**At a glance...**

Air-O-Lator Corporation has studied the technology of aerating and mixing since 1961. The blending of air with water is as important as the addition of air to water. Without proper blending and mixing air can immediately escape into the atmosphere. Air-O-Lator believes nothing blends and mixes water like a propeller and that is why we incorporate the propeller design into all of our aerators and mixers.

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**How it works...**

The Enterprise II Aspirating Mixer is an axial flow propeller pump that operates in a scientifically designed pump volute. A high volume of water is pumped past the four patented multi-purpose vanes, which more than doubles the velocity of the propelled fluid. The vanes also act as flow straighteners and are open on the low pressure side. Air is drawn into the air plenum and from there into the liquid stream. The air and liquid converge in the nozzle chamber. The intimate turbulent contact creates an emulsion of oxygen charged liquid which is discharged into the main body of water.
**Typical Installations**

**MAST MOUNTED**

For installation in concrete or steel tank basins, this method of installation incorporates a stainless steel fixed mounted guide rail. With the dual purpose upper mast support and rotational base plate, the Enterprise II can be rotated and set at any angle. The jib boom, supplied with a manual marine type winch, allows the unit to be raised or lowered for variable depth operation and easily removed for required inspection or service.

**FEATURES**

- Directional Flow
- Actual Horizontal Flow
- 8" and 10" Diameter Propellers
- 4" Diameter Air Intake
- Submersible Reliance Motors
- One Piece Solid Shaft
- Blower Adaptability For Additional Air Flow
- No Mechanical Icing Problems
- 95% Of Unit Weight Below Surface Insuring Stability
- No Outboard Shaft Bearings

**FLOATING**

For ponds, lakes, lagoons, ditches and where water levels may continually vary. This method of installation utilizes polystyrene foam filled stainless steel pontoons. The Enterprise II can be easily raised or lowered to a maximum depth of 5' (five feet). The unit can also be set at various angles.
DIMENSIONAL DATA

<table>
<thead>
<tr>
<th>MODEL</th>
<th>HP</th>
<th>FRAME</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>PROPELLER SIZE</th>
<th>UNIT WEIGHT</th>
</tr>
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<tbody>
<tr>
<td>ER-30</td>
<td>3</td>
<td>140TY</td>
<td>57</td>
<td>19</td>
<td>26</td>
<td>29</td>
<td>8 X 4 7/8</td>
<td>370#</td>
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<tr>
<td>ER-50</td>
<td>5</td>
<td>180TY</td>
<td>57</td>
<td>19</td>
<td>26</td>
<td>29</td>
<td>8 X 7 1/2</td>
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<tr>
<td>ER-75</td>
<td>7.5</td>
<td>180TY</td>
<td>57</td>
<td>19</td>
<td>26</td>
<td>29</td>
<td>8 X 9 3/4</td>
<td>450#</td>
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<tr>
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<td>10</td>
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<td>63</td>
<td>19</td>
<td>32</td>
<td>29</td>
<td>8 X 10 7/8</td>
<td>580#</td>
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<tr>
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<td>15</td>
<td>210TY</td>
<td>65</td>
<td>20</td>
<td>32</td>
<td>30</td>
<td>10 X 10</td>
<td>600#</td>
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<tr>
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<td>20</td>
<td>32</td>
<td>30</td>
<td>10 X 10</td>
<td>600#</td>
</tr>
</tbody>
</table>

Mast Mounted: 4 in. sq. Stainless Steel Tube 10 lbs per ft.
Float Assy: 10' x 5' Stainless Steel Pontoon 200 lbs unit wt.

PERFORMANCE DATA

<table>
<thead>
<tr>
<th>MODEL</th>
<th>HP</th>
<th>RPM</th>
<th>KW</th>
<th>PUMPING RATE (GPM)</th>
<th>AIR FLOW (CFM)</th>
<th>THRUST (LBS)</th>
<th>INDUCED FLOW (MG/HR)</th>
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</thead>
<tbody>
<tr>
<td>ER-30</td>
<td>3</td>
<td>1800</td>
<td>3.9</td>
<td>1800</td>
<td>40</td>
<td>130</td>
<td>3.0</td>
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<td>1800</td>
<td>5.7</td>
<td>3400</td>
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<td>200</td>
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<td>7.5</td>
<td>1800</td>
<td>7.7</td>
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<td>70</td>
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<tr>
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<td>1800</td>
<td>10.5</td>
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<td>130</td>
<td>420</td>
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<tr>
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<td>15</td>
<td>1800</td>
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<td>6000</td>
<td>145</td>
<td>550</td>
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<tr>
<td>ER-200</td>
<td>20</td>
<td>1800</td>
<td>20.6</td>
<td>8000</td>
<td>160</td>
<td>670</td>
<td>10.0</td>
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</tbody>
</table>

Note: Air flow is measured at 4 feet of depth in clean water.
**Transfer Efficiency**

- Graph showing Standard Oxygen Transfer Efficiency (%).

**MIXING CAPACITY**

(for approximation purposes only)

**Lagoon Application**
- Oxygen Dispersion: 4 to 6 hp/MG
- Complete Mixing: 30 to 50 hp/MG

**Sludge Storage Application**
- Circular: 0.4 to 0.8 hp/1000 cu. ft.
- Rectangular: 0.6 to 1.0 hp/1000 cu. ft.

**Storm Water Retention**
- Circular: 0.2 to 0.6 hp/1000 cu. ft.
- Rectangular: 0.3 to 0.8 hp/1000 cu. ft.

**Oxidation Ditch**
- Operating Depths: 3 to 16 ft.
- Mounting: Mast Mounting or Floating
- No mechanical icing problems as with brush aerators
- Simple installation
- Water depth variations allowed in feet not inches, preventing hydraulic surges.

**AEROBIC SLUDGE STORAGE**
- Operating Depths: 3 to 30 ft.
- Mounting: Mast Mounting or Floating
- Superior mixing over diffused aeration
- Actual horizontal flow over non submersible aerators
- Lower installation cost
- Lower power requirements

**FACULTATIVE LAGOON**
- Operating Depths: 3 to 16 ft.
- Mounting: Floating
- Actual horizontal flow over non submersible aerators
- No mechanical icing problems as with non submersible motors
- Superior stability

To maintain 1 fps or greater, calculation is based on physical dimensions of ditch and expected mixed liquor characteristics. Contact factory for thrust requirements and assistance.
# ENTERPRISE II - ASPIRATING MIXER SPECIFICATIONS

## 1. GENERAL

1.1 The following specifications direct attention to certain required features of the design package, but do not purport to cover all details entering into the design, construction, and/or installation of the equipment.

1.2 Furnish ____ aspirating mixers. Each aspirating mixer shall consist of a submersible motor, a direct drive propeller driven at a constant speed, a clag resistant aspirating venturi nozzle and a support structure. Non-submersible motors shall not be considered equal.

## 2. PERFORMANCE

2.1 Each aspirating mixer shall be capable of delivering ____ cubic feet of air per minute, at ____ feet of liquid depth.

2.2 Each mixer shall be capable of a direct pumpage rate of ____ gpm.

## 3. SUBMERSIBLE MOTOR ASSEMBLY

3.1 The motor shall deliver ____ horsepower at 1800 rpm and shall be wired for ____ volts, ____ cycle, ____ phase service.

3.2 The motor shall be a Reliance Electric Duty Master Submersible AC motor designed for installation in water or sewage and rated for chemical duty. The high efficiency motor shall be designed for continuous duty and shall be capable of sustaining ten (10) evenly spaced starts per hour.

3.3 All electrical parts shall be housed in an air filled, corrosion resistant, cast iron, Class 30 frame. All mating frame fits shall have rubber joints with large overlap, as well as O-ring seals of nitrile rubber.

3.4 The motor shall have special Class F insulated windings rated for continuous duty in 25°C liquids and shall be non-hygroscopic. The motor shall have a 1.15 service factor and three (3) thermal overload switches in the end turns of the motor windings.

3.5 The internal components of the motor shall be protected by heavy duty tandem mechanical seals Type 21. The inboard seal shall be of carbon ceramic. The outboard seal shall be of silicone carbide for superior abrasion resistance and wear. Any motor using shell lip seals or a combination of lip seals and mechanical seals shall not be considered equal.

3.6 There shall be a fairwater shield to aid in guarding the outboard seal from fouling with stringy or filamentous objects. Aspirating mixers without this device will not be considered equal.

3.7 The cable leads shall have strain relief internal to the entry consisting of a strain equalization plate and Buna-N grommets. The cable leads shall be butt spliced and epoxy sealed to prevent intrusion of any liquid from a damaged cable into the motor. Terminal boards shall not be considered equal to the leakproof threaded enclosure impregnated conductor epoxy seal system specified.

3.8 The motor shaft shall be continuous from bottom bearing to the mixer's propeller and manufactured from 18-8 stainless steel. The motor shaft shall be machined to a tolerance of plus or minus .002 T.I.R. from lower bearing to the upper end of the motor. The motor shaft shall be supported by two (2) single row double shielded anti-friction prelubricated bearings, rated for 8-10 life of 100,000 hours. Aspirating mixers with shaft couplings, universal joints or outboard propeller shaft bearings shall not be considered equal.

3.9 All external hardware, including the motor name plate, shall be made of 304 stainless steel.

## 4. PROPELLER

4.1 The propeller shall be manufactured of stainless steel and specifically designed for the application intended.

4.2 The propeller shall be streamlined to prevent cavitation and reduce drag and shall have trailing edge blades for weedless and fouling resistance operation.

4.3 The propeller shall be hydraulically balanced to assure equalization of load under full operation.

4.4 The propeller shall be dynamically balanced to within 5 gram centimeters.

4.5 The propeller shall not be greater than 12 inches from outboard motor bearing.

4.6 The propeller and motor rotor unit shall be dynamically balanced to a vibration level not to exceed .70 mils while hydraulically submerged.

## 5. VOLUTE, VENTURI/NOZZLE

5.1 The volute shall be manufactured from ductile iron, Class 30, and be not less than .250 inches minimum sectional thickness.

5.1.1 The volute shall be designed to diminish vortexing of the propeller and be flared to minimize entrance losses.

5.1.2 The propeller shall run inside the volute.

5.2 The design of the venturi/nozzle shall be such that the air/liquid emulsion is discharged horizontally with a directional capability determined by support structure design.

5.2.1 The venturi shall be of a clag resistant design. The smallest opening shall be not less than four (4) inches.

5.2.2 The intake port shall be not less than four (4) inches in diameter.

5.2.3 The air delivery tube shall be PVC flexible hose.

## 6. MOTOR MOUNT SUPPORT

6.1 The motor support shall be constructed of 304 stainless steel.

6.2 Motor mounting fasteners shall be type 18-8 stainless steel.

6.3 Motor mount support shall be designed in such a way as to furnish maximum rigidity and stability with minimum flow interference.

## 7. ELECTRICAL SERVICE CABLE

7.1 Each aspirating mixer shall be furnished with ____ feet of appropriately sized MSHA P123 UL Approved and CSA Listed round electrical cable, for water and oil, with high resistance to ozone, acids and chemicals, type SOW or SEOW, with non-wicking filler separating individually colored leads.

## 8. PAINT

8.1 All surfaces, other than stainless steel, will be coated with Tennent Series 66 Hi-build epoxy line. Paint shall be chemical and corrosion resistant for protection against abrasion, moisture, corrosive fumes, chemical contact and immersion in potable and waste water applications.

8.2 All surfaces shall receive two (2) coats for 7 to 11 mils. thickness.
9. INSTALLATION MOUNTING OPTIONS

9.1 Mast Mounting Assembly

9.1.1 The mast shall be a single square stainless steel vertical guide rail to facilitate vertical adjustment, removal and required inspection of the aspirating mixer.

9.1.2 The mast mounting assembly shall consist of a stainless steel anti-sway upper mast support, with a directional locking clutch assembly, and a stainless steel lower base plate, with a pivotal ball to interlock with mast for rotational service.

9.2 Flotation Assembly

9.2.1 The flotation assembly shall consist of two (2) stainless steel pontoons, which shall be filled with a closed cell, non-hygrosopic, corrosion resistant, polyethylene foam.

9.2.2 A Tnemec 66 Series epoxycoated steel support frame shall connect the two (2) pontoons.

9.2.3 The support frame shall incorporate two (2) stainless steel, 1.25" x 6' Acme thread rods for depth and angle adjustment of the aspirating mixer.

9.2.4 The support frame shall be designed so that the aspirating mixer can be raised above the water level between the two (2) pontoons for required inspections and removal.

9.2.5 The flotation assembly shall be unconditionally guaranteed not to capsize due to ice or turbulence.

10. QUALITY

10.1 All mixers will be tested and verified for electrical and mechanical integrity.

10.2 A statement by the mixer manufacturer attesting to the test results shall be furnished to the owner at his request.

11. OPERATION & MAINTENANCE MANUALS

11.1 Operation and maintenance manuals shall be furnished to the owner prior to start-up of the equipment.

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### Single Phase Two or Three Wire Cable, 60 Hz (Service Entrance To Motor)

<table>
<thead>
<tr>
<th>Motor Rating</th>
<th>Copper Wire Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>H</td>
<td>14</td>
</tr>
<tr>
<td>230V</td>
<td>2500</td>
</tr>
</tbody>
</table>

### Three Phase Three Wire Cable, 60 Hz 200 and 230 Volts (Service Entrance To Motor)

<table>
<thead>
<tr>
<th>Motor Rating</th>
<th>Copper Wire Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>H</td>
<td>14</td>
</tr>
<tr>
<td>200V</td>
<td>60 Hz</td>
</tr>
<tr>
<td>230V</td>
<td>60 Hz</td>
</tr>
</tbody>
</table>

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(1) Lengths marked *= meet U.S. National Electrical Code capacity only for individual conductor 75°C cable. Only the lengths without *= meet the code for jacketed 75°C cable. Local code requirements may vary.
Quantum Floating Aerator
5 through 25 hp

Aquarian Commercial Aerator
available in 2 and 3 hp with removable power cord polyethylene flotation

Aquarian Residential units,
available in 1/2 and 1 hp

Font'N-Aire Floating
Decorative Fountain improves water quality with aesthetics

Font'N-Aire Ready fountain,
available in 1/2 hp,
Design for easy installation and low maintenance

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8100-04 Fasoe  Kansas City, MO  64131  U.S.A.
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website: http://www.airolator.com  e-mail: sales@airolator.com