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CRANE WATER

730 COMMERCE DRIVE

VENICE, FL

34292 USA

35 gpm Water Purification System Operating and Maintenance Manual

For

Customer: Crown Solutions Co. LLC

Customer Purchase Order # Loan PO 11504128 Cl. 25100

Crane Blog Order # 11/15/2013

End User: SAHIC (2013) 11/15/2013 - 11/15/2013



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SECTION 1 – INTRODUCTION

1.1 PURPOSE OF THIS MANUAL

This manual is intended to assist the installer and operator of the Crane Water Purification System to operate and maintain the system effectively. The focus of this manual is strictly on the Water Purification Equipment, and is not intended to address other customer-supplied equipment. Although this manual has been specially prepared for this unit, conditions may occur which are not specifically covered. If unusual conditions occur, it is recommended that you contact a Crane Water Field Service Representative prior to attempting any corrective measures that are not specifically outlined in this manual.

The information contained in this manual is intended for use by installers and/or operators of this equipment at their own discretion and risk. Since conditions of use are outside the control of the manufacturer, we cannot assume liability for results obtained or damages incurred through the application of the information presented. This information is not intended as a license to operate under or a recommendation to infringe upon any patent or copyright.

DESIGN OVERVIEW

This Water Purification System is a skid-mounted 9 x 840 Reverse Osmosis system mounted on a single frame. The 9 x 840 Reverse Osmosis Water Treatment System was designed in accordance with membrane projections based on the customer's water requirements, specifications, and the feed water analysis. Final Permeate production is projected to be 35 gpm, with Conductivity of 1.79 mg/L TDS. Actual production rates will depend on the actual feed conditions at the installed location of the water purification system.

Basic components of the 9 x 840 Reverse Osmosis Skid include a sediment prefilter housing, a high-pressure pump, reverse osmosis pressure vessels, membranes, control valves. ORP, Conductivity, pH, Pressure, and Flow are monitored by sensors for display and logic decisions within the Microprocessor control system.

The Microprocessor Enclosure is mounted on the 9 x 840 skid frame. The Control Enclosure houses the Variable Frequency Drive (VFD) for the RO high-pressure pump motor, contactors, switches, and a DC power supply and the microprocessor controller with display. The enclosure is fan cooled. The display screen is located on the front panel of the Control Enclosure, with an Emergency Stop mushroom switch and the chemical dosing pumps HOA switches.

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This Water Treatment System is designed to process raw feed water from the customer-supplied source at a rate of 46 gpm and a minimum pressure of 40 psig. Feed water is dosed with both dechlorination and pH adjust solutions. The influent then enters the 5 μ (micron) filter housing before being pumped by the VFD-controlled RO high-pressure booster pump to the first array of the RO unit. The total recovery rate varies with water temperature and other site conditions.

The final Permeate flow of 35 gpm from the RO unit is fed to the customer's Permeate Storage Tank. The entire system will continue to run, producing Permeate until the customer's water tank level float switch reaches the "high" level.

Following is an outline of the components and conditions relating to this equipment order:

1. One (1) skid mounted 9 x 840 RO Unit with Microprocessor Controls Enclosure
2. One (1) Prefilter Housing with seven (7) 5 micron filter cartridges, installed on the RO skid
3. Fast Flush Feature (full flow of feed water bypassing the Concentrate Control valve) upon RO shut down.
4. One (1) Variable Frequency Drive (VFD) unit for control of the RO High Pressure Pump
5. One (1) Antiscalant Chemical Dosing Unit, installed off-skid from the RO frame
6. One (1) pH adjustment Dosing Unit, installed off-skid from the RO frame
7. Permeate divert feature is provided to divert permeate to drain when water quality is below the desired set point.