



Xpress™ MEMBRANE BIOREACTOR (MBR) TECHNICAL SPECIFICATIONS

Evoqua's Xpress™ membrane bioreactor (MBR) packaged plant from the DAVCO™ product line enables municipal and industrial wastewater treatment plant owners and operators to achieve high quality effluent while reducing energy and maintenance costs. The compact, robust design is factory pre-assembled, tested, and skid-mounted providing easy installation for the treatment of applications ranging from 5,000 gallons per day (gpd) to 200,000 gpd.

The Xpress™ MBR Process

The pre-designed and skid-mounted system can be offloaded quickly and efficiently at the treatment site and includes prefabricated steel tankage, pre-installed internals, pumps and blowers reducing time and on-site installation labor.

The treatment process begins with influent entering a 2 mm rotary drum screen with re-screening that assists in improving membrane life before entering the aerobic reactor zone or biological treatment process tank. Aeration within the aerobic reactor zone provides oxygen for biological respiration and maintains solids in suspension. To retain the active biomass in the process, the Xpress MBR system relies upon the proven MEMCOR® B40N hollow fiber membrane eliminating sludge settleability issues. This allows the biological process to operate at long sludge ages (typically 20-100 days) and increases mixed liquor suspended solids (MLSS) concentrations typically (8,000 - 14,00 mg/L).

The MEMCOR® B40N membranes are bound together in modules using a unique dual-potting system and submerged within a compact modular rack located in a separate tank. Mixed liquor is drawn into the bottom of the fiber bundles with air. The filtrate pump then draws the water through the fiber wall thus filtering the water from the solids and the filtrate is pumped away for use elsewhere. Evoqua's MBR system uniquely uses pulsed, plug flow aeration to greatly increase process efficiency and reduce energy usage. A continuous air flow is evenly distributed to each module in the form of large bubbles that increase in size as they move up the membrane fibers. The size and the random nature of the large bubbles or slugs of air prevent trash and solids build up by pushing debris away from the membrane fibers at the surface. Evoqua's membrane system leads the industry in energy consumption with specific energy usage as low as 0.08 kWh/m³ and delivers superior filtration performance while reducing aeration energy up to 60 percent.

Materials of Construction

Component	Description
Tanks & Skids	Painted carbon steel with urethane coating
Air & Plant Water Piping	Galvanized steel
Liquid Piping	Schedule 80 PVC
Electrical Enclosure	Enamel coated steel
Biological Recirculation Pump	Cast iron, silicon carbide seals, EPDM rings
MOS Feed Pump	Cast iron, silicon carbide seals, EPDM rings
Filtrate Pump	316 stainless steel, silicon carbide seals, Viton elastomers
Plant Water	304SS, silicon carbide seals, EPDM rings
Process Aeration & Air Scour Blower	Cast iron
Drum Screen	304 stainless steel



Xpress™ MEMBRANE BIOREACTOR

- 1 Aerobic Treatment Tank
- 2 Anoxic Zone
- 3 Drum Screen
- 4 Membrane Tank with MEMCOR B40N Hollow Fiber Membranes
- 5 Process Aeration & Air Scour Blowers
- 6 Painted Carbon Steel Tank with Urethane Coating
- 7 Electrical Enclosure
- 8 Pumps & Valves Arrangement

MODEL SPECIFICATIONS

Parameter	Units	25K Xpress	50K Xpress	75K Xpress	100K Xpress
Average Daily Flow ¹	gpd m ³ /d	25,000 94.6	50,000 189.3	75,000 283.9	100,000 378.5
Peak Daily Flow ¹	gpd m ³ /d	50,000 189.3	100,000 378.5	150,000 567.8	200,000 757.1
Peak Hourly Flow ¹	gpd m ³ /d	50,000 189.3	100,000 378.5	150,000 567.8	200,000 757.1
Number of Modules	qty	10	20	30	40
Fine Bubble Diffusers	qty	12	36	54	72

¹ Capacities are for reference only. Contact Evoqua for specific capacity based on influent characteristics. Flow rate may be lower than listed.

SYSTEM WEIGHT AND DIMENSIONS

Parameter	Units	25K Xpress	50K Xpress	75K Xpress	100K Xpress
Shipping Weight - Equipment Skid, MOS & Anoxic Tank	lbs kg	28,000 12,700	41,000 18,597	34,000 15,422	39,000 17,690
Shipping Weight - Aerobic Tank	lbs kg	N/A* N/A*	N/A* N/A*	22,650 10,274	32,000 14,515
Operating Weight	lbs kg	150,000 68,039	260,000 117,934	408,000 185,065	548,000 248,569
Length	ft-in mm	39' - 0" 11887	56' - 6" 17221	81' - 10"**** 24943	103' - 6"**** 31547
Width	ft-in mm	8' - 6"*** 2591	8' - 6"*** 2591	8' - 6"*** 2591	8' - 6"*** 2591
Height	ft-in mm	16' - 6" 5029	16' - 6" 5029	16' - 6" 5029	16' - 6" 5029

* The 25K and 50K come as a single unit so the weights are all inclusive.

** Listed width is for tank only. Overall width depends on stairway layout. Standard stairway layout makes total width 11' - 3" (3429 mm)

*** Alternative configurations available to reduce length. Overall width will increase. Contact Evoqua for alternative layouts.

There are many equipment variations, configurations, and options that can be used with MBR systems, all of which are designed to provide the necessary treatment for each wastewater project. Equipment selection is dependent on effluent requirements, ease of maintenance and operation, power consumption, future expansion, and initial capital costs.



1828 Metcalf Ave., Thomasville, GA 31792

+1 (800) 841-1550 (toll-free)

+1 (229) 226-5733 (toll)

www.evoqua.com/davco



DAVCO, Xpress and MEMCOR are trademarks of Evoqua its subsidiaries or affiliates in some countries.

All information presented herein is believed reliable and in accordance with accepted engineering practices. Evoqua makes no warranties as to the completeness of this information. Users are responsible for evaluating individual product suitability for specific applications. Evoqua assumes no liability whatsoever for any special, indirect or consequential damages arising from the sale, resale or misuse of its products.

© 2017 Evoqua Water Technologies LLC

Subject to change without notice

MU-XPRESSPEC-DS-0617