

Ultra-High Efficiency RO/DI (MC-RODI-200UHE-10HC)



OWNER'S MANUAL & INSTALLATION INSTRUCTIONS

WARNING

Please read carefully before proceeding with installation. Failure to follow any attached instructions or operating parameter may lead to the product's failure and possible damage to property.

SpectraPure®

Thank You for your purchase of a SpectraPure[®] System. With proper installation and maintenance, this system will provide you with high quality water for years to come. All SpectraPure[®] products are rigorously tested by us for safety and reliability. If you have any questions or concerns, please contact our customer service department at 1.800.685.2783 or refer to our online troubleshooting at www.spectrapure.com.

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OPERATIONAL SPECIFICATIONS

| RO Feed water requirements | | | |
|--|--|--|--|
| Operating Pressure: | 40-80 psi (2.75-5.5 bar) 3-11 | | |
| Max. Temperature: | 113°F (45°C) | | |
| Max. Fe ed Turbidity: Max Silt Depsity Index: | 1.0 NTU 5.0 (based on 15 min test time) | | |
| Maximum Chlorine: | < 0.1 ppm | | |
| Maximum TDS: | 2000 ppm | | |
| Maximum Hardness. Maximum Iron: | < 0.1 ppm. $(170 \text{ ppm as CaCO}_3)$ | | |
| Maximum Manganese: | < 0.1 ppm. | | |
| Langelier Saturation Index (LSI): | 0 ppm must be negative | | |
| | | | |

NOTE: MOST MUNICIPAL WATER SUPPLIES MEET THE ABOVE REQUIREMENTS. IF WELL WATER IS USED, PLEASE MAKE SURE THAT YOU OBTAIN A WATER TEST BEFORE INSTALLATION.

CONTENTS OF UHE WATER SYSTEM

- (1) 5-Stage System
 - (2) SpectraSelectPlus[™] Membranes (90 GPD)
 - (1) 0.2 Micron ZetaZorb® Sediment Filter
 - (1) 0.5 Micron Carbon Block Filter
 - (1) High-Capacity MaxCap[®] DI Cartridge
 - (1) High- Capacity SilicaBuster™ DI Cartridge
 - (1) High Flow Recirculation Pump
 - (1) UHE Module
 - (1) Pressure Regulator
 - (2) Pressure Gauges
 - (2) Dual Probe Inline TDS Meters
- (1) High & Low Float Switches (with 6ft extension cable)
- (1) 24VDC Power Supply
- (1) Filter Wrench
- (1) 3/8" Bulkhead Fitting (for Pure Water Flush Cycle)
- (1) Safety Backup Float



SpectraPure[®] **Inc**. assumes no responsibility for water damage due to leaks. It is the user's responsibility to determine that the system is leak-free.

SYSTEM COMPONENTS



SYSTEM CONNECTIONS



UHE Control Module

(E)

ELECTRICAL CONNECTIONS

- A Floats Red/White/Black (3 sockets)
- B Flush Solenoid Red/Red (2 sockets)
- C Pump Connection Black/Red (2 sockets)
- D Input Solenoid White/White (2 sockets)
- E Power Transformer Black Barrel



LED SEQUENCES

- (1) Input Solenoid LED Lights when system turns on.
- 2 Pump LED Lights when system is pressurized and pump turns on.
- (3) Flush LED Lights during flush cycle.
- (4) RUN LED Blinks when system is powered on.

Normal Operation - 1+2 stay lit. Flush Operation - 1+3 stay lit. Float Failure - All three LEDs blink sequentially.

TOP VIEW

(One Membrane Shown for Clarity)



NOTE: When mounting your UHE, make sure it is elevated above your fresh water reservoir. Mounting your RO/DI system below the level of your reservoir may cause the pure water in your reservoir to flow out through the Pure Water Flush line to the RO/DI system and down the drain by way of the yellow waste water line. If you must mount the RO.DI system below the level of the pure water reservoir, you will need to install a siphon break in the yellow waste water line to prevent the reservoir from draining when the system is not in use.

INSTRUCTIONS FOR INSTALLATION OF SIPHON BREAK IN WASTE WATER LINE

- 1. Install a piece of PVC pipe that leads to the drain. (See Figure A below) The Inner Diameter of the PVC pipe needs to be greater than the Outer Diameter of the Yellow Waste Water line to allow air to flow between them.
- 2. Run the Yellow Waste Water line to the top of the PVC pipe.
- 3. Trim the Waste Water line, allowing for enough length to make a gentle bend at the top (be sure not to crimp the line) and to leave about 12 inches of line in the PVC pipe. (See Figure B below)
- NOTE: It is imperative that the end of the Yellow Waste Water line is above the level of the reservoir for the siphon break to be effective.
- 4. The Waste Water line may be secured to the PVC pipe using wire ties.



OPERATION DESCRIPTION (how the system functions)

- 1. The incoming feed water (3/8" Black line) is passed through a 0.2 micron ZetaZorb[™] Sediment Filter. This filter is required to remove excess turbidity (particulate matter) that may cause the carbon block filter to plug.
- 2. The second stage of filtration is a 0.5 micron carbon block prefilter. This filter removes organics and chlorine from the feed water that can damage the membrane.
- 3. The third filtration stage of the system is a high rejection thin film composite (TFC) reverse osmosis membrane. It removes over 98% of most inorganic salts, all microorganisms and organics above 100 diatoms molecular weight. A Flow Restrictor, located in the waste water line, is preadjusted for your location's maximum tap water temperature. This Flow Restrictor regulates the amount of water going to drain and determines the waste-to-product ratio. At the maximum yearly tap water temperature, the ratio should be close to 1:1. As the water gets colder, the ratio will increase by a small factor.
- 4. The fourth and fifth stage filter are our MAXCAP[®] DI cartridge followed by our SilicaBuster[™] DI cartridge. These two cartridges remove the remaining silicates, phosphates, and nitrates that get by the RO membrane.

High and Low Float Operation:

- 1. Floats are to be mounted horizontal when dry and float up when wet.
- 2. When the bottom float goes dry, the input solenoid is opened and one second later, the Recirculation Pump turns on.
- 3. When the top float becomes wet, a Flush Cycle commences and then the System shuts off until the bottom float goes dry again.



PROPER ORIENTATION OF LIQUID LEVEL FLOATS

Flush Cycle (flush cycle consumes only a couple of quarts of pure water):

- 1. As the system is running, a periodic sequence of flushes is performed.
- 2. When the top float gets wet, or every 8 hours of uninterrupted operation, the flush cycle is initiated.
- 3. After the flush cycle, the system shuts down if the tank is full or pauses for an hour to let the pure water soak the membrane before continuing.

PREPARATION

1. CHOOSING THE BEST MOUNTING LOCATION:

LIGHT SOURCE: Algae is more likely to thrive inside clear housings when exposed to ultraviolet light and other sources like metal halide lighting. Avoid installing the unit in bright light or direct sunlight.

EXTREME TEMPERATURES: The unit MUST be kept out of areas that are subject to extreme temperatures like freezing or temperatures greater than 113° F (45° C).

FRESH WATER RESERVOIR: Mount system in an area that will have enough room for a small trash can or reservoir. This Fresh Water Reservoir is to be used for the Flush Cycle. (Reservoir needs to hold at least 10 gallons.)

ELEVATION FOR SYSTEM: When mounting your UHE, make sure it is elevated above your fresh water reservoir: (If system is installed below the reservoir, see Installation of Siphon Break on Page 6.)



GRAVITY DRAIN WATER FROM ELEVATED TANK TO TRASH CAN FOR SALT MIXING OR TO SUMP

2. TOOLS RECOMMENDED FOR INSTALLATION:



- Adjustable Wrench
- Sharp X-Acto Knife
- Open End Wrench(s)
- Electric Drill - 5/8" Drill bit - 13/16" Drill bit
- Phillips Screw Driver
- Trash Barrel or Reservoir

FOR SALT MIXING OR TO SUMP

- Optional Ball Valve or Float Valve (as shown above)

FRESH WATER

USE DELIVERY PUMP TO DELIVER WATER WHERE NEEDED

- Optional Delivery Pump (as shown above)

3. INTRODUCTION TO PUSH FITTINGS:

Push fittings are similar to a Chinese finger trap toy. In order to release its grip from tubing:

- Firmly depress and hold the push fitting collar down with your thumbnail.
- While the push fitting collar is depressed, pull the tubing straight out of the push fitting. Once the tubing is removed, release the collar.



H TRASH CAN

SETUP PROCEDURES

- STEP 1: Unscrew the third position housing (MaxCap[®] DI) and the fourth position housing (SilicaBuster DI) from the system and remove the DI Cartridges. Then, reinstall the empty housings back onto the system.
- STEP 2: Connect the 3/8" Black Line to the cold water line by using either the garden hose adapter, which is provided with the system, or a Feed Water Adapter.



SETUP PROCEDURES (continued)

- STEP 4: For now, direct both the 1/4" blue (product or permeate) line and the yellow 3/8" (waste or concentrate) line to drain.
- STEP 5: Open the cold water (tap water) feed, connected to the black line.
- STEP 6: Connect the 24 **VDC** power supply to the barrel connector on the UHE Control Module and plug it into a wall outlet. (See Page 5.)
- STEP 7: At this stage, the system will start producing water from the 1/4" blue and 3/8" yellow lines. Discard that water for approximately 15-20 minutes.
- STEP 8: PRESSURE ADJUSTMENT USING THE PRESSURE REGULATOR:



- A. When the Pressure Regulator is pushed down, it is in the lock position.
- B. Lift up on the Pressure Regulator to unlock it and turn it clockwise to increase pressure or counterclockwise to decrease pressure. While the system is producing water, set the pressure to 80 psi, then relock the pressure knob.
- STEP 9: REINSTALLING AND FLUSHING DI CARTRIDGES:
 - A. Disconnect power to the system and turn off the water supply line.
 - B. Unscrew the third clear housing and reinstall the MaxCap[®] Cartridge.

NOTE: At this time, leave the fourth clear housing empty.

- C. Turn on water supply line and reconnect power to system. Allow water to run through the MaxCap[®] Cartridge and down the drain, until the right-hand meter (SET TO "IN") reads "000".
- D. Then, follow step A and place the SilicaBuster[™] DI in the fourth clear housing.
- E. Finally, turn the water supply line back on, plug the power back in and allow the water to run through the SilicaBuster[™] DI Cartridge and down the drain, until the right-hand meter (SET TO "OUT") reads "000".
 - **NOTE:** At least 2 gallons (7.57 liters) of purified water should be discarded during the flushing procedure before you can collect purified water for use.

Upon startup, air may be trapped in the DI cartridges (housings may not appear full), this is a normal condition and will not affect the operation of the RO/DI system.

(continued on next page)



SETUP PROCEDURES (continued)



STEP 11: CONNECT SAFETY BACKUP FLOAT AND BULKHEAD FITTING:

(Safety Backup Float and Bulkhead Fitting MUST be installed on the same container that the floats are on. (SEE DIAGRAMS ON PAGES 8-9)



1/4" SAFETY BACKUP FLOAT: Use a paddle bit and carefully drill a 7/16" hole for installation at the top of the reservoir (above the high level float).

CAUTION: Make sure that you offset the safety backup float so that it is not directly above the high-level float, otherwise the incoming water may interfere with the proper operation of the high-level float.



3/8" BULKHEAD FITTING: Use a paddle bit and carefully drill a 13/16" hole for installation at the bottom of the reservoir (below the low level float).

(continued on next page)

SETUP PROCEDURES (continued)

STEP 12: FINAL CONNECTION:

- A. Direct the waste line (yellow) to a drain or connect it permanently to a drain pipe via a Drain Saddle. (Drain Saddle is not included with system.)
- B. Inspect for leaks and do not leave the system alone until you are sure there are no leaks. Monitor the system for 72 hrs.

CAUTION

An extremely long drain line may create a siphon which will pull the water past the 4# check valve and cause water to drain from the tank after shutdown.

See "Instructions for Installation of Siphon Break in Waste Water Line" on Page 6.

OPTIONAL INSTALLATION FOR WASTE WATER LINE (USING A DRAIN SADDLE)



CHECK BEFORE LEAVING SYSTEM UNATTENDED:

- Ensure that all fittings are tight and leak-free before leaving the system unattended.
- The concentrate line (yellow) includes a smaller capillary tube (flow restrictor) that is located "inside" of the tubing. Do not remove or discard this restrictor; the system will not produce permeate water without the flow restrictor.
- The following conditions must be met before water can be produced: The water source must be turned "ON" and the water level in the reservoir tank must be below the low level float.

MAINTENANCE PROCEDURES

Maintenance and troubleshooting procedures have been made easy and effective with a combination of the (2) Dual TDS meters and a built-in pressure gauge. It is recommended that you keep replacement cartridges on hand, ready to install as soon as the monitor indicates that the cartridge in use is exhausted.

METERING AND DIAGNOSTICS

The digital TDS meter (left side) will provide a reliable means of evaluating the efficiency of the RO membrane. This meter will indicate the tap water conductivity (IN PROBE) and the RO water conductivity (OUT PROBE). The difference between the two meter readings can be used to calculate the percentage rejection of the (TFC) RO membrane. (as shown on page 14)

The Digital TDS meter (right side) will be used to determine the condition of the two DI stages. When the reading on the (IN PROBE) reads 50% of the left-side meter's OUT reading, then the MaxCap[®] DI Cartridge needs to be replaced. When a reading on the (OUT PROBE) is higher than 001 PPM, replace the SilicaBuster Cartridge.

SHELF LIFE FOR FILTERS

PREFILTERS (Sediment and Carbon Block Filters): Prefilters have an infinite shelf life.

REVERSE OSMOSIS MEMBRANE (RO): Purchase an RO membrane when needed. If you would like to keep one on hand, you can store it in the refrigerator for up to 1 year. (Keep in its sealed, original packaging). You should always see moisture inside the bag. If the membrane dries out, it will not produce water and any warranty will be voided).

DEIONIZING CARTRIDGES (DI)

Replacement DI cartridges are shipped in a Mylar[®] Bag. Keep them in their sealed, original packaging until use. You can store them for up to 1 year.

SEDIMENT PREFILTER REPLACEMENT:

For maximum contaminant removal and long membrane life, the sediment prefilter must be changed when the system fails to maintain the preset pressure of 80 PSI. If your water contains a great deal of sediment, the prefilter may require more frequent changes to maintain adequate production rate and extended membrane life.

Materials Required: 0.2 micron ZetaZorb[®] Sediment Filter (SF-ZZ-0.2-10), Filter Wrench. (Failure to use a ZetaZorb[®] sediment filter as the replacement will void the system's warranty.)

Procedure: (See Front View on Page 4 for location of correct housing.)

- 1. Turn off water supply to the system.
- 2. Using the provided filter wrench, remove the first housing on the left. Unscrew it counterclockwise as viewed from the bottom.
- 3. Remove the old filter and discard.
- 4. Thoroughly wash the housing with a mixture of hot soapy water and a few teaspoons of household bleach. Rinse well with clean hot water.
- 5. Install the new prefilter into the housing, Screw the housing back onto the assembly, and **hand tighten only**.

NOTE: Do not use filter wrench to tighten housings. Over-tightening will damage housings and void your warranty.

6. Proceed with carbon block filter replacement.

CARBON BLOCK PREFILTER REPLACEMENT:

For maximum contaminant removal and long membrane life, the Carbon prefilter must be changed when the Chlorine Test Kit shows more than 0.1 ppm of chlorine in the waste water stream.

Materials Required: 0.5 micron Carbon Block Filter (CF-0.5-10), Filter Wrench, Chlorine Test Kit (TK-CL-10-KIT)

Procedure: (See Front View on Page 4 for location of correct housing.)

- 1. Turn off water supply to the system.
- 2. Using the provided filter wrench, remove the second housing on the left. Unscrew it counterclockwise as viewed from the bottom.
- 3. Remove the old filter and discard.
- 4. Thoroughly wash the housing with a mixture of hot soapy water and a few teaspoons of household bleach. Rinse well with clean hot water.
- 5. Install the new prefilter into the housing, Screw the housing back onto the assembly, and **hand tighten only**.

NOTE: Do not use filter wrench to tighten housings. Over-tightening will damage housings and void your warranty.

6. Turn on system's water supply and check for leaks.

REVERSE OSMOSIS MEMBRANE REJECTION DIAGNOSTICS:

Although RO membranes are capable of maintaining high water quality over extended periods of time, they eventually will begin to deteriorate. Normally, the conductivity of the permeate water will increase as the membrane ages. By comparing the difference in TDS readings between the Tap water TDS and the RO water TDS, the "percentage rejection" of the RO membrane may be calculated and the resultant value may then be used to determine the condition of the membrane. In this way, the operator will know when the membrane needs to be replaced. Membrane failure will be indicated by a reduction in the percentage rejection which will be determined by calculating the differential between the input and output TDS readings.

In order to accurately determine the condition of the RO Membrane, a conductivity tester (TDS meter) capable of reading the tap water conductivity and the permeate water conductivity has been provided with this system. With the assistance of the left-hand (meter #1) Dual TDS meter, you will be able to easily determine the RO membrane's condition.

Before performing the diagnostic test on the RO membrane, make sure that the RO system has been "ON" and producing pure water for a minimum of 10 minutes. Also check the brine (yellow) line to make sure that water is flowing and that the flow ratio between the brine water and the permeate water is at a ratio that is between 1:1 and 2:1. (NOTE: The pressure gauge should indicate a pressure reading of 80 PSI during this 15-20 minute test period.)

Procedure:

- 1. Turn on the left-side meter by depressing the "ON" button.
- 2. Locate the meter slide switch on the front of the DM-1 TDS meter.
- 3. Measure the tap water conductivity by sliding the switch to the left (IN) position. Call this X.
- 4. Measure RO water conductivity by sliding the switch to the right (OUT) position. Call this Y.
- 5. Subtract the RO water conductivity from the tap water conductivity. (X Y)
- 6. Divide this quantity by the tap water conductivity. $(X Y) \div X$
- 7. Multiply that by 100 to get the percent rejection of the RO membrane.
- 8. The general rule is that you should replace your Reverse Osmosis (RO) Membrane when the % rejection falls below 95%.

Rejection of the RO Membrane Calculation Example

- 1. Tap water hardness = 150 ppm (X)
- 2. RO water hardness = 7 ppm (Y)
- 3. X Y = 143 ppm
- 4. $(X Y) \div X = 143 \div 150 = 0.953$
- 5. Rejection = [(X Y) ÷ X] ×100 = 0.953 ×100 = 95.3%

REVERSE OSMOSIS MEMBRANE PRODUCTION RATE TESTING:

Actual production rate of a membrane is dependent on two factors: Tap Water Pressure and Tap Water Temperature.* The testing standards for RO membranes are 60 psi (4.1 bar) tap water pressure and 77°F (25°C) tap water temperature. Changing either of these factors affects the output of the RO membranes.

PRESSURE COMPENSATION:

The Pressure Compensation Factor is calculated by dividing the water pressure at the inlet for the RO membrane by the standardized 60 psi rating that is used for all membranes. Since the 200UHE comes factory equipped with a brushless DC booster pump, that figure should always be 80/60 or 1.33 (4/3). (See Pressure Adjustment on page 8.)

The UHE System uses two RO Membrane that are each nominally rated to produce 90 GPD at 60 psi. Therefore, the expected production (before Temperature Compensation) would be 180 x 4/3 or 240 GPD.

TEMPERATURE COMPENSATION:

The viscosity of water changes with temperature. Colder water does not pass through the membrane as easily as warm water. Look up the water temperature on the chart below to determine the Temperature Compensation Factor (TCF) value. Multipy it by the pressure-compensated flow rate of 240 GPD.

For Example, if your tap water temperature is 59° F. The TCF is 0.730. Multiplying 240 GPD by 0.730 results in a temperature-compensated flow rate of 175.2 GPD.

| °F/°C | TCF | °F/°C | TCF | °F /°C | TCF |
|---------|-------|---------|-------|---------|-------|
| 41.0/5 | 0.521 | 59.0/15 | 0.730 | 77.0/25 | 1.000 |
| 42.8/6 | 0.540 | 60.8/16 | 0.754 | 78.8/26 | 1.031 |
| 44.6/7 | 0.560 | 62.6/17 | 0.779 | 80.6/27 | 1.063 |
| 46.4/8 | 0.578 | 64.4/18 | 0.804 | 82.4/28 | 1.094 |
| 48.2/9 | 0.598 | 66.2/19 | 0.830 | 84.2/29 | 1.127 |
| 50.0/10 | 0.620 | 68.0/20 | 0.857 | 86.0/30 | 1.161 |
| 51.8/11 | 0.640 | 69.8/21 | 0.884 | 87.8/31 | 1.196 |
| 53.6/12 | 0.661 | 71.6/22 | 0.912 | 89.6/32 | 1.232 |
| 55.4/13 | 0.684 | 73.4/23 | 0.941 | 91.4/33 | 1.267 |
| 57.2/14 | 0.707 | 75.2/24 | 0.970 | 93.2/34 | 1.304 |

Temperature Correction Factor Table (TCF)

* Tap Water Hardness is also a factor that, at high levels, will reduce the production rate. For simplicity, that factor has not been accounted for in this equation as its effect is not nearly as pronounced as that of temperature and pressure.

REVERSE OSMOSIS MEMBRANE REPLACEMENT:

- 1. Turn off the water supply to the RO system and unplug the transformer. Place the system where the membrane housing is easily accessible.
- 2. Remove the black tubing from the membrane feed push fitting by depressing the collar on the fitting with your thumb and pulling the tubing from the push fitting.
- 3. Lift the membrane housing from the retention clips.
- 4. Unscrew the membrane housing lid. This may require two people.
- 5. Use a pair of pliers to grasp the membrane stem and pull the membrane from the housing.
- 6. Remove the black housing O-ring. Wash the empty housing with soapy water. Rinse thoroughly with hot, clean water.
- 7. Insert new membrane into the housing, with the double O-ring end first. The tube must fit into the recess at the bottom of the membrane housing. When the membrane is aligned with the hole, firmly push the membrane into the hole until it bottoms out.
- 8. Place the black housing O-ring on the housing rim and carefully screw the lid back on to the base.
- 9. Reconnect the black tubing to the membrane feed push fitting.



TIPS FOR LONG MEMBRANE LIFE:

- 1. Replace the 0.2 micron ZetaZorb[®] sediment filter once every 6 months. This will prevent membrane fouling due to silt or sediment depositing on the membrane.
- 2. Replace the 0.5 micron carbon block filter at least once every 6 months or when chlorine breakthrough occurs. This will ensure good membrane life and protect the membrane from chlorine damage.
- 3. Soft water will greatly increase the life of an RO membrane.
- 4. Membrane should not be operated at lower than the preset concentrate to purified water ratios.
- 5. Operating reverse osmosis systems on softened feed water greatly reduces the chances of membrane fouling.

DEIONIZATION CARTRIDGE MAINTENANCE AND REPLACEMENT

Materials Required: Filter wrench and DI cartridges (See "Replacement Parts" on Page 20 for correct part numbers.)

NOTE: In order to receive an accurate reading, the system must be producing water for at least 10 minutes before reading the TDS meters.

Maintenance for MaxCap® DI Cartridge:

When the reading on the right-hand TDS meter (set to "IN") displays 50% (or greater) of the reading on the left-hand TDS meter (set to "OUT"), it is time to replace the MaxCap[®] DI cartridge.

- 1. Disconnect power to the system and shut down the water supply line.
- 2. Unscrew the third clear housing and insert the new Cartridge. Discard the old cartridge. NOTE: at this time leave the fourth clear housing empty.
- 3. Make sure the DI cartridge is installed in the correct direction as marked on the cartridge shell and be sure that the top seal is securely attached to the top of the cartridge.
- 4. Tighten the cartridge housing by rotating it clockwise and hand tighten.
- 5. Turn the supply line back on, plug the power back in, and redirect the product water to drain. Allow water to run through the MaxCap[®] DI Cartridge until the reading on the right-hand meter (set to "IN") is "000".
- 6. Check system for leaks.
- NOTE: When replacing DI cartridges, ALWAYS flush the MaxCap[®] DI with the downstream cartridge removed. There is a large ionic load present in a new MaxCap[®] DI cartridge. Failure to flush this cartridge will shorten the life of the downstream DI.



Maintenance for SilicaBuster[™] DI Cartridge:

When the reading on the right-hand TDS meter (set to "OUT") displays "001" (or greater), it is time to replace the SilicaBuster™ DI cartridge.

- 1. Disconnect power to the system and shut down the water supply line.
- 2. Unscrew the fourth clear housing and insert the new Cartridge. Discard the old cartridge.
- 3. Make sure the DI cartridge is installed in the correct direction as marked on the cartridge shell and be sure that the top seal is securely attached to the top of the cartridge.
- 4. Tighten the cartridge housing by rotating it clockwise and hand tighten.
- 5. Turn the supply line back on, plug the power back in, redirect the product water to drain and allow the water to run through the SilicaBuster[™] DI Cartridge until the right-hand meter (set to "OUT") is "000".
- 6. Check system for leaks.

TROUBLE SHOOTING GUIDE

| Problem | Cause | Corrective Action |
|----------------|--|---|
| Low production | on rate. | |
| | a. plugged prefilters. | i. Replace prefilters. |
| | b. fouled membrane. | ii. Replace membrane. |
| | c. plugged flow restrictor. | iii. Replace flow restrictor & membrane. |
| Zero producti | on rate. | |
| | a. Dried membrane. | i. Replace membrane. |
| | b. Power supply not plugged in | ii. Plug power in. |
| | c. Floats not in dry position | iii. Check floats for proper orientation and replace if necessary |
| Extremely hig | h production rate. | |
| | a. Ruptured membrane. | i. Replace it. |
| Milky colored | water. | |
| | a. Air in system. | i. Air in the system is a normal occurrence with initial startup of the RO/DI system. This milky appearance will disappear during normal use within 1-2 weeks. If condition recurs after filter changes, drain tank 1 or 2 times. |
| The water in t | he Pure Water container drains out wh | en not used. |
| | a. The system is not elevated higher than the Pure Water container | i. Elevate the system higher than the Pure Water container to avoid siphoning. |
| | b. Check Valve on Pure Water Flush is not functioning | ii. Replace Check Valve |

iii. Create an air gap in the waste water line.(See Installation of Siphon Break on Page 6.)

c. An air gap is needed

ONE YEAR LIMITED WARRANTY

SpectraPure, Inc.[®] warrants the product to the original owner only to be free of defects in material and workmanship for a period of one year from the date of receipt. SpectraPure's liability under this warranty shall be limited to repairing or replacing at SpectraPure's option, without charge, F.O.B. SpectraPure's factory, any product of SpectraPure's manufacture. SpectraPure will not be liable for any cost of removal, installation, transportation or any other charges which may arise in connection with a warranty claim. Products which are sold but not manufactured by SpectraPure are subject to the warranty provided by the manufacturer of said products and not by SpectraPure's warranty. SpectraPure will not be liable for damage or wear to products caused by abnormal operating conditions, accident, abuse, misuse, unauthorized alteration or repair or, if the product was not installed in accordance with SpectraPure's or other manufacture's printed installation and operating conditions, or damage caused by hot water, freezing, flood, fire or acts of God.

SpectraPure will not be responsible for any consequential damages arising from installation or use of the product, including any water or mold damage due to flooding which may occur due to malfunction or faulty installation, including, but not limited to failure by installer to over- or under-tighten fittings, housings, and/or push-style fittings, or improper installation of push-style fittings. Consumable items such as prefilters and membranes are not covered under the one year warranty.

To obtain service under this warranty, the defective system or components must be returned to SpectraPure with proof of purchase, installation date, failure date and supporting installation data. Any defective product to be returned to the factory must be sent freight prepaid. Documentation supporting the warranty claim and a Return Merchandise Authorization (RMA) number must be included. SpectraPure will not be liable for shipping damages due to the improper packaging of the returned equipment and all returned goods must also have adequate insurance coverage and a tracking number.

SpectraPure will not pay for loss or damage caused directly or indirectly by the presence, growth, proliferation, spread or any activity of "fungus", wet or dry rot or bacteria. Such loss or damage is excluded regardless of any other cause or event that contributes concurrently or in any sequence to the loss. We will not pay for loss or damage caused by or resulting from continuous or repeated seepage or leakage of water, or the presence or condensation of humidity, moisture or vapor, that occurs over a period of 14 days or more. "Fungus" and "fungi" mean any type or form of fungus or Mycota or any byproduct or type of infestation produced by such fungus or Mycota, including but not limited to, mold, mildew, mycotoxins, spores, scents or any biogenic aerosols.

SpectraPure will not be liable for any incidental or consequential damages, losses or expenses arising from installation, use, or any other causes. There are no expressed or implied warranties, including merchantability or fitness for a particular purpose, which extend beyond those warranties described or referred to above.

* The one year limited warranty does not apply to consumable items, including but not limited to, filters and cartridges unless specifically stated above.

TERMS AND CONDITIONS:

- 1. Shipping charges on units or parts submitted to our facility for repair or replacement must be borne by the registered purchaser. After repair or replacement, the factory will return the unit or part freight prepaid to the customer.
- 2. We assume no warranty liability in connection with our equipment other than as herein specified.
- 3. This warranty is in lieu of all other warranties expressed or implied, including warranties of fitness for a particular purpose.
- 4. We do not authorize any person or representative to assume for us any other obligation on the sale of our equipment. This is the exclusive remedy and liability for consequential damages under any and all warranties which are excluded to the extent exclusion is permitted by law.
- 5. Proof of original purchase date must accompany all warranty claims.
- 6. SpectraPure, Inc. Reserves the right to change prices without notice when necessary. All prices in the catalog are quoted in US dollars.
- 7. Claims for error in quantity or condition must be made within 10 days of receipt of material. SpectraPure, Inc. will not be responsible for any claimed shortages not reported within 10 days. Returns other than warranty claims may be subject to 20% restocking fee.
- 8. SpectraPure, Inc. cannot be held liable for damage or loss to a shipment by a freight carrier. Check shipment for damage before acceptance or note on freight bill subject to inspection for concealed damage. Consignee must file claim. SpectraPure, Inc. will offer as much assistance as possible.
- 9. A complete credit check is required prior to shipping on a Net 30 basis. In the interim period during which credit references are being evaluated, all orders must be prepaid until approved.
- 10. All returned checks (due to insufficient funds or closed accounts) will be subjected to a \$35 penalty charge.
- 11. Invoices on Net 30 accounts not paid within 30 days of shipment will be considered delinquent and will accrue Finance charges at the rate of 1.5% per month (18% per annum).

REPLACEMENT PARTS

| Catalog No. | Replacement Parts | Description |
|---------------------|--|---|
| SF-ZZ-0.2ABS-10 | ZetaZorb [®] Sediment Filter | 0.2 Micron Sediment Filter (1st Stage) <i>(Failure to use a ZetaZorb[®] sediment filter for replacement will void the system's warranty.)</i> |
| CF-0.5-10 | Carbon Filter | 0.5 Micron Carbon Prefilter (2nd Stage) |
| MEM-SP-0090 | RO Membrane | 99% Rejection SpectraSelectPlus Membrane (3rd Stage) |
| DI-MC-10HC | MaxCap [®] DI | High-Capacity MaxCap [®] Deionization Cartridge (4th Stage) |
| DI-SB-10HC | SilicaBuster™ DI | High-Capacity SilicaBuster™ Deionization Cartridge (5th Stage) |
| GHA-6JG | Garden Hose Adapter | 3/8" Garden Hose Adapter |
| E-TRN-115V-24VDC-SW | Transformer for Booster Pump | 24VDC/2.5A Transformer |