 3/8" Tubing – for drain line from back of drain flow meter
- Isolated 15Amp power supply (GFI 120VAC outlet)
- Drain valve for tank outlet
- Any additional fittings, pipe, and components per the "Typical Install" drawing

SYSTEM DIAGRAM

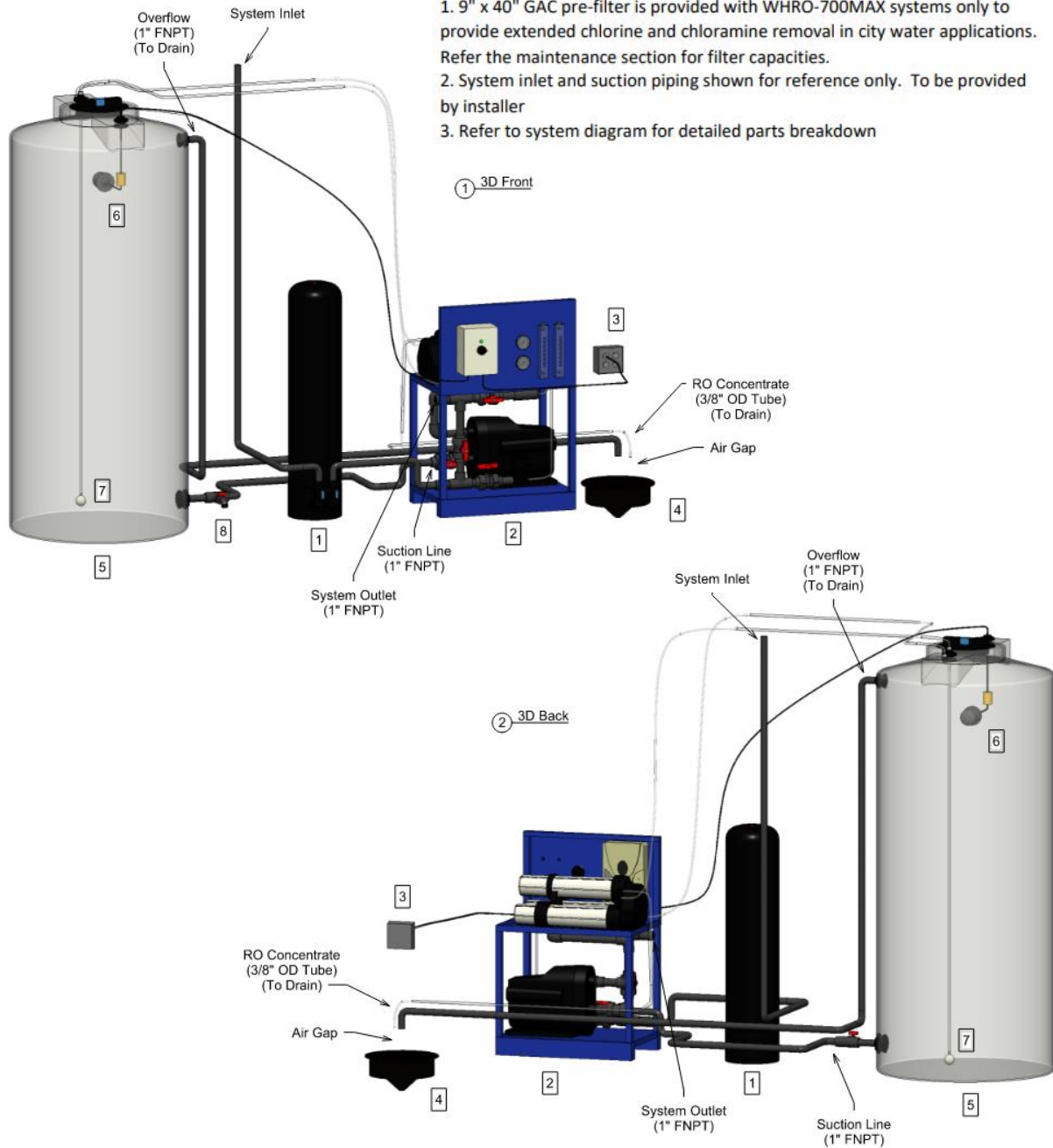


TYPICAL INSTALLATION DIAGRAM

Tag	Description	Provided By
1	9" x 40" GAC Pre-Filter	WCC ("MAX" Systems Only)
2	WHRO-700	WCC
3	GFCI Outlet	Installer
4	Floor Drain	Installer
5	200 Gallon Storage Tank	WCC
6	Float Switch w/Counterweight	WCC
7	Ozone Diffuser Stone	WCC
8	Sample/Drain Port	Installer

Notes:

1. 9" x 40" GAC pre-filter is provided with WHRO-700MAX systems only to provide extended chlorine and chloramine removal in city water applications. Refer the maintenance section for filter capacities.
2. System inlet and suction piping shown for reference only. To be provided by installer
3. Refer to system diagram for detailed parts breakdown



INSTALLATION NOTES

Be sure fittings are properly tightened.

Most fittings come pre-taped from the factory. Whenever connecting threaded fittings, make certain there is sufficient Teflon tape around the threads to maintain a water-tight seal. All plastic-to-plastic fitting connections should be hand tightened, then turned an additional 1 – 1-1/2 turn with pliers. **Do not over-tighten**. This can result in a cracked fitting and a potential leak.

Flush components prior to system startup.

Each RO system comes with membrane elements that contain a preservative to prevent freezing and organic growth. These RO membrane elements need to be thoroughly flushed prior to installation. For ease of installation, it is recommended that the tank be pre-rinsed prior to installation. The RO system should be flushed for 30-60 minutes. (See page 6)

This system is designed to purify the water to the entire interior home/commercial application. It is not recommended for external applications such as sprinkler systems and swimming pool refills. When determining the appropriate water supply line to connect into, be certain all outside sprinkler lines and pool refill lines are by-passed.



IMPORTANT: Whenever tubing is placed into quick disconnect fitting or other compression fittings, be certain tubing is inserted properly and completely. Failure to do so will result in a leak.

INSTALLATION PROCEDURE

The RO membrane elements and filters are shipped loose with the system.

Use Surgical Gloves whenever coming in contact with water in the storage tank or in the RO membrane elements.

1. Locate storage tank and skid assembly in appropriate location. Both tank and skid assembly should be placed on a level surface.
2. Verify inside of storage tank is clean. *All tanks are cleaned prior to leaving the factory.

***NOTE: It is recommended that the tanks be flushed with chlorinated water prior to use.**

3. Install drain valve on plumbing connecting the tank outlet (bulkhead on bottom of storage tank) and 1.0" pump suction line on skid assembly.

NOTE: It is recommended to leave the ball valve on the pump suction line closed until ready to prime the pump.

4. Connect 3/8" tubing (not included), from outlet (top/back), of concentrate flow meter to appropriate floor drain. Use air gap fitting per local code.
5. Connect the 1.0" system (raw water) inlet to the water supply source.
 - a. When installing a WHRO-700MAX system, the water supply source should first be connected to the 9" x 40" GAC pre-filter, then to system inlet piping.
6. Connect 1.0" outlet on skid assembly to building water supply.
7. Lubricate the manifold locations detailed in Figure 1 and Figure 2. Six packets of silicone lubricant are supplied with the system. One packet should be completely used to lubricate the O-ring contact surfaces in the (3) manifold ports and (2) RO membrane locations (Figure 1). Lubricate the filter seat and the flat surface below the threads for the (3) sump locations (Figure 2). Use a complete packet of silicone for each sump location.
8. Install the pre-filter and membrane elements into the RO system. Consult filter/membrane replacement section for installation instructions.

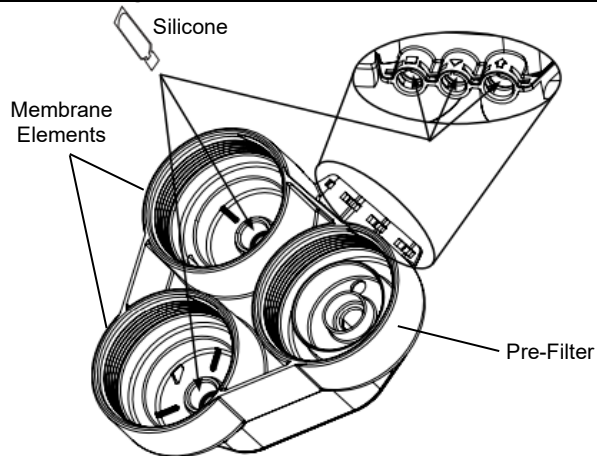


Figure 1

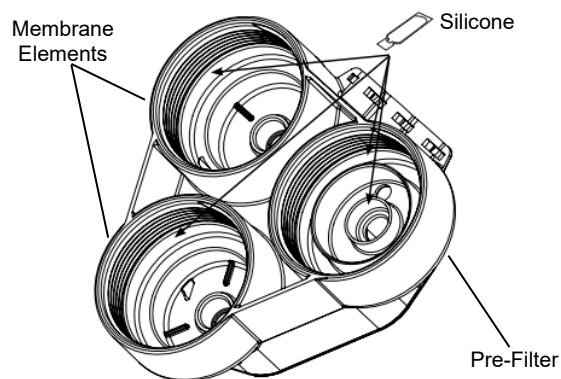


Figure 2

9. Figure 3 details the coding system for the fitting connections. Each fitting has a unique “keyed” socket on the manifold. Each fitting also has a graphic symbol molded into the elbow with a corresponding symbol on the manifold. The locking clip also has the same markings (Figure 4).

Connector Symbol	Connection	Tubing Color
⇄	Feed-Inlet	Natural
—	Concentrate	Black
□	Product	Blue

Figure 3

10. Insert the float switch wire (located on top of the storage tank) through one of the open cord grips on the control panel.
11. Land the (2) float switch wires on their appropriate terminals. The appropriate terminals are 7 & 8. Either wire can be landed on either terminal. Polarity does not matter. For additional wiring information, see appendix B and C.
12. Connect the plastic tubing (located on top of the storage tank) to the ozone generator output. The ozone generator output is located on the bottom of the ozone generator.
13. Connect the blue 3/8” tubing from the permeate outlet on the skid assembly to the connection on the top of the storage tank.

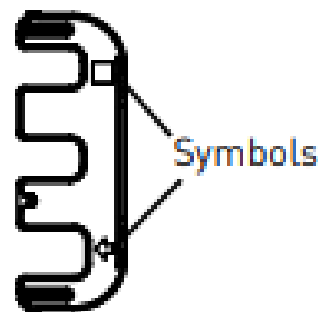


Figure 4

START-UP STEPS

1. Once all plumbing connections are completed, and the system is plugged in, check to make certain the drain flow control valve (gray valve with black circular handle), is in the fully open position.
2. For WHRO-700MAX systems only, open the filter inlet valve and depress the air purge button located on the top of the tank until a steady stream of liquid comes out of the cartridge. As the cartridge fills up with water, air will be vented while the air purge button is depressed. After a steady stream of liquid comes out of the filter, open the filter outlet valve.
3. PRESSURIZE: Turn the control switch on the control panel to “Run”. This will open the motorized ball valve.
4. PRESSURIZE: Slowly open the feed valve to the RO system. As the system begins to pressurize, you will notice air bubbles in the DRAIN and PRODUCT flow meters and the pressure will begin to rise.
5. PRESSURIZE: Slowly increase the amount of water feeding the RO system until the feed valve is completely open. At this point, most of the water should be passing through the DRAIN flow meter. Allow the system to run this way for at least 30 minutes. This will flush the membranes.
6. CHECK FOR LEAKS: During this initial start-up time, check for leaks. As a result of shipping, it is possible that some of the fitting and tubing connections could be loose.
7. CHECK FOR LEAKS: Once you have checked for leaks and corrected all you have found, adjust the drain flow control valve so that the DRAIN flow and PRODUCT flow ratio is in line with Table 2.0 in the “System Recovery” section.
8. FILL TANK: At this time, the storage tank is slowly filling with RO purified water (PRODUCT WATER). On a standard system, the production rate is approximately 0.50 GPM. In order to test the pump and make certain the tank is clean, consider adding tap water to the tank so that it is at least ½ full.
9. PRIME PUMP: Once the water level in the tank is above the top of the pump, prime the pump. To do this, open the tank outlet valve and, with the power to the pump turned off, slowly unscrew the air relief port on the top of the pump. If there is enough water in the storage tank, water will begin to spew out of the port. Allow sufficient water to pour out to make certain no air remains in the pump. Close the tank valve, screw the port cap back on the pump, and open the tank valve.

NOTE: If the pump does not prime by the method described above, water may be manually added to the priming port to fill the entire pump cavity with water.

10. TEST FLOAT: While you continue to add water to the storage tank, reach inside the tank and manually lift the float. With the float elevated toward the top of the storage tank, the motorized valve should close cutting off the water supply to the system. Repeat this step 3 to 4 times to confirm the system successfully turns on and off. This can be observed by:
 - a. No more water entering the storage tank

- b. The pressure on the pressure gauge dropping to zero
 - c. The flow on both flow meters dropping to zero
11. SHAVINGS: Once the storage tank is at least ½ full, check on the surface of the water for loose plastic. The tanks are cleaned at the factory, but plastics shavings can still come loose during shipping. An aquarium net works well to remove any shavings that may be floating on the surface of the water.
12. Check the TDS of the PRODUCT water going into the storage tank using the included handheld TDS meter (product water should have TDS levels 80-90% lower than raw water). Allow a minimum run time of 30 minutes prior to TDS level testing.
13. If desired, purge the tanks and system of any tap water used for testing.
14. Allow the storage tank to fill with RO water until the system shuts off.
15. The pump may now be turned on to distribute water to the building. Press the power button on the pump to turn the pump on.
 - a. The up and down arrows may be used to increase/decrease the discharge pressure of the delivery pump.
 - b. For the full operation pump manual and troubleshooting guide, either scan the QR code to the right or visit net.grundfos.com/qr/i/98880508.
16. The ozone generator may now be turned on to maintain tank sanitization. Refer to appendix D for operation instructions and available set points. The recommended starting setpoint is set point #7. This setpoint cycles the ozone generator on for 5 minutes, once per hour.



When working with the electrical wires, make certain the AC adapter is unplugged, with no power running to any of the electrical components. Apply power only when all connections are completed.

PUMP DETAILS

The RO delivery pump now provides water pressure throughout the home/facility. The pump comes equipped with an internal pressure sensor so that when the pressure in the system is relieved (e.g., a faucet is opened), the pump senses the reduction in water pressure and turns on. The pump then turns off when no water is required. The pump now provides equal water pressure throughout the home/commercial application, it also is an excellent indicator of any internal water leaks. If the pump continues to run when no water is on, this is indicative of unexpected flow. The most likely sources of this are:

1. **Toilet flappers** – a loose toilet flapper will allow water to continuously run to drain. This causes the pump to run continuously. This also results in an empty tank and wasted water. Be certain all toilet flappers are in proper working order.
2. **Outside sprinkler systems** – RO water is not necessary for watering lawns. It is highly recommended that all outside sprinkler lines are bypassed from the RO system.
3. **Swimming pool refills** – using RO water for swimming pool refills requires a significant amount of water and is not recommended.

SYSTEM OPERATION

The WHRO-700 system uses a patented membrane technology that provides flow rates up to twenty times greater than standard home RO membranes. The membrane element is designed to work from 45-90 PSI (2.7-5.5 bar) inlet water pressure and 40-100°F (4.4-37.8°C) water temperature. The WHRO-700 system performs better as pressure and temperature increase. Ideally, pressures will be higher than 50 PSI (3.4 bar) and temperatures will be higher than 50°F (10°C).

The WHRO-700 system works like a commercial RO system. It uses two membrane elements in series to produce the high flow of permeate (filtered water). The concentrate (drain water) from element one is channeled into the inlet at the second element for maximum recovery and purification.

Table 1.0 – Inlet Water Supply Parameters

CONTAMINANT/ CONDITIONS	REQUIREMENTS	COMMENTS
Chlorine/Chloramine	0.0 mg/L	Install WHRO-700MAX system with 9"x40" GAC pre-filter for chloramine applications (optional for chlorine applications). [City Water Only!]
Max Hardness	25 grains (428 mg/L)	For hardness levels above maximum level, contact your local dealer or the factory
Max Iron	0.3 mg/L	Above max level, additional pretreatment is required
Max Manganese	0.1 mg/L	Above max level, additional pretreatment is required
Temperature	40°F - 100°F	(4.4°C - 37.8°C)
Pressure	50 - 100 PSI	
Max TDS	1,500 mg/L	For TDS levels above maximum level, contact your local dealer or factory
Min TDS	150 mg/L	For TDS levels below minimum level, contact your local dealer or factory

NOTE: In cases where Iron, Manganese and/or Hardness levels exceed the maximum accepted system specification, additional pretreatment, such as water softening or iron filtration, is required.

NOTE: Providing inlet water with a TDS level below 150 mg/L could damage piping and fixtures. Additional re-mineralization equipment is required!

SYSTEM RECOVERY

System recovery is defined as the ratio of permeate (filtered) water produced to the amount of feed water used. In the case of RO systems, this ratio can be defined mathematically using the equation:

$$\text{System Recovery \%} = \text{Permeate Flow (gallons/minute)} / \text{Feed Flow (gallons/minute)} * 100$$

Most residential RO systems operate at recoveries ranging between 5% and 15% - meaning for every 10 gallons of permeate water produced, 90 gallons runs to drain (i.e., 10% recovery).

The WHRO-700 system is designed to operate between 33% and 50% recovery. The two primary factors affecting system recovery are temperature and pressure. In high-pressure, high-water temperature areas such as Las Vegas, NV and Phoenix, AZ the system should operate close to 50% recovery. In colder regions with lower water pressure such as Chicago and Minneapolis, recovery rates can be as low as 33%.

Table 2.0 - Setting Product Water vs Drain Water Flow Ratio

Recommended Recovery Ratios Based on Incoming Temperature & Pressure							
INLET WATER PRESSURE (PSI)	90	33%	33%	50%	50%	50%	50%
	85	33%	33%	50%	50%	50%	50%
	80	33%	33%	50%	50%	50%	50%
	75	33%	33%	50%	50%	50%	50%
	70	33%	33%	50%	50%	50%	50%
	65	33%	33%	50%	50%	50%	50%
	60	33%	33%	33%	40%	50%	50%
	55	25%	33%	33%	40%	50%	50%
	50	25%	33%	33%	40%	50%	50%
		40°	45°	50°	60°	70°	80°
INLET TEMPERATURE °F							

Explanation	25%	Product water flow = 1/3 drain water flow
	33%	Product water flow = 1/2 drain water flow
	40%	Product water flow = 2/3 drain water flow
	50%	Product water flow = drain water flow

NOTE: Adjust the drain flow control valve until the recommended recovery ratio is achieved for your installation

CONTAMINANT REJECTION

The WHRO-700 is designed to reject (remove) an average of 90% of dissolved contaminants. So long as the inlet water TDS levels are above the minimum requirements (see Table 1.0), this leaves just enough dissolved solids in the permeate (filtered water) to prevent system corrosion, which can be caused by prolonged exposure to pure water.

MEMBRANE LIFE

The WHRO-700 system uses a patented RO membrane technology which can be adversely affected by long-term exposure to chlorine or chloramine. Standard WHRO-700 systems include a 2.75" x 17" carbon block pre-filter to pre-screen particulates and to provide approximately 6 months of chlorine removal capacity. This pre-filter is not adequate for treating water containing chloramine. WHRO-700MAX systems include an additional 9"x 40" GAC pre-filter, which is required for chloramine removal and will provide approximately 18 months of service between cartridge changeouts. If utilized in chlorine removal applications, this GAC pre-filter will provide approximately 54 months of service between cartridge changeouts. **IMPORTANT:** Always consult city water provider to determine whether water is being treated with chlorine or chloramine!

MAXIMIZING MEMBRANE ELEMENT LIFE

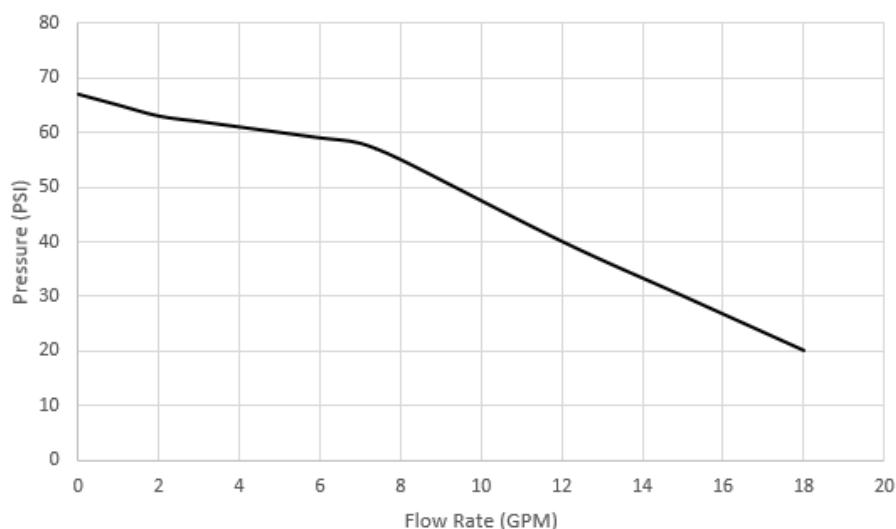
Pretreatment is the key to maximizing the membrane element life. Be certain system is installed according to the Inlet Water Supply Parameters, (see Table 1.0). Also, the more the system is used the longer the membrane elements generally tend to last.

TROUBLESHOOTING

ISSUE	POSSIBLE CAUSE	CORRECTIVE ACTION
Pump runs continuously	Water leak in building, which results in pump sensing drop in pressure thus running continuously	Check for water leaks from all equipment/appliances
No water pressure to home	1 – Pump power turned off	1 – Check electric supply
	2 – Inlet or outlet valves closed	2 – Check valve positions
	3 – Pre-filters plugged	3 – Bypass system, call for service, replace
Permeate storage tank running out of water	1 – Water leak in home/business	1 – Check for leaks
	2 – Water usage has increased	2 – Larger tank or extra system
	3 – Pre-filter plugged	3 – Bypass system ¹ , call for service, replace
	4 – Scaled or fouled RO membrane	4 – Bypass system ¹ , call for service, replace
Leak at system	Equipment moved or modified	Bypass system ¹ , call for service
Tank overflowing	1 - Float not working	Bypass system ¹ , call for service
	2 – Valve not working	Bypass system ¹ , call for service
Poor product water quality	1 – Scaled, fouled, or damaged RO membrane	1 - Replace membrane elements and pre-filter
	2 – Water sample collected during initial startup	2 – Allow adequate run time and recollect sample
	3 – Low driving pressure	3 – Increase feed pressure to minimum levels or higher
	4 – Pre-filter plugged	4 – Replace plugged filter. Consider additional pre-filtration options. Consult WCC for recommendation.
1. To bypass the system, close the RO and pump isolation valves (#7 on system diagram) and open the bypass valve (#8 on system diagram). Unplug the system from the power supply outlet. The home/application will now operate with raw city/well water.		

Table 3.0 - Booster Pump Flow and Pressure Capabilities

Delivery Pump Performance



For further pump details, including maintenance procedures, please refer to separate manual included with pump.

MAINTENANCE

	TASK	FREQUENCY	PART NUMBER
1)	Test Water Quality: Compare inlet (raw) water to outlet (product) water to confirm a minimum 80% reduction in TDS level. If TDS reduction is less than 80%, replace membrane elements	3 months	Use handheld TDS tester included with system
2a)	Replace 9" x 40" GAC pre-filter cartridge (WHRO-700MAX installations with <u>chloramine</u>-treated city water)	18 months	FST-5418-RC
2b)	Replace 9" x 40" GAC pre-filter cartridge (WHRO-700MAX installations with <u>chlorine</u>-treated city water)	54 months	FST-5418-RC
3)	Replace 2.75" x 17" pre-filter	3 months ¹ or 25,000 gallons ²	PS3038333
4)	Verify inlet float functioning	6 months	Call WCC
5)	Verify ozone generator active (bubbling)	6 months	Call WCC
6)	Replace membranes	As needed (typical 2-3 years)	PS4000569
1. Pre-filter is considered "fouled" when pressure loss exceeds 10 psi 2. Rated capacity assumes 150 GPD usage, 50% RO recovery, 1 ppm chlorine residual. Replace immediately if pressure loss across the filter exceeds 10 psi			

FILTER/MEMBRANE REPLACEMENT

1. Turn off water supply to RO system by changing switching the valve control from "run" to "off". The system will be depressurized when the feed pressure gauge reads zero.
2. Disconnect the locking bar and place the fittings (with tubing still connected) into a tub or bucket to collect any water than may drain from the tubing.
3. Move the system into a contained area, such as a sink or tub.
4. Remove the support leg from the three sumps and unscrew the top sump as shown (Figure 5) to access the pre-filter element. The support leg functions as a wrench to loosen/tighten the sump.

NOTE: Do not disconnect the tubing from the fittings on the manifold. Remove the locking bar and pull the fittings out. Lubricate O-rings with silicone prior to reassembly.

NOTE: If only changing the pre-filter, the other two sumps do not need to be removed. If changing the membrane elements, the pre-filter should also be changed.

5. Remove the exhausted pre-filter and discard

CAUTION: The person handling the filters and membrane elements must have clean hands to keep the system sanitized. The use of sterile/latex gloves is recommended.

6. If changing the membranes:
 - a. Remove membrane sumps. Remove and discard used elements.
 - b. Remove new elements from packaging.

CAUTION: Elements contain a food grade preservative. The use of sterile/latex gloves is highly recommended.

- c. Lubricate element O-rings, brine seals and sump O-rings with silicone lubricant.
- d. Securely insert O-ring end of elements into manifold (Figure 6)
- e. Replace sumps and tighten until sump bottoms out on manifold.

NOTE: The system should be sanitized whenever a membrane element or filter is replaced.

7. Sanitize the system.
 - a. The manifold should be positioned flat with the sump connections facing up.
 - b. Pour a tablespoon (15 milliliters) of chlorine bleach into the center opening of the pre-filter sump connection (Figure 6).

8. Install pre-filter.
 - a. Remove new pre-filter from packaging. Ensure gaskets are secure. Insert pre-filter into proper opening on manifold.
 - b. Lubricate sump O-ring with silicone lubricant.
 - c. With the pre-filter element in place, screw the sump into the connection. Tighten until it bottoms out on manifold.

9. Reconnect the fittings to the manifold and lock in position with locking bar.
10. Turn drain flow control valve (gray valve with black circular handle) to the fully open position.
11. Re-position the assembly onto the skid assembly and turn on the water supply back onto the RO. Turn the valve control from "off" to "run" to supply pressurized water to the RO system. Verify there are no leaks.
 - a. Air will need to be bled from the system. Consult startup procedure to bring the system back into service. Allow water to flow to drain for at least 30 minutes to flush out membrane preservative before adjusting the drain flow control valve to re-establish the correct permeate-to-concentrate (product water-to-drain water) ratio, per table 2.0.
12. The RO system is now ready for use.

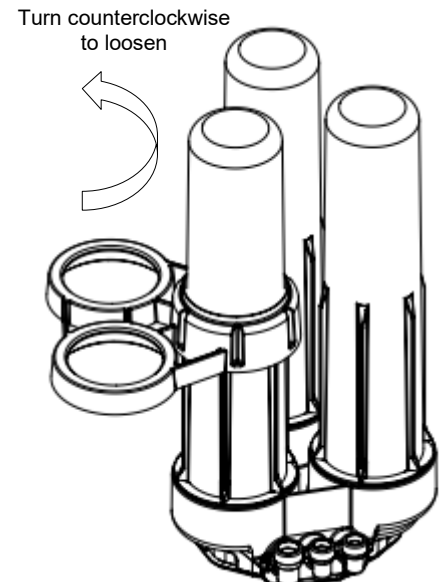


Figure 5

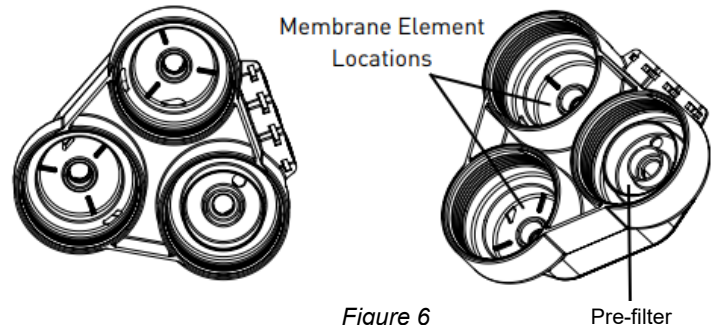
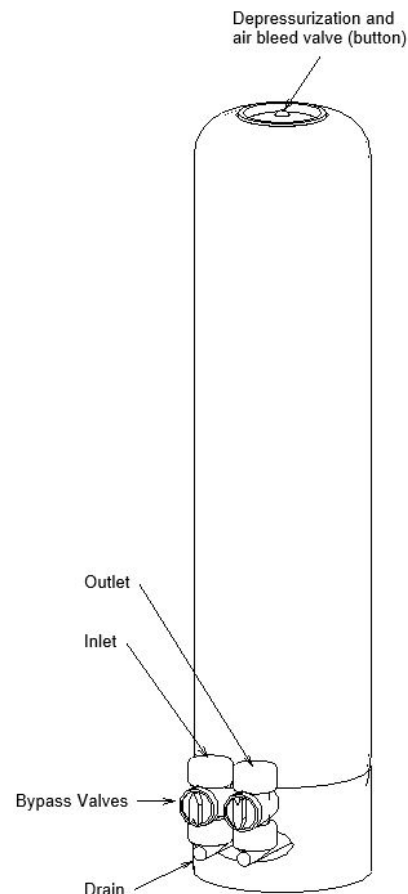


Figure 6

BULK CARBON FILTER CARTRIDGE INSTALLATION & REPLACEMENT (MAX SYSTEMS ONLY!)

INITIAL INSTALLATION

1. Remove cap from cartridge tank and then push top cap down equally with both hands to unseat the retaining ring. Remove the ring from the groove by carefully grasping the handle and pulling inward then upward. Ring will slide completely out of the groove.
2. Remove top cap from system by lifting up on top handles.
3. Remove plastic covering surrounding filter cartridge and discard.
4. Lubricate O-rings on cartridge to ensure proper sealing. Do not use pipe dope, Vaseline, oils or other unacceptable lubricants on O-rings. Food grade silicone lubricant is recommended.
5. Insert cartridge into bottom center of tank, assuring proper seal and alignment by pushing down gently until fully seated.
6. Replace top cap of tank using top handles.
7. Push top cap down to make room for placement of retaining ring in the retaining ring groove.
8. Insert retaining ring into retaining ring groove, starting at the end opposite of the handle. Using only hands, gently push the retaining ring into groove until the entire ring is in place and both ends meet in groove section.
9. To ensure proper engagement, hold retaining ring by handle and slightly rotate around inner diameter of the vessel.
10. Slowly turn water supply on to system by first opening inlet valve and pressing red depressurization valve to completely vent tank of trapped air. When water leaks out of depressurization valve, stop pushing and open outlet valve.
11. Check system for leaks and ensure system integrity.



CARTRIDGE REPLACEMENT

1. Turn off water supply by shutting off the inlet and outlet ball valves (Figure 7).
2. Properly depressurize system by pushing red depressurization button on top cap of system. Keep button pushed depressed until all air or water pressure is completely released. Some water may be released from relief button.
3. Open drain ball valve to drain water from the system. This will also make the cartridge removal a drier and lighter weight process.
NOTE: If drain line is not run to an appropriate collection area such as a floor drain, a bucket may be used to collect the water drained from the housing so that it can be transported to an appropriate area.
4. Push top cap down equally with both hands to unseat the retaining ring. Remove the ring from the groove by carefully grasping handles and pull inward, then upward. Ring will slide completely out of groove.
5. Remove top cap of system by lifting up on top handles.
6. Remove replacement cartridge carefully from bag. Retain bag for disposal of used cartridge.
7. Remove used cartridge from system by grasping handle and pulling upward while holding the tank down. The old cartridge may be extremely heavy with sediment & water weight. Place in bag and dispose of in accordance with local, state and federal laws and regulations.
8. If necessary, open drain and flush system further with a bucket of water to remove final sediment and particles. Once flushed, close the drain line.
9. Proceed with step 4 – 11 of initial installation section to complete the new cartridge installation.

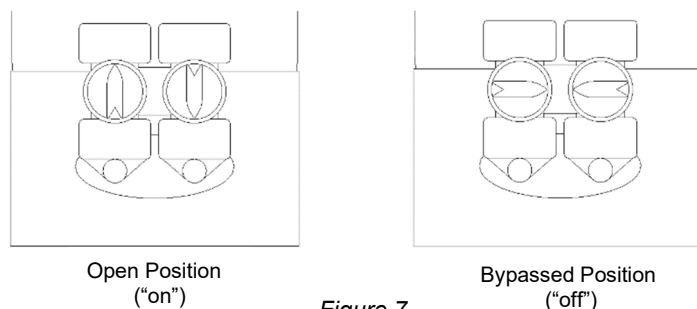


Figure 7

PERFORMANCE LOG

WCC recommends that a performance log be kept to assist with system troubleshooting. WCC recommends that the performance log be updated weekly. The performance log can be helpful to help determine when pre-filters or RO membranes require service or will require service in the near future.

[illegible]

WARRANTY

Official Warranty

Water Control Corporation

Pure Simplicity Water Treatment Systems

Limited Warranty

Water Control Corporation warrants the RO system and pump to be free from manufacturer's defects for a period of 1 (one) year from the date of installation, and the storage tank, to be free from leaking due to manufacturers defects for a period of 5 (five) years. We will, at our discretion, repair or replace defective products. This warranty does not include any costs associated with removal of defective products, or installation of replacement products. All replacement parts will be provided FOB Ramsey, MN. This warranty is transferable.

DISCLAIMER OF IMPLIED WARRANTIES

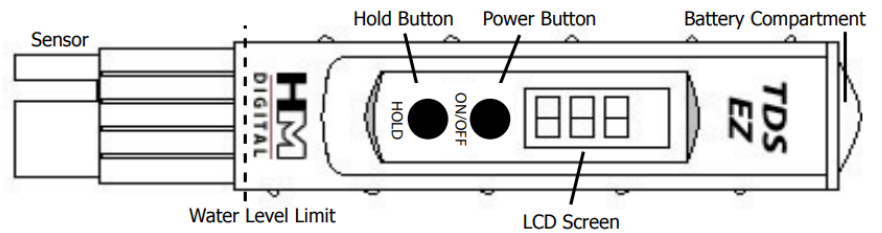
Water Control Corporation makes no warranties except those expressly stated in this document. To the extent permitted by the laws of the applicable state, **ALL WARRANTIES CONTAINED IN THIS DOCUMENT ARE EXPRESSLY IN LIEU OF, AND WATER CONTROL CORPORATION EXPRESSLY DISCLAIMS, ANY AND ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.**

WHAT IS NOT COVERED BY THESE WARRANTIES

1. Conditions, damages, and health effects resulting from any of the following:
 - Wear caused by unfavorable water conditions
 - Improper installation, delivery, or maintenance
 - Any repair, modification, alteration, or adjustment not authorized by the manufacturer or an authorized servicer
 - Misuse, abuse, accidents, or unreasonable use
 - Improper setting of any control
 - Incorrect electric current, voltage, or supply
 - Failure to test water at recommended intervals
2. Warranties are void if the original serial numbers have been removed, altered, or cannot be readily determined.
3. The cost of service or service call to:
 - Correct installation errors
 - Instruct the user on proper use of the product
 - Transport the product to the servicer
4. Any costs associated with removal of defective products, or installation of replacement products.
5. Consequential, special, or incidental damages sustained by any person as a result of the breach of these warranties. Some states do not allow the exclusion or limitation of consequential or incidental damages, so the above exclusion may not apply to you.

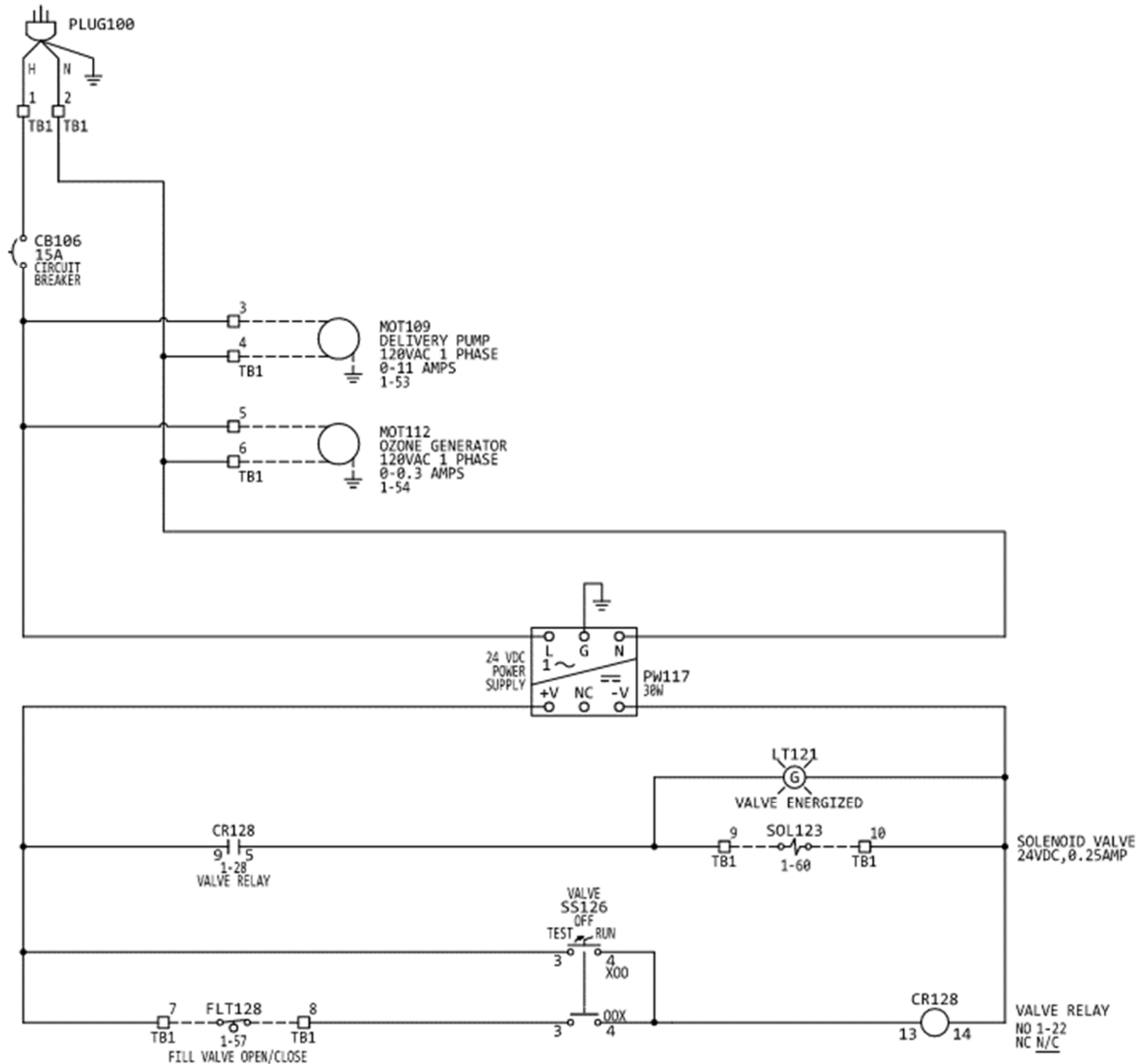
APPENDIX A – TAKING WATER QUALITY MEASUREMENTS

- 1) Remove the protective cap
- 2) Turn the TDS meter on. The ON/OFF switch is located on the panel
- 3) Immerse the meter into the water/solution up to the max immersion level (2"). If necessary, use a clean plastic cup to capture sample.
- 4) Lightly stir the meter to dislodge any air bubbles
- 5) Wait until the display stabilizes. Once the reading stabilizes (approx. 10 seconds), press the HOLD button to view the reading out of the water
- 6) If the meter displays a flashing "x10" symbol, multiply the reading by 10
- 7) After use, shake off any excess water from your meter and replace the cap



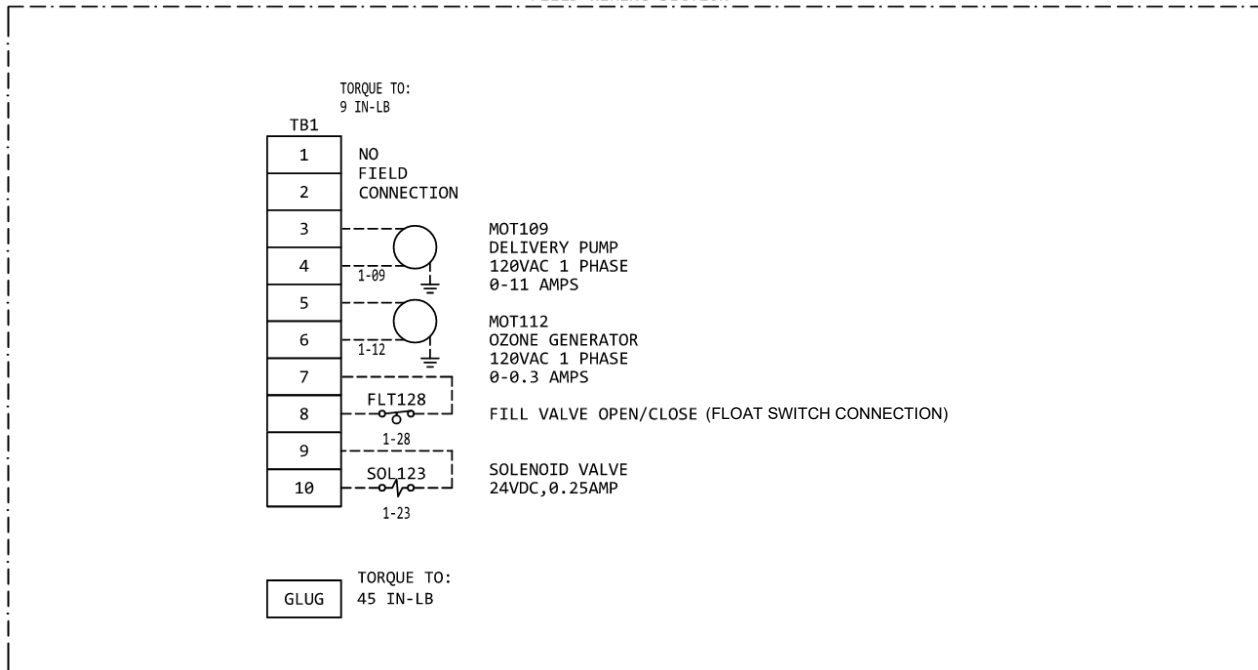
For additional information regarding your handheld TDS meter, visit www.hmdigital.com

APPENDIX B – WIRING SCHEMATIC



APPENDIX C – FIELD WIRING

FIELD WIRING SECTION



APPENDIX D – OZONE SANITIZING SYSTEM OPERATION INSTRUCTIONS

The ozone generator is included to keep stored water clean and sanitary.

WARNING: Do not inhale ozone. Ozone can damage lungs if inhaled. Go immediately to fresh air if exposed. Keep out of reach of children. Hazards to humans and domestic animals. Do not expose children, people, pets, plants, or valuables to ozone. If exposed to ozone, get to fresh air immediately. Seek doctors' advice if exposed to ozone for an extended period of time.

HIGH VOLTAGE! Service/maintenance work on the ozone generator should be performed by certified technicians only! For your safety, do not store or use gasoline, chemicals or other flammable liquids or vapors near this or any other appliance.



NOTE: Use only as directed. Follow all instructions provide in the manual. Buyer will assume all responsibility for installation and use not in accordance with direction.

- 1) To turn the ozone generator on, push in the main power switch located on the on the front of the ozone generator into the "ON" position
 - a. The red light above the main power button will illuminate
 - b. The LED will indicate 00 while blinking
- 2) Use the Plus (+) and Minus (-) buttons to select the desired function setting from the table for the desired application time. Setpoint #7 is recommended for initial setup.
- 3) The ozone generator will start 10 seconds after you select the setting on the LED screen
- 4) Once the generator starts producing ozone, the LED changes to display the time remaining for the setting you have selected
- 5) When the cycle is complete, the LED screen will change back to the setting number for repeat settings or (00) for one time run settings
 - a. Settings 1 – 5 are single run time settings
 - b. Settings 6 – 10 continuously repeat the selected cycle every hour
 - c. Settings 11 – 15 continuously repeat the selected cycle every 4 hours
- 6) To pause a setting, simply press the pause button below the LED screen
 - a. The LED will hold the previously selected function and the time remaining until the pause button is pressed again

- 7) Press the Plus (+) or Minus (-) buttons to select another function if desired
- 8) After the run cycle is complete, the air compressor will run for 10 seconds and will automatically shut off

NOTE: This ozone generator is not rated for continuous operation. Do not intentionally run the unit without a minimum pause of 15 minutes between each run cycle

FUNCTION	DESCRIPTION
1	Runs 2 minutes and turns off, one time run only
2	Runs 5 minutes and turns off, one time run only
3	Runs 10 minutes and turns off, one time run only
4	Runs 15 minutes and turns off, one time run only
5	Runs 20 minutes and turns off, one time run only
6	Runs for 2 minutes every hour, repeats every hour
7	Runs for 5 minutes every hour, repeats every hour
8	Runs for 10 minutes every hour, repeats every hour
9	Runs for 15 minutes every hour, repeats every hour
10	Runs for 20 minutes every hour, repeats every hour
11	Runs for 2 minutes every 4 hours, repeats every 4 hours
12	Runs for 5 minutes every 4 hours, repeats every 4 hours
13	Runs for 10 minutes every 4 hours, repeats every 4 hours
14	Runs for 20 minutes every 4 hours, repeats every 4 hours
15	Runs for 30 minutes every 4 hours, repeats every 4 hours



NOTE: The recommended starting setpoint for the ozone generator is #7 and is quite low/safe. However, if there is a noticeable buildup of ozone odor in the room, reduce the setpoint to #6.

To view the full operational manual, visit www.a2zozone.com

