MARLO INCORPORATED®

Quality Products for Quality Water

# 'MSB' Series Deionization Systems


## Overview

The Marlo 'MSB' Series Automatic Separate-Bed Deionizer (DI) systems are engineered to economically produce high purity water through the removal of total dissolved solids (TDS). Each MSB system is constructed using robust, industrial-grade components and materials for reliable operation and exceptional performance.

Standard designs are available for product flow rates of 5-600 GPM. All systems are completely factory skid mounted, pre-piped, pre-wired, and pre-tested for minimal installation time and cost. Duplex alternating systems are available when continuous DI water demand is required.

## Standard Features

- Carbon steel resin tanks with vinylester lined interior
- Aquamatic diaphragm style control valves (up to 3", air-actuated)
- Butterfly style control valves (4"-6", air-actuated)
- Volume, time, or conductivity initiated regeneration cycle
- Pre-sized chemical eductors (acid & caustic containers by others)
- High capacity, cation and anion exchange resins
- Tank isolation valves & system bypass valve
- Inlet/outlet tank and dilute chemical sampling valves
- Factory Hydro-Tested at 100 psig

## Materials of Construction

- Resin Tanks: Carbon steel with Safety Blue exterior paint
- Tank Lining: Vinylester (applied at 40-50 mils DFT)
- Exterior Piping: Sch 80 PVC
- Internal Distributors: Sch 80 PVC / ABS
- Control Valves: Noryl Thermoplastic
- Chemical Eductors: PVC
- Skid: Painted, Carbon Steel

## Controls / Instrumentation

- Allen-Bradley MicroLogix PLC system
- Allen-Bradley PanelView operator terminal
- NEMA-4X electrical enclosure
- Signet product water flowmeter
- Signet product water conductivity meter
- Visual-type rotameter for chemical dilution water
- Inlet/Outlet tank pressure gauges

## Operating Parameters

- Inlet Pressure: 30-100 psig
- Electrical: 120VAC, 1-Ph, 60 Hz.
- Pneumatic: 80-100 psig (Dry, Oil-Free Air)
- Water Temperature: 35-100°F
- Cation Resin Regenerant: HCL (30%)
- Anion Resin Regenerant: NaOH (50%)

## Available Options

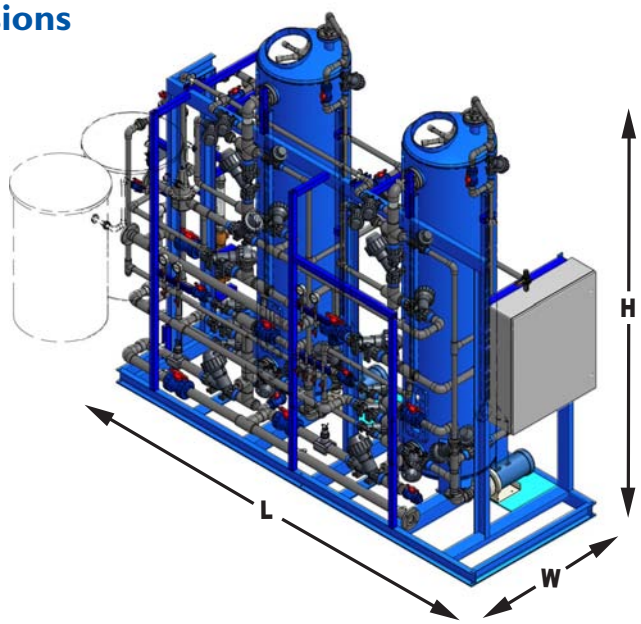
- ASME Code stamped resin tanks
- Duplex alternating systems (2-skids required)
- Recirculation pump systems (for low-flow periods)
- Rubber lined tank interior surfaces
- Regenerant chemical tank and pump systems
- Alternate PLC systems
- CPVC exterior piping
- 304/316 Stainless steel exterior piping
- Stainless steel internal distributor piping
- Automatic butterfly or ball control valves
- Alternate ion exchange resins
- Wastewater neutralization systems
- Regeneration with sulfuric acid (H2SO4)
- Forced-draft decarbonator systems (CO2 removal)

## 'MSB' Series Specifications

| MODEL NUMBER | CAPACITY (Kilograins) ① | FLOW RATES SERVICE | | TANK SIZE | RESIN VOLUME CATION | RESIN VOLUME ANION | PIPE SIZE | WASTE VOLUME | ACID PER REGENERATION | CAUSTIC PER REGENERATION | OVERALL DIMENSIONS (LxWxH, INCHES) ⑦ | SHIPPING WEIGHT (LBS.) ⑧ | OPERATING WEIGHT (LBS.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | KGR | MINIMUM ② | MAXIMUM ③ | INCHES | CU. FT. | CU. FT. | INCHES | GALLONS ④ | GALLONS ⑤ | GALLONS ⑥ | | | |
| **MSB-2084** | 140 | 5 | 26 | 20x84 | 7 | 8 | 1 | 1,046 | 19.5 | 10 | 88x38x106 | 2,605 | 3,905 |
| **MSB-2484** | 220 | 11 | 37 | 24x84 | 11 | 12 | 1 1/2 | 1,597 | 30.5 | 15 | 96x42x108 | 3,054 | 4,854 |
| **MSB-3084** | 340 | 17 | 60 | 30x84 | 17 | 19 | 1 1/2 | 2,482 | 47 | 24 | 108x48x111 | 4,187 | 7,087 |
| **MSB-3684** | 500 | 25 | 85 | 36x84 | 25 | 27 | 2 | 3,579 | 69.5 | 34 | 120x54x114 | 5,665 | 8,465 |
| **MSB-4284** | 680 | 34 | 115 | 42x84 | 34 | 37 | 2 | 4,873 | 94.5 | 46.5 | 132x60x117 | 7,452 | 12,852 |
| **MSB-4884** | 860 | 43 | 150 | 48x84 | 43 | 48 | 3 | 6,274 | 119 | 60.5 | 144x66x122 | 9,185 | 16,485 |
| **MSB-5484** | 1100 | 55 | 190 | 54x84 | 55 | 60 | 3 | 7,924 | 153 | 75.5 | 156x72x125 | 11,162 | 20,162 |
| **MSB-6084** | 1320 | 66 | 235 | 60x84 | 66 | 72 | 3 | 9,574 | 183 | 90.5 | 168x78x128 | 13,888 | 25,088 |
| **MSB-6684** | 1640 | 82 | 288 | 66x84 | 82 | 90 | 3 | 11,854 | 228 | 113 | 186x90x133 | 17,055 | 30,555 |
| **MSB-7284** | 1900 | 95 | 336 | 72x84 | 95 | 104 | 4 | 13,738 | 264 | 131 | 198x96x136 | 19,163 | 36,700 |
| **MSB-8484** | 2640 | 132 | 456 | 84x84 | 132 | 144 | 6 | 18,986 | 367 | 181 | 222x108x142 | 26,614 | 49,825 |
| **MSB-9684** | 3440 | 173 | 600 | 96x84 | 173 | 190 | 6 | 24,962 | 481 | 239 | 246x120x148 | 36,416 | 66,750 |

## 'MSB' Series Dimensions

**NOTE:**
Chemical tanks
(shown in broken lines)
are provided by others.




## Notes

① System nominal capacity is based on a raw water having no more than 15 grain/gallon (approx. 250 ppm) of total dissolved solids (as CaCO3) and free of color, oil, turbidity, and organic matter. A complete water analysis is required to more accurately predict system capacity and product water quality.

② Minimum flow rates are established to prevent flow channeling within the resin bed, which can lead to lower capacity and product water quality.

③ At a pressure drop not exceeding 15 psig.

④ Wastewater from the regeneration process may require neutralization prior to final discharge. Size drain flows equal to the maximum flow rating.

⑤ Acid dosage for the cation resin tank is based on 8 lbs. per cubic foot of 30% hydrochloric acid (HCL). Acid drums or carboys are to be provided by others.

⑥ Caustic dosage for the anion tank is based on 8 lbs. per cubic foot of 50% sodium hydroxide (NaOH). Caustic drums or carboys are to be provided by others.

⑦ Dimensions are estimate only. Actual dimensions may vary based on job-site space limits, piping layout, and selected options. Dimensions shown are for a single, cation-anion tank skid and do not included space for chemical regenerant containers. Allow a minimum of 24" above the height dimension for resin loading.

⑧ Shipping weights are estimate only. Weights include resin and support gravel, which are added to the tanks after installation.

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