"Designed, Tested and Approved for Shipment by LWT Engineering Staff"

REVERSE OSMOSIS WATER TREATMENT

LTF 2, LTF 3 and LTF 4 SERIES RO SYSTEMS

14,400 TO 252,000 GALLONS PER DAY AND LARGER

Lakeside Water for Affordable Pure Water Technology

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Packaged Reverse Osmosis Systems for Brackish Water

Lakeside Water incorporates the latest technology and high quality components in manufacturing a complete line of systems to treat all your applications. Our pre-engineered and custom designed systems purify water by reducing dissolved minerals, particles, organics and other contaminants in your water up to 98%. Membrane technology is used to separate the feed water into two streams. One stream of water is the high purity water (permeate) and typically flows into an atmospheric tank for the future use. The other water stream produced is called the reject or concentrate stream and carries the impurities to the drain. Lakeside's waste water reuse system reduces your disposal costs.

Sequence Of Operation – If the level float switch located inside the atmospheric product tank is calling for water, the standard programmable controller will signal to OPEN the automatic feed valve and pressurize the pump suction. It then signals to START the high pressure pump (HPP) pumping high pressure water through the membranes. This is where the two streams of water are separated. The Permeate water is sent to the atmospheric tank, where a high level float switch detects a full tank signal and shuts down the high pressure pump. A post low pressure membrane flush rinses water to drain. The concentrate water is discharged to a floor drain. The two streams must be adjusted properly to maintain the manufactures operating guidelines to produce high purity water. The re-pressurization pump skid delivers the permeate water from the storage tank to the end-user locations. A recirculation loop is typically utilized on atmospheric tank applications to provide constant pressure to service.

Pre-Treatment -Typically, a reverse osmosis system requires pre-treatment of the water supply to prevent hardness, iron fouling or chlorine destruction of the membranes. Our team of engineers have years of experience and can design a chemical feed or equipment pre-treatment package to meet your application requirements.

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Pre-Treatment Options: Multi- Media filters reduce the turbidity down to 10 microns. The lower the SDI number, the better protection of the membranes. **Carbon filtration** is designed to provide membrane protection by removing the free chlorine and organics that cause membrane destruction and fouling. **Water Softeners** protect the membranes by removing all hardness, preventing scaling that reduces: membrane life, water quality, water volume production and equipment down time. OR **Chemical feed systems** that inject chemicals for pH, anti – scaling and de-chlorination into the feed water for membrane protection.

Quality Control – Lakeside's team of engineers take pride in designing performance systems. **Our engineers program, test, verify operation and release each system for shipment.** Lakeside's high level of quality control ensures a happy and satisfied customer. Your success is our Top Priority!

Lakeside's Standard Microprocessor Controller on the 4" systems displays the operating status and conductivity. Monitors / Controls: high pressure pump, inlet solenoid, automatic flush valve, low and high pressure switches, RO storage tank level switches (1 or 2), operating hours, pre-treat lockout and water temperature. The economical controller features LCD with easy touch key pad and user friendly programmable flush modes. Electrical specifications: 120/240 vac, 50-60 hZ, 25 watts. 8" x 6" x 4" NEMA 4X.

Allen Bradley PLC is standard on the 8" systems. By simply programming the parameters on the 6" HMI EZ Touch color screen, the Reverse Osmosis system is fully automatic. The HMI displays the operating status and conductivity while monitoring and controlling: flow meters, flush times, high pressure pump, inlet solenoid, automatic flush valve, low and high pressure switch, RO storage tank level switches (1 or 2) and operating hours. Racked instrumentation includes: inlet, suction, pump, permeate and reject pressure gauges. The pre-treatment is coordinated, controlled and monitored by the PLC and can be programmed to your specifications. NEMA 4X with 120/240 VAC, 50-60 HZ. Ethernet port for data export is included.

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Standard Features:

- Ultra-Low Pressure Membranes reduce power consumption by 30% and provide high rejection rates
- FRP membrane vessel housings
- 4" systems use polypropylene cartridge filter vessels and 304 stainless steel for 8" systems with **1 micron filters-high protection**
- Stainless Steel multistage centrifugal high pressure pump and piping
- Skid mounted permeate and reject throttling valves with flow meters
- Racked & labeled liquid filled pressure gauge package
- 4" systems Include in-line rotameters
- 8" systems include Signet paddle wheel flow sensors
- Low and High Pressure switch protection
- **PLC Automated Permeate Flush on 8" systems protects the membranes from impurities ensuring longer life**
- High efficiency motor (TEFC) , 208-230/460VAC, 3 phase , IEC motor starter and disconnect on system
- Skid mounted construction on a welded epoxy coated steel frame provides the ultimate corrosion resistance
  Fiberglass option available

System Options:

- Multi-media and/or carbon filtration, water softener treatment, chemical feed water treatment
- Optional I/O Expander: Permeate divert or remote alarm relay, auxiliary relay, tank low switch
- Temp gauge, pH, ORP and conductivity sensors
- Product water diversion
- RO pressurized and atmospheric storage tanks
- Re-pressurization pump skids and controls
- Membrane clean in place (CIP) Skid mounted or portable roller skid (CIP)
- UV sterilization and sub-micron filtration
- Deionization polishing systems deliver high quality water up 18 Meg-ohm
- Pre-Engineered products, custom controls, programming and engineered systems available

*Reverse Osmosis Systems require a membrane flush every 24 hours (minimum) to reduce bio-growth and fouling.

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Optional Post Treatment Equipment: Degasifies, chemical feed injection systems, and UV sterilizers are provided to assure the product water is within specifications. Deionizers polish the RO product water to produce up to 18 meg-ohm/cm water.

LTF 2 Specifications:

Model	Capacity (GPD)		Motor	Connections (in.)			Dimensions	Ship Wt.
	Typical	Max	HP	Feed	Product	Reject	L x W x H (in.)	(lbs.)
LTF2-14400	12,540	14,040	5	1.5	1	1	135 x 38 x 70	870
LTF2-19200	16,700	18,690	7.5	1.5	1	1	135 x 38 x 70	950
LTF2-24000	20,900	23,370	7.5	1.5	1	1	135 x 38 x 70	1030
LTF2-28,800	25,000	28,040	10	1.5	1.5	1	135 x 38 x 70	1170

LTF 3 Specifications:

Model	Capacity (GPD)		Motor	Connections (in.)			Dimensions	Ship Wt.
	Typical	Max	HP	Feed	Product	Reject	L x W x H (in.)	(lbs.)
LTF3 – 42,000	35,040	41,600	10	2	1.5	1	145 x 36 x 80	1940
LTF3 – 63,000	52,560	62,400	15	2	1.5	1	145 x 36 x 80	2490
LTF3 – 84,000	70,080	83,220	15	2	2	1.5	145 x 36 x 80	3095
LTF3 – 105,000	87,600	104,020	20	2.5	2	1.5	145 x 50 x 80	3440
LTF3 – 126,000	105,100	124,800	25	2.5	2.5	1.5	145 x 50 x 80	3865

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LTF 4 Specifications:

Model	Capacity (GPD)		Motor	Connections (in.)			Dimensions	Ship Wt.
	Typical	Max	HP	Feed	Product	Reject	L x W x H (in.)	(lbs.)
LTF4 – 112,000	93,400	110,900	25	2.5	2	1.5	192 x 50 x 80	3905
LTF4 – 140,000	116,800	138,700	30	3	2.5	2.5	192 x 50 x 80	4260
LTF4 – 168,000	140,160	166,440	30	3	2.5	2.5	192 x 50 x 80	5000
LTF4 – 210,000	175,200	208,100	40	4	3	3	272 x 50 x 80	5800
LTF4 – 252,000	210,240	250,000	40	4	3	3	272 x 50 x 80	6300

1). Total system capacity is after 3 years of operation at standard conditions with 55F. or warmer feed water. Maximum capacity requires ideal operating conditions and high area membranes.

2). Standard operating conditions are 1000 ppm TDS softened feed water, SDI less than 3.0, 7- to 80% conversion, 50 psi. Inlet.

3). Detailed specifications, drawings and computer projections are available on request.

4).Standard power is 460 VAC, 30, 60 Hz.

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