

*“Designed, Tested and Approved for Shipment  
by LWT Engineering Staff”*

## MIX BED DEIONIZER

**LWMD Series**



**Industrial Mixed-Bed Polishing System**

## Water Quality to 18 Meg-ohms!

**Deionization** is the removal or reduction of positive ions called cations and negative ions called anions from the water supply. High purity water from 1.0 to 18.3 megohms/cm and a silica level of .10ppm to 0.01ppm or lower can be produced. The cation resin is converted to the hydrogen form and exchanges positive ions for hydrogen. The Anion resin is converted to the hydroxyl form and exchanges the negative ions for hydroxyl. This ion exchange process removes the majority of the dissolved minerals and produces deionized water (H<sub>2</sub>O). Mixed bed systems utilize a single tank with thoroughly mixed resins. A mixed bed system produces a higher quality of deionized water compared to a two bed system. Ion exchange does not reduce the bacterial count of the water.

**Carbon Steel Pressure Vessels** Standard working pressure is 100 PSIG maximum. **The vessels come skid mounted with interconnecting piping, isolation valves and sediment strainer on the mixed-bed outlet.** Standard systems have sight window assemblies included. A standard vinyl ester lining of 35-45 mils DFT is applied internally and 6-8 mils DFT safety blue epoxy finish coating is applied over the exterior of the vessel. The standard vessels are non-code constructed, but ASME code stamped and certified vessels are available. A rubber lining is also an available option.

**Resins** are designed specifically for deionizer applications regenerating with approximately 6.4 pounds of 100% of HCl per cubic foot for cation resin and 8.0 pounds of 100% NaOH per cubic foot for anion resin. Lakeside resins provide high chemical and physical stability, lower pressure drop and greater resistance to bead breakage. Type 1 Anion resins are standard to produce the lowest silica leakages and 10% cross-linked cation resins for durability and performance. Standard Cation regeneration is with 32% HCl. Standard systems utilize pressure compensating eductors for drawing chemical.





**Underdrain** The radial hub underdrain uses high quality Schedule 80 PVC pipe and fittings delivering flows uniformly over the entire bed with a minimum pressure drop. All mixed bed vessels use a false flat bottom design with each radial arm securely fastened to the vessel interior with T-316 SS angle. **The 316 Equal-Log distributor design utilizes logarithmically spaced collector orifices to increase even flow distribution and prevent clogging.** This assembly contains a custom drilled septum pipe with a 0.010” stainless steel well screen cover. These laterals provide even flow distribution, higher strength and reliable service.



**Thermo-Plastic Valve Nest** design allows each valve to be exactly designed and sized for the required functions, providing the most cost effective, efficient and serviceable system in the market. Backwash and rinse flow rates are controlled with automatic self-regulating flow control valves, and other flow rates are regulated with adjustable limit stops. Sample valves for the inlet, outlet and dilute chemicals are provided, and all PVC piping configurations include a boiler drain valve. Optional hydraulic or pneumatic valve operation.

**Allen Bradley PLC** controls the individual solenoid valve operation and comes standard with the HMI EZ color touch screen with user friendly programming. **Lakeside PLC solenoid system features a hold, advance, resume, termination or close of all valves function, for fast, easy field service.** The main screen can be designed to display a variety of parameters such as: water quality, current flow rates, online tank status, flow totalization, low resistivity alarms and remaining batch in gallons for each train of equipment. Fully automatic or semi-automatic operation on either batch (flow sensors standard), resistivity or both. **The AB 10/100 IP Ethernet Network Connection port is standard for building management capabilities. Custom Programming and alternate communication protocols are available.**





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**Recirculation Systems** are a standard feature that provides low flow protection and allows the unit to sit at zero flow and maintain optimum water quality. This eliminates the need for a pre-rinse, which minimizes the in service delay and saves on raw water use plus the waste water generated. The recirculation system is also used in the last step of the regeneration process to “recirculate to quality”. Sediment strainers are standard equipment on the cation and anion outlet piping.

**Operating Parameters** Pressure 30-100 PSIG / Temperature range 35F-100F Electrical: 120vac, 60Hz / NEMA 4X FRP rated electrical enclosures. Air flow regulator max. 80psi.

**Drain piping limits:** Max. 10ft. vertical and discharged to an atmospheric floor drain sized to handle the maximum rinse rate of the system. (Maximum recommended horizontal length is 25ft.) Chemical day tank location should be within 10 feet from the unit.

#### **OPTIONS AVAILABLE:**

- Low flow recirculation systems
- FRP Storage tanks, level controls, repressurization pumps, neutralization systems
- Pumped chemical regenerant systems
- Custom valves and instrumentation
- Sulfuric Acid regeneration packages
- Percent acid and caustic meters
- PH or ORP meters
- Heated caustic dilution water packages
- Multi-media filters, carbon filters and Reverse Osmosis pre-treatment systems

*\* Nominal \*\*Larger systems available upon request*



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## LWMD SERIES SPECIFICATIONS

Cap (KGR) & Model #	Min. Flow	Normal Flow	Polishing Flow	Manifold Piping Size	Cation Resin	Anion Resin	Cation Regen	Anion Regen	Vessel Size	Back wash Flow	Air Mix Flow	Ship Weight
LWMD	GPM	GPM	GPM	(inches)	Cu. ft.	Cu. ft.	32% HCl	50% NaOH	(Dia. & Ht.)	GPM	SCFM	lbs.
40,000 / 1696	3	11	25	1	2	3	5.6	3.8	16 x 96	3.5	11	1270
66,400 / 2096	4	17	25	1	3.3	5	9.2	6.3	20 x 96	6	17	1520
100,000 / 2496	6	25	60	1.5	5	7.5	13.9	9.4	24 x 96	9	25	2105
146,000 / 3096	9	38	92	2	7.5	11	20.3	13.8	30 x 96	14	38	2690
213,000 / 3696	14	55	95	2	10.7	16	29.8	20.1	36 x 96	20	55	3333
293,600 / 4296	19	75	95	2	14.7	22	40.9	27.6	42 x 96	28	76	4710