ULTRA PURE SYSTEMS 625 GPD RODI INSTALLATION AND OPERATION MANUAL

Thank you for choosing **UPS** (Ultra-Pure Systems) for your RO/DI solution. We are confident you have made the right decision. This system will effectively remove 99% of contaminants as well as organic and inorganic compounds.

Table of Contents

Product Specification

General:

6- Stage Reverse Osmosis + DI Water Purification System

Capacity Generates: 625 gallons per day depending on water temperature, pressure and chemistry variations.

Dimensions:

Cabinet: Height 42”, Width 35”, Depth 13”
Bladder: Height 37.5”, Diameter 21” Flexwave SSRO 40
Weight 235pnds wet/205pnds dry

About the System:

Reverse Osmosis process:

- The Reverse Osmosis process works via separation. Domestic water enters the system, and it is separated at the 4th stage membranes filter. One side would go to the storage tank (purified water); the other side carrying contaminants is purged to the drain. The ratio of purified water to drain water is approximately 1:2. That means for every gallon of water you use, it will drain approximately 1 ½ to 2 gallons. The drain is required for the RO process to work. If the drain is intentionally shut off, contaminants will be accumulated inside the membrane, this will permanently damage all RO membranes.
- All Reverse Osmosis units require purging of water when producing water.

Purification Processes/ Filter specifications:

Removes microbiological contaminants like Cysts (protozoan), inorganic/Radiological contaminants like Barium, Cadmium, Copper, Chromium (hexvavalent), Chromim (trivalent), Fluoride, Lead, Radium 226/228, Selenium, etc. Ammonia, Arsenic, chloramines, chlorine, copper, lead, nitrate, phosphate, silica, hardness, calcium, magnesium, other dissolved solids.

- 1st Stage: 5 micron sediment filter 2” X 18” height, made by 100% pure polypropylene fibers
- 2nd & 3rd Stage: Carbon Filter, 2” X 18” height, composed of high-performance coconut carbon
- 4th Stage: TFC type membrane (1) 400GPD 2”X 21” long (1) 225 GPD 2”x 14” long in S/S housing.
- 5th Stage: DI Resin tank .66 cu/ft replaceable resin.
- 6th Stage Viqua UV sterilizer light

Production:

The final purity of the water leaving the RO/DI System is between 0-2 PPM. Systems flow is rated at 625 gpd +/- 15% based on 77degree water, 125psi applied pressure. 500 ppm NaCI softened filtered water.

Drain rate:

The drain rate of the system is set at .86 gal/min. using a flow restrictor. This drain rate is constant,independent of input pressure.

Performance:

Average Rejection rate is 92 to 98% of dissolved solids after RO. 98 to 100% rejection rate after RO/DI resin. Permeate flow for individual elements may vary +/- 20%

Warranty:

- 1 year complete system Warranty on parts. Hardware and Filters are not included under warranty.
- **WARNING:** IF KNOWN BACTERIA PROBLEMS EXIST AN ULTRA VIOLET LIGHT IS REQUIRED FOR PROPER OPERATION
- **WARNING:** DO NOT CONNECT HOT WATER TO THIS SYSTEM
- **WARNING:** INCORRECT INSTALLATION WILL VOID WARRANTY
- **WARNING:** USING OTHER BRANDS OF FILTERS WILL VOID WARRANTY

System Requirements:

- Working pressure 40-80 psi feed water pressure required.
- maximum water pump 100 psi.
- Working temperature 100-40 deg. F (37-4 deg. C)
- pH range 2-11

System Includes:

- Pre Filters, RO Membrane, DI tank
- HDPE plastic cabinet with door hinges and lockable handles.
- Storage Tank 40gl pressurized tank with pre-charge of 7-10 psi.
- (4) Pressure gauges (1) 0-300 psig and (3) 0-100 psig mounted on side of cabinet. Inlet pressure, feed pressure, pump pressure, tank pressure.

- (2) GPM flow meters mounted inside of cabinet. Permeate water flow and Concentrate water flow.
- Sterilizer Ultraviolet Light
- Digital RO/DI monitor
- ROC-5 Reverse Osmosis Controller 115v.
- (3) Single Point 1/2" FPT connections.

Installation:

We have designed this system to be a turnkey solution to obtain RO/DI without using salt and costs associated to soft water systems.

Once the RO-DI system arrives, inspect for damage and notate on delivery BOM all evident damage with pictures. Contact UPS promptly @ 800-729-5192 to resolve any issues immediately.

If no damage is evident proceed with uncrating the system.

(1) Pipe Domestic water to UPS system on side of cabinet and terminate piping with ½" MPT connection to inlet water connection. Install ½ ball valve to isolate domestic water manually.

(2) Pipe Drain water to approved Local Code waste water and terminate piping with ½" MPT connection on side of cabinet to Drain/Concentrate fitting.

(3) Pipe DI water from DI fitting on side of cabinet with (3) ball valves. 1st ball valve will be in line with bladder to store DI water/ 2nd ball valve will be in tee going to process. 3rd ball valve pipe to approved drain for manually flushing system.

(4) Pipe DI water to process/Ultra Sonic humidifier

(5) See recommended piping diagram last page of IOM.

Piping outside of the RO/DI is typically S/S however there are several manufacturers of plastic pipe that withstand DI water. Refer to local municipally code for DI water delivery.

WARNING: Confirm Domestic water IN and Concentration OUT is piped correctly. Severe damage will occur if piped backwards.

Electrical:

- Each system requires 115v/15a dedicated circuit to operate system.
  (1) Located on top left side of cabinet is #14 115V plug.
  (2) **GFCI** required prior to operation
  (3) Verify 115v

Final flushing:

(1) Close ball valve to bladder, open DI/Process water ball valve to drain.
(2) Push start and wait for delay. Motor will start and unit will start producing water. Allow to run for approx. 15min.
(3) Shut unit down, reverse ball valves, close drain ball valve and open bladder ball valve.
(4) Turn system on and allow to run approx. 45 min.

System gauge tolerances after initial start-up:

- Inlet Pressure Gauge: (40-80 psi)
- Feed Pressure Gauge: (40-80 psi) new. Over time feed pressure will drop. This indicates pre-filters need to be changed. 10-15 psi delta.
- Pump Pressure: (100-125 psi)
- Tank Pressure: System will function up until tank pressure reads 60psi. As DI water is used from bladder pressure will drop to 40 psi and pump will start again.
- Flow Meter: (.1 -1 gpm)
- Concentration flow meter (.2 - 2 gpm)

Operation:

UPS-625

- Domestic water enters the system via water in/feed inlet port on side of box. Prior to water entering system there is an automatic valve that opens once the RO controller goes through start up. Once water starts flowing domestic water passes through the 1st stage sediment filter, 2nd carbon filter 3rd and one final pass through the 3rd chamber carbon filter. Water enters pump and exits at approximately 125psi which goes to RO Membrane. This is where the 1:2 ratio happen. Concentrate water goes through flow meter and RO water goes through Permeate flow meter. Last pass of RO water goes into DI tank and out to the UV sterilizer. Water exits cabinet to process.

Concentration Flow Gauge:

- The concentrate flow meter is a useful tool to review how much water the system is purging at any given time while the pump is on.

Permeate Flow Meter Gauge:

- The Permeate flow meter is a useful tool to review how much water the RO/DI system is producing while in operation (pump on).

Inlet pressure: (pnds sq/in) gauge:

- The inlet glycerin gauge mounted on the side door monitors incoming domestic pressure while pump is on. This gauge will be helpful for diagnosing if domestic pressure has been lost or turned off.

Feed pressure: (pnds sq/in) gauge:

- The feed glycerin gauge mounted on the side door monitors the pressure of the water after the sediment and to carbon filters. The feed gauge and the inlet pressure gauge is very helpful to determine when to change the pre-filters. Monitoring the monthly pressure difference of inlet and feed gives a good indication to replace pre-filters. Approximately 15 psi differentials should prompt replacement of filters.

Pump pressure: (pnds sq/in) gauge:

- Pump glycerin gauge mounted on the side the cabinet gauge is used for optimizing the amount of pressure put onto the entering port of the RO membrane. Each UPS-625 delivered is tested at 77° with 100psig. Depending on domestic pressure each unit should be dialed in to obtain 100-125psig.

Tank pressure: (pnds sq/in) gauge:

- The tank pressure gauge will be 0psi upon start up. Once the system starts making water and the bladder starts filling this gauge will move. Within 6-8 hrs this gauge should read 60psi and pump shuts off. Once pressure drops below 40psi the system will automatically start producing water until the tank pressure is restored to 60 PSI.

  Note: All gauges with exception to tank pressure will show 0 psi with exception to tank pressure while system is off. This is due to the ROC-5 controller closing the inlet valve until a call for water occurs.

HM Digital Meter:

- This meter is designed to monitor parts per million (PPM) of permeate clean RO/DI water and temperature of the water. Local alarm will annunciate if water quality exceeds alarm limits. User defined.

Both temperature and PPM is factory calibrated and does not require any additional calibration once on site.

Maintenance / Filter Replacement:

Filter Life:

- 1st **Stage Sediment Filter**: Recommend changing every 3 months or when pressure difference of 15-20psi from inlet and feed gauges appear SED 5MIC-L Part # UPF_4295

- 2nd & 3rd **Stage Carbon Block Filter**: Recommend changing every 3 months CAR 10MIC-L. Part # UPF_4296

- 4th Stage **RO Membrane:** Every 6 months depending on water quality after pre-filters have been changed. Should not exceed 85 PPM during normal operation MEM2521 & MEM2514. Part # UPF_5296

- 5th Stage **DI Polish Resin:** Every 6-12 months depending on PPM. Should not exceed +/- 10 PPM. Part # UPD_6291

Filter replacement:

Filter replacement changes from site to site. In order to maintain your system, we recommend putting the UPS-625 on a regimented filter replacement throughout the year.

Pre-filters:

1) Turn System off; close bladder valve and domestic water valve.
2) Open ball valve from process to drain. This will remove any pressure from system.
3) Proceed to unscrew the used pre-filters (CCW) counter clockwise until the filter drops off.
4) All pre-filters have alignment notches. Confirm that notches match the inside housing for proper sealing. Proceed to install the replacement pre-filters (CW) clockwise.
5) Once the filters have been replaced confirm ball valve outside cabinet is closed, domestic and bladder ball valve is open. Turn the system on.
6) Turn system on
7) Inlet Pressure and Feed Pressure should be the same +-2 psi

Membrane:

8) Turn System off; Open ball valve from process to drain. This will remove any pressure from system. Remove red clips from yellow, black and blue plastic fittings.
1) Continue to remove S/S housing from cabinet. With a #10 wrench unscrew the clamp that secures the black plug to the housing.
2) Carefully remove the black plug and set aside.
3) Slide the membrane out of the housing and disregard.
4) Slide new Membrane into tube and use included Silicone to seal O ring prior to pushing plug back into housing. **RO Membranes are directional**
5) Reseal housing with clamp and install membrane into system.
6) Install red safety clips
7) Once the Membrane has been replaced confirm all valves are open and turn the system on.
8) Turn system on.
9) Permeate should read 40-60 PPM on ROC-2 controller and HM Digital Meter.

DI Resin:

1) Our recommendation with DI resin is to have a local water treatment company change the cylinder out when the DI meter exceeds 10 PPM. Please confirm all filters have been changed prior to changing resin. If DI PPM exceeds 10 PPM change DI resin ASAP.

Web Site Support

If additional support is needed, we have videos online to assist with routine maintenance. www.ultrapureus.com

Ultra Pure Systems is always here to help. If at any time you have questions or concerns regarding the system please feel free to Contact us @ 1-800-729-5192. Thank you once again for choosing **UPS** for your RODI needs.