

Reverse osmosis 4000 gpd

Technical specifications : Commercial and industrial reverse osmosis systems

Operating profile

The system uses reverse osmosis technology to reduce total dissolved solids (TDS) level in water by a minimum of 95%, depending on raw water quality. System contains its own pressurization system to optimize the production of water through the membranes. System operating pressure should be between 90 and 130 psi (6,2 and 9,0 bar). System functionalities include monitoring and regulating devices to adjust the system's operating pressure. The system contains an electric inlet valve that closes when a tank full or a problem signal is received. A low pressure switch serves to protect pump from cavitation damage during low pressure occurrences. On/Off cycling is based on a normally open dry contact (ex.: level float switch) that closes when the system needs to shutdown. The unit is equipped with audible and visual alarms as well as a fused disconnect switch.

Pump design

Units use a multi-stage vertical stainless steel submersible pump. Pump motor is 1 HP (60Hz) or 1½ HP (50 Hz) and NEMA rated.

Membranes and housings

System uses two thin film composite membranes in a spiral wound configuration. Each membrane size shall be 102 x 1 016mm (4.0" x 40") with an area of 16,2 m² (85 ft²). Each membrane and housing shall be rated for a working pressure to 225 psi (15,5 bar). Housings shall be mounted in a vertical configuration.

Plumbing configuration

System incorporates a reject recovery design and provides for an adjustable internally recirculated flow rate. Reject flow is controlled by a pressure regulating valve. During a shut down mode, the feed side of the membrane shall be flushed with at least 5 housing volumes of permeate water. PureRince cycle shall be automatic with each shutdown.

Control system

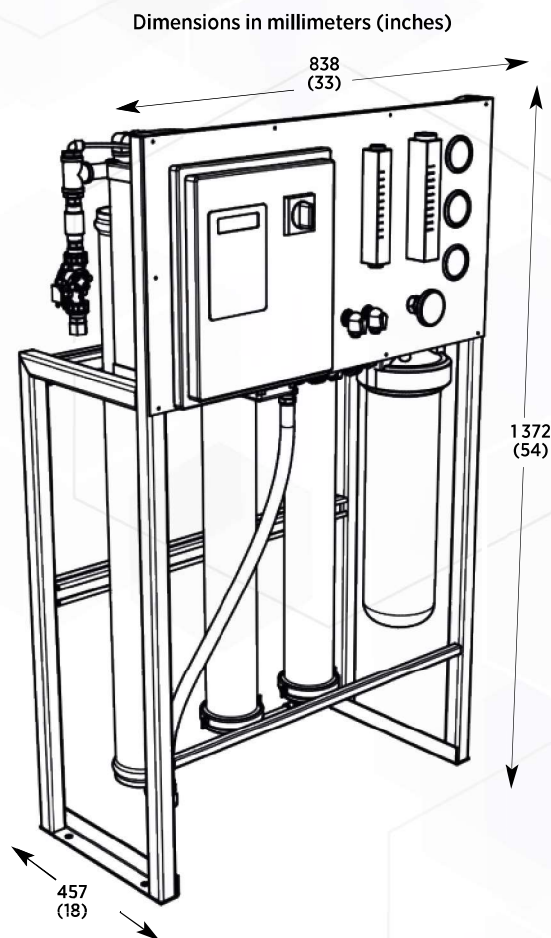
All system controls are automated and monitored by an integrated circuit. The system displays permeate water quality data in microSiemens (µs) at all times. The controller activates system alarms, including high or low pressure alarms and poor water quality alarms. When the system is in shutdown mode, the feed side of the membrane is flushed with permeate water. All electronic components are enclosed in a non-metallic NEMA 4X housing. System controls include a main disconnect switch that can cut the main electrical feed.

Skid

The system is assembled on a corrosion resistant stainless steel frame. The unit will not weight more than 112 kg during operation.

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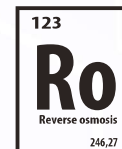


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Daily production chart
(liters/day)

TDS (NaCl) inlet water (mg/l)

°C/°F		500	1 000	2 000
25/77	(gpd)	4 000	4 000	3 686
	(lpd)	1 5140	15 140	13 952
15/59	(gpd)	3 686	3 312	2 606
	(lpd)	13 952	12 536	9 864
5/41	(gpd)	2 448	2 203	1 742
	(lpd)	9 266	8 338	6 593

* Inlet water parameters used for calculations : raw water at 25°C. SDI < 3, no counterpressure.



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Components

Inlet valve	1" FNPT
Inlet filter	5 microns, 114 x 508 mm (4,5 x 20")
Pressurization pump	Submersible booster pump Stainless steel 316
Motor	1HP NEMA
Low pressure protection	Pressure switch
Membrane housing	Stainless steel
Membrane type	TFC - Low energy
Membrane dimensions	102 x 1 016 mm (4" x 40")
Number of membranes	2
Membrane surface m ² (pi ²)	16,2 (174)
Recirculation control	Manual flow control
Drain control	Regulation valve (flow/pressure)
Reject flow meter	0-37,9 lpm (0-10 gpm)
Permeate flow meter	0-18,9 lpm (0-5 gpm)
System shutoff control	Float/contact device
Inlet water quality monitor	0-1 000 µS
Permeate water quality monitor	0-250 µS
Display screen	Printed circuit board, 2 line screen

Connections

Electric power supply	208-240VAC/1ph/60Hz, 12-10,4 Amp. 208-575VAC/3ph/60Hz Other power supply configurations available on demand
Inlet	1" FNPT
Permeate	1/2" MNPT
Reject	3/4" MNPT
PureRince process	1/2" FNPT

Feed water

Inlet pressure	25-50 psi (1,7 - 3,4 bar)
Operating pressure	90-130 psi (6,2 - 9,0 bar)
Temperature	4 - 30 °C
pH	2 - 11 SU
Chlorine	0,05 mg/l
Iron (Max.)	<0,3 mg/l
Silica (Max.)	10,0 mg/l
Total dissolved solids (Max.)	3 000 mg/l

Operating specs

Permeate flow rate *	10,5 lpm (2,78 gpm)
Reject flow rate @ 50 %	10,5 lpm (2,78 gpm)
Daily production	15 140 l (4 000 gal)
Reject rate	97-99 %
Recovery ratio	50-65 %
Rinse time	10 minutes
Rinse volume (Min.)	75,8 l (20 gal)
Width x Depth x Height	838 x 457 x 1 372 mm (33 x 18 x 54")
Shipping / operating weight	122/163 kg (270/360 lbs)

Options

Raw water conductivity probe
Reject water conductivity probe
BACnet or Modbus communication protocols available
Direct feed
Programmable logic controllers (PLC)
Stainless steel piping (316)
Alternate or auxiliary pump