



# AVANTech WTModules™ MBS-Series

## Steel Tank Mixed Bed Demineralizer

The MBS-Series is designed to remove cations and anions (minerals) from water. The term "mixed bed demineralizer" describes a unit with a thoroughly mixed blend of both cation and anion resins contained in one tank, thus providing the effect of thousands of small two bed units. The MBS-Series can produce water with an effluent quality of 1.0 to 18.3 megohms-cm and a silica level of 0.10 ppm to 0.01 ppm as CaCO<sub>3</sub>.

### Vessels

MBS-Series vessels are constructed of high quality carbon steel and will have a bolt and yoke manway in the top head. This permits the loading of media and inspection of internals without disturbing main piping. A 3" diameter media removal pad flange is provided in the lower side sheet. Vessels include structural legs.

### Distribution

MBS-Series 24" and smaller vessels are provided with an inlet/regenerant, interface, and outlet distributor. The 30" and larger vessels are provided with separate inlet, outlet, regenerant, and interface distributors. The distributors are designed to direct flows uniformly over the entire bed with a minimum pressure drop. MBS-Series distributors are constructed of Schedule 80 PVC, except for the interface which is constructed of 316SS. A structural steel base plate supports the resin.

### Media

The cation/anion resin is high quality, designed specifically for the MBS-Series demineralizer.

### Lining

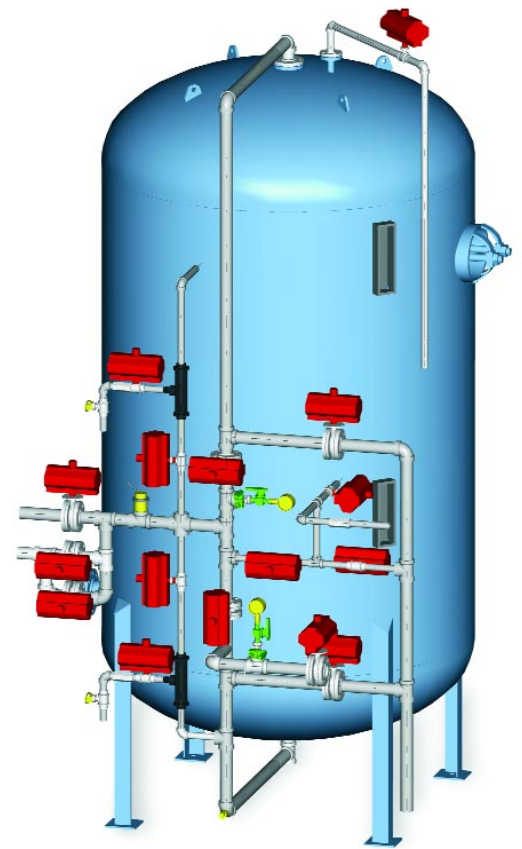
Each tank is lined with 3/16" industrial grade rubber and spark tested for integrity.

### Piping

Standard configuration piping is Schedule 80 PVC with socket welded fittings except where the attachment of threaded valves, rotometers and other devices is needed.

### Valves

Diaphragm valves are provided for 3" piping and smaller; butterfly valves are provided for 4" piping and larger. Backwash and rinse outlet valves are equipped with limit stops to regulate flow rates during backwash and rinse cycles. An air pressure filter/regulator system is provided. Clean air at a minimum pressure of 80 psig is required. All automatic valves are solenoid operated. All tubing is polypro. Individual manual rate set valves are provided on acid and caustic draw lines. Manual vent valves are provided for each vessel. Sample valves for service inlet, service outlet, and dilute chemical sample are provided on each vessel.



### Controls

A PLC controller will be provided, fully wired and programmed. All regenerant times have been programmed into the unit. All automatic valves are solenoid operated and include manual overrides.

### Regenerant

The demineralizer is designed to draw concentrated chemicals directly from client supplied shipping containers (carboy or drum). The concentrated chemical lines are provided with a PVC wand attached to a flexible hose.

Regenerant acids/caustics are introduced to each vessel at the proper flow and concentration by means of an eductor constructed of non-corrodible material. The flow of concentrated chemical is regulated by means of a manually adjustable valve on each concentrated chemical line.

### Options

- ASME code tank
- Alternate tank lining
- Larger media connection
- Manway and davit
- Structural steel skid
- 316SS piping and valves
- PPL piping and valves
- Interconnecting header
- Thermal relief valve
- Media trap
- Alternate service
- Flow indicator/totalizer
- Silica anticipatory probe
- Automatic shut-off
- Automatic rinse control
- Finish paint
- Backwash sight glass
- Recirculation pump
- Pressure regulating valve
- Manual operation
- 316 stainless steel distribution
- Separate backwash inlet
- ARS Series
- CRS Series
- WNS Series

# AVANTech WTModules™

## MBS-Series

### Steel Tank Mixed Bed Demineralizer

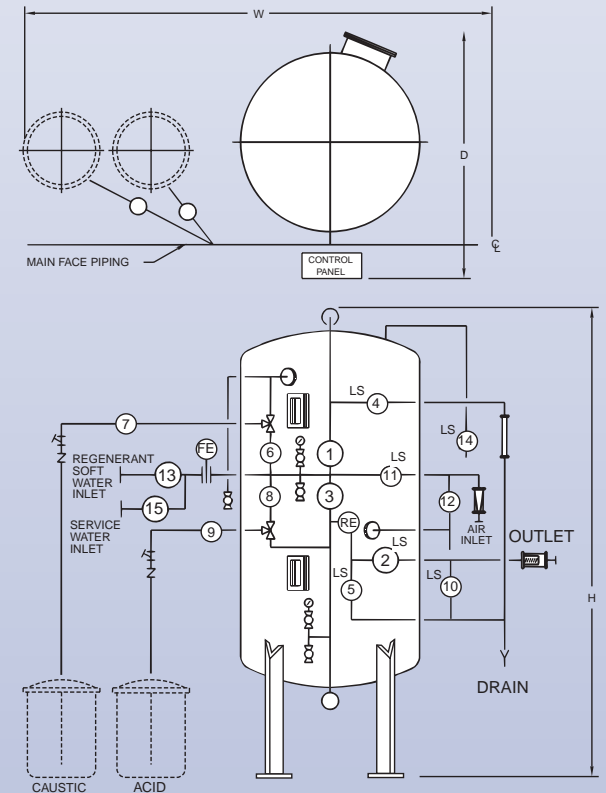
WTModules™ are AVANTech's line of pre-engineered water treatment systems designed to provide excellent results at low cost in a variety of water treatment applications. With a long list of options, but without the need for custom engineering, WTModules™ is the cost effective solution for many process requirements.

Model	Tank Size (in)	Design Flow (gpm)	Resin Vol Cation Anion (cf)	Resin Capacity (Kgr)*	Chemicals HC1 NaOH (lbs)	Regenerant Volume Water-(gals) Air-(scfm)	Pipe Size (in)	Overall Height H (ft-in)	Width W (ft-in)	Depth D (ft-in)	Shipping Weight (lb)
MBS-2496	24 x 96	30	5	80	100	1,600	1 1/2	10-0	5-6	4-6	2,600
MBS-3096	30 x 96	50	8	120	160	2,400	2	11-6	8-9	4-9	2,422
MBS-3696	36 x 96	75	12	180	240	3,600	3	11-8	9-6	5-3	3,098
MBS-4296	42 x 96	100	16	240	320	4,800	3	11-10	9-8	5-9	3,954
MBS-4896	48 x 96	125	20	300	400	6,600	3	11-9	10-11	6-4	5,160
MBS-5496	54 x 96	160	25	370	500	7,440	4	12-0	11-3	6-7	6,055
MBS-6096	60 x 96	200	31	460	620	9,240	4	12-6	11-11	7-7	7,040
MBS-7296	72 x 96	300	45	670	900	13,440	4	12-9	12-2	7-4	11,163
MBS-8496	84 x 96	400	60	900	1,200	18,000	6	13-0	15-0	6-8	15,350
MBS-9696	96 x 96	500	80	1,200	1,600	24,000	6	14-0	16-0	9-6	19,960
			120	960	270						

Throughput volume per regeneration = ( ) kgr./ ( ) gpg of the ionic load from the total anions as CaCO<sub>3</sub>.

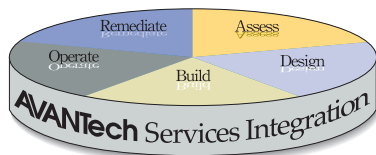
\* Based on 20lbs/cf of 30% HCl and 8lbs/cf of 100% NaOH.

## MBS-Series Mixed Bed Demineralizer Typical layout (shown with piping)



#### Typical valve sequence

Service	1, 2 & 15	Fast Rinse	1, 3, 10 & 13
Blowdown #1	1, 5 & 11	Blowdown # 2	1, 5 & 11
Backwash	3, 4 & 13	Air / Water Mix	3, 4, 12, 14 & 13
Settle	-----	Air Mix	3, 4, 12 & 14
Caustic / Acid	-----	Air Drain	1, 5 & 11
Injection	6, 7, 8, 9, 10 & 13	Fill	1, 13 & 14
Slow Rinse	6, 8, 10 & 13	Final Rinse	1, 5 & 15



**Design/Build/Operate** AVANTech's approach to systems integration makes us uniquely qualified to provide turnkey service. Our broad range of services enables us to lend our expertise to an entire project—from planning through commissioning and beyond, including operational and remedial assistance needs. *Call us today for assistance with your project.*

