

REVERSE OSMOSIS SYSTEM

SINGLE PASS REVERSE OSMOSIS SYSTEM

System Features and Functional Highlights

The PRIME 8,000 x 6,000 GPD-DP Series is designed with advanced features that enhance performance, monitoring, and water efficiency for dialysis-grade water treatment. Below are the key system components and capabilities:

PLC-Based Control System: Equipped with a Programmable Logic Controller (PLC) for precise and efficient system management.

Individual Membrane Monitoring: Each RO membrane includes a dedicated in-line flow meter to allow real-time monitoring of product flow.

Flexible RO Membrane Configuration: Supports variable membrane configurations, including parallel and parallel-series setups, allowing adaptability to operational demands.

Comprehensive Pre-Filtration Monitoring: Integrated pressure gauges and sampling ports at each pre-filter stage enable accurate diagnostics and quality control.

Manual RO Membrane Flushing: Manual flushing function post-operation helps extend membrane life and maintain optimal performance.

Automated Water Recycling: Automatically recycles RO 2 reject water back to the raw water tank, significantly improving water use efficiency.

Integrated Flushing & Declogging Line: Built-in lines facilitate RO membrane flushing and declogging for simplified maintenance and consistent output.

Variable Reflux System: Enables reflux control, allowing a portion of the reject water to be recirculated back into the feed for improved processing.

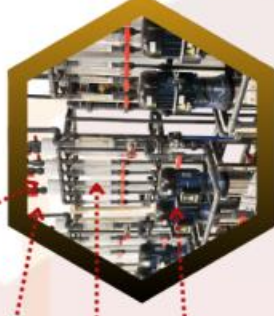
Advanced RO 2 Reflux System: Allows a portion of RO 2 reject to be returned to the raw holding tank to dilute the raw water. The system includes a manual option to divert this to the RO 1 holding tank. Once both tanks are full, flow is automatically diverted to the reject line to prevent overflow.

4040 RO Membranes

Individual Valve Control

Individual Flow Meter

High Pressure Pump



Description

PRIME 10k SP Series

The PRIME 10,000 GPD-SP Series is a locally manufactured and assembled water treatment system specifically designed for dialysis use. Built with versatility in mind, the system allows end-users to configure and program settings tailored to their operational requirements—delivering both functionality and convenience.

At the core of the system is a Schneider TM221CE24R Programmable Logic Controller (PLC), ensuring efficient and reliable control of the entire treatment process.

At RC PRIME, we are committed to innovation and continuous improvement. Our systems are developed with an emphasis on ergonomic design, quality, and affordability, positioning them to compete with international brands.

Safety and compliance remain our top priorities. The system is designed to fully comply with AAMI Water Quality Standards and the regulatory guidelines of the Department of Health (DOH), ensuring it meets the highest standards for dialysis applications.



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10,000 GPD SINGLE PASS RO SYSTEM

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Control System

Main Controller : Using PLC Module
Low and High-Water Level Sensors : A float switch controls the systems operation as part of the interlocking components.
Raw Water Input Control : A 220 VAC solenoid valve that controls the incoming raw water. Equipped with a by-pass ball valve in case the solenoid is faulty.
Drain Control Valve : Controls the flow of the drain line when backwashing is interrupted due to lack of raw water supply. This prevents the continuous flow of water by gravity while filling up the raw tank.
Low- and High-Pressure Switch : Yes, using a digital pressure controller for a more sensitive and accurate response.
Auto and Manual Switches : Yes, every stage has its own auto and manual switches with the corresponding indicator lamp which motor is running. These include overload indicators.
Back Up System (Automatic) : Yes. Pumps are controlled by a 24-hour timer that switches automatically triggered every 1-hour (default settings).
Back Up System (Manual) : Yes, can be manually triggered in the event of failure of the main pumps.
RO Inlet Pressure Gauge (Oil) : 0-350 PSI
Concentrate Pressure Gauge (Oil) : 0-350 PSI
RO Pre Filter Pressure Gauge (Oil) : 0-100 PSI
Conductivity Meter (Feed) : PPM/ uS/cm
Conductivity Meter (Product) : PPM/ uS/cm
Conductivity Meter (Return/Loop) : PPM/ uS/cm
Low- and High-Pressure Alarm : 14 mm Pilot Lamp
Emergency Stop Switch : Yes, Manually Pressed during Emergency
Auto Flushing : Yes, with 14 mm Pilot Lamp Indicator
RO Pump on Delay : Yes, with 14 mm Pilot Lamp Indicator
Recirculation Mode : Yes, Manually Triggered during night mode (Optional)
RO Pressure Alarm off Delay : Yes, (When High Pressure is detected)



Technical Specifications

Capacity - GPD, 1st Stage : 10,000 Gallons per Day (GPD)
RO Main Pump 1st Stage : 2 Units, 3.0 Hp, 2.2 kW Multistage Vertical Pump, CDMF 3-12, Single Phase
RO Back Up Pump 1st Stage : 2 Units, 3.0 Hp, 2.2 kW Multistage Vertical Pump, CDMF 3-12, Single Phase
Phase : Single Phase (BFD)
Voltage : 220 VAC, 60 Hz
Recovery - %, 1st Stage : Adjustable from 30% - 50 % (Depending on Water Quality)
Rejection - % : 90 to 99 % (Depending on Raw Water Quality)
Membrane Housing 1st Stage : 5 x 4040 FRP Vessel
RO Membrane 1st Stage : 5 x 4040, RO Membrane
Flow Meters (Permeate) : 0-20 GPD
Flow Meter (Concentrate)

Pre Treatment System

Feed Pump with Pressure Controller (with Back up Pump) : Horizontal Pump
Rated Power: 1.5 kW, 2 hp, Single/Three Phase, 220/240 VAC, Q: 4 m³/h
Multi-Media Filter : 16 X 65" FRP Tank (PENTAIR/CANATURE), 4.0 Inches Base
Carbon Filter (2 Units) : 16" X 65" FRP Tank (PENTAIR/CANATURE), 4.0 Inches Base
Water Softener : 16" X 65" FRP Tank (PENTAIR/CANATURE), 4.0 Inches Base
Backwashing Release Valve : Yes, automatically triggered when backwashing is activated. This prevents high pressure build up at the FRP Control Head to avoid gear displacement of head controller.
Brine Tank : 120 Liters PVC Tank
Pressure Gauges and Sampling Outlets : Equipped with pressure gauges every after stage with corresponding sampling port.

Storage and Distribution Module

RAW Water Holding Tank (Blue) : 1,000 Liters PE Tank w/ 304 S/S Frame
Permeate Holding Tank : 1,050 Liters Polyethylene Storage Tank
Distribution Main Pump : 2 Units, Horizontal Pump, 1.1 kW, 1.5 hp, Single Phase, 220/240 VAC
Distribution Back Up Pump : 2 Units, Horizontal Pump, 1.1 kW, 1.5 hp, Single Phase, 220/240 VAC
Recirculation System : **Rated Power:** Solenoid Ball Valve (220 Vdc) with By-pass Valve and manually triggered during night shift. Programmable 24-hour timer.
UV System Distribution Side : 1 Unit 6 GPM UV Water Sterilizer
Sediment Filter with Housing (Pre UV) : 1 Unit SL 20 Sediment Filter with Housing
UF Filter with Housing : 0.2 Micron Bacteria Filter 2.5" x 20" Clear Housing
Piping and Fittings : Grey Pipe and Fittings Scheduled 40