WATER TECH - Commercial RO Systems

R4X40-1 System

R4X40 RO Series

Three models for flow rates to 6600 GPD

Standard Features

- Powder coated steel frame
- Inlet solenoid valve
- 20” prefilter
- Prefilter pressure gauge
- Multistage centrifugal pump
- Low-pressure protection with microprocessor auto reset
- 2 ½” liquid filled pump pressure gauge
- Stainless steel pressure vessel(s)
- Product flow meter
- Reject flow meter
- Concentrate needle valve
- Non metallic recycle needle valve
- On / off toggle switch
- Feed water and product water TDS monitor

Applications

- Whole house
- Boiler feed water
- Humidifiers
- Greenhouses
- Process Water
- Electronics

Specifications

Membrane Size	4” x 40”
Average membrane rejection	98 %
Feed Water Connection	3/4" NPTF
Prefilter	20”
Product Water Connection	5/8"tubing OD
Reject Water Connection	5/8"tubing OD
Feed Water Pressure (minimum)	10 psi
Electrical Requirement	120 VAC 60 Hz

Options

Part Number	Description
R2353-SD	Product float switch
R2288	Whole House Option*

*Includes 300 gal tank, product float switch, and repressure pump with built in controls

Models

	R4X40-1	R4X40-2	R4X40-3
Maximum Productivity (gallons per day)	2200	4400	6600
Recovery (user adjustable)	15 - 75 %	25 – 75%	32 - 75 %
Number Of Membranes	1	2	3
Feed Water Required (maximum)	10gpm	12 gpm	14 gpm
Drain Required (maximum)	10gpm	12 gpm	14 gpm
Motor Horse Power	3/4	1	1 1/2
Electrical Requirement	15 amps	20 amps	25 amps
Dimensions W x D x H	20 x 20 x 50	20 x 20 x 50	20 x 26 x 50
Shipping Weight (estimated lbs)	120	150	180

Notes: Maximum production based on a feed water of 77°F, SDI < 1, 1000 ppm TDS, and pH 7. Individual membrane productivity may vary (± 15%). May be operated on other feed waters with reduced capacity. Percent Rejection is based on membrane manufactures specifications; overall system percent rejection may be less.

*Also available in 230 volts single phase.

Introduction

WT Reverse Osmosis (R/O) Systems are designed to provide the commercial and industrial user with the most trouble free, cost effective and reliable form of water treatment available, by providing every option necessary for a successful installation.

Principles of Reverse Osmosis

WT R/O systems employ thin film composite spiral wound membrane elements for superior performance. To simply describe the process, pump pressure is used to supply source water to reverse osmosis membranes. These special membranes allow only high quality water to permeate them. In turn, they reject metals, salts, ionic and organic impurities that are processed to waste. Suspended solids are removed by pre-filters, which are standard components on all WT RO systems.

Water temperature

Product water quality and production of any RO system is dependent on pressure and temperature. WT RO systems are rated at standard conditions of 77°F (25°C), 60 psi (4.2 bar) inlet pressure and 1,000 TDS feed water quality. Higher temperatures will result in more water passing through the membranes and increased water production. As a rule, at given pressures and TDS levels, for each one-degree change in water temperature the change in water production is approximately 2%.

Water temperature		Production Factor*
°F	°C	(Using thin film membranes)
40	4	0.48
50	10	0.60
60	16	0.73
70	21	0.88
77	25	1.00
80	27	1.06
90	32	1.26

*Percent of rated production.

Water pressure

WT commercial RO systems require a minimum of 10 psi feed pressure to function properly. The maximum pressure is 90 psi, and a pressure regulator must be utilized over 90 psi to reduce feed water pressure.

Feed / source water inlet requirements

The source water requirements shown below are essential for proper operation:

Inlet feed water requirements	
Factor	**Requirement**
Hardness	<1 grain per gallon
Free chlorine	0 ppm
T.D.S.	<1,000 ppm
S.D.I.	<5
pH	3-11
Iron	<0.01 ppm
Silica	<25 ppm
Manganese	<0.05 ppm
Turbidity	<1 NTU
Temperature	40°F - 95°F (4°C - 32°C)
Pressure	10 - 90 psi (2.8 - 5.6 bar)

Note: Pretreatment may be required if the above parameters are not met. Failure to meet feed water requirements may foul membranes, void the warranty and possibly make it necessary to down-rate performance.

All specifications listed are based on an average of 1,000 TDS feed water, 77°F (25°C) temperature and 60 psi (4.2 bar) pressure. Typically, higher-pressure differentials and higher temperatures increase water production and water quality. Maximum pressure and temperature limits must be observed.

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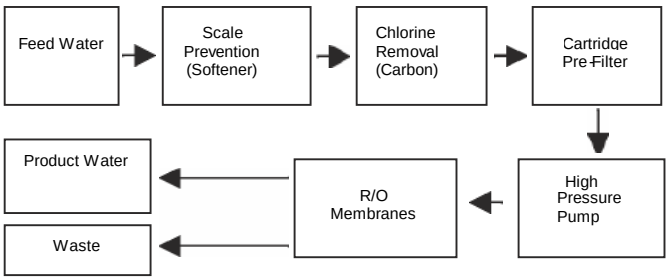
General RO Process Diagram



1. System location

The RO system should be located on a level surface in an area sheltered from sun, wind and rain. The temperature in this area should be maintained, and should not fall below 35° F, nor greater than 95° F. If these limits are exceeded, damage to components may result and the warranty may be considered void. It is important to allow sufficient space around the unit so maintenance can easily be performed.

2. Plumbing

The high-pressure pumps used require a continuous flow of water to the system. Minimum feed pressure is 10 psi. Please see table, below for minimum flow rates.

3. Feed water

Piping for feed water to the RO system should be either copper or plastic. Iron and carbon steel pipe will increase the iron content of the raw feed water and adversely affect the RO system's performance. Temperature of the feed water must not exceed 95° F.

4. Product water (permeate) line connection

Connect the product water (permeate) line to the manifold on the back side of the system. This line should not have valves and should run as directly as possible to the storage tank.

5. Concentrate (waste) line connection

Connect the waste line (concentrate) to the manifold on the back side of the system. The waste from the system should not have valves and should have an air break between it and the building drain system. The tubing or piping used for discharge of the concentrate should be run to an open drain in a free and unrestricted manner.

6. Electrical

The customer must provide a properly sized electrical service.

Level controls

In most installations it is necessary to use the level switch connector wire to install a level control or an electrical switch to turn the RO system on and off based on the water level in the storage tank.

Pumps

Never let pumps run dry. Operating pumps without sufficient feed water will cause damage. Feed pumps with filtered water only.

Pre-filtration

All WT RO systems come with particulate pre-filters to remove suspended particles down to five (5) micron in size. Change pre-filter cartridges at least every month or when there pressure differential of 10% or more that start-up pressure differential with clean cartridges.

Limited warranty

WT Commercial Reverse Osmosis systems are warranted to the original purchaser to be free of defects in material and workmanship for a period of one year from date of shipment.

Normal wear,
accident, abuse, misuse, unauthorized alteration or repairs are also excluded. WT will not be responsible for any incidental or consequential damages, losses or expenses arising from the installation or use of aWT system.