

# AIRE-O<sub>2</sub><sup>®</sup> SERIES II ASPIRATING AERATOR

## STANDARD NEMA SPECIFICATIONS

### PART 1 GENERAL

#### 1.1 SUMMARY

##### A. SCOPE OF WORK

- 1) This specification defines an electric motor-driven propeller-type, horizontal, aspirating aerator. The aerator induces the flow of atmospheric air below the surface of the water and provides flow-linkage mixing in multiple unit arrangements.
- 2) The aerators shall consist of an electric motor drive above the water surface. The motor is connected to a hollow shaft within a protective housing positioned at a **30/45** degree angle downward into the water. Aerators with submersible motors are not acceptable.
- 3) The shaft shall be connected to and drive a propeller/diffuser beneath the water surface. The propeller/diffuser shall induce a pressure differential, drawing air through intake holes above the water surface down through the rotating hollow shaft.
- 4) The air will be dispersed as fine bubbles as defined by the U.S. EPA Report Number EPA-600/2-82-003.

#### 1.2 DELIVERY, STORAGE AND HANDLING

- A. Aerator shall arrive at the installation site fully assembled and ready for attachment to the floatation or support equipment.
- B. Aerators with couplings that can become misaligned during shipment are not acceptable.

#### 1.3 WARRANTY

- A. The aerator Manufacturer shall supply a **1-year** non-prorated factory warranty.
- B. All parts supplied by the aerator Manufacturer must be warranted the same.
- C. Field replacement of the aerator components shall in no way effect the factory warranty.
- D. The warranty repairs must be done in accordance with the factory O & M manual.

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**PART 2 PRODUCTS**

**2.1 MANUFACTURER**

- A. The equipment shall be manufactured by Aeration Industries International,

Aeration Industries International  
4100 Peavey Road  
Chaska, MN 55318 USA  
(952) 448-6789  
www.airo2.com

**2.2 AIRE-O<sub>2</sub><sup>®</sup> SERIES II AERATOR COMPONENTS:**

A. AERATOR DRIVE MOTOR

- 1) The motor shall deliver [ ] horsepower at [ ] RPM and shall be rated for [ ] volts, [ ] cycle, [ ] phase service. Motors shall be specifically designed for 30/45 degree operation.
- 2) The motor shall be totally enclosed, fan cooled.
- 3) The motor windings shall be non-hygroscopic insulation.
- 4) Equal to or exceeding NEMA Class F with Class B temperature rise.
- 5) A service factor of 1.15 shall be furnished.
- 6) A condensate drain shall be located at the lowest point in the lower end-bell housing.
- 7) A stainless steel nameplate shall be provided with each motor and shall be securely fastened thereto. Information shall include voltage, speed, phase, insulation class, amperage, service factor, wiring diagram, and motor serial number.
- 8) The motor shaft shall balance to within 1 mil to be measured on any part of the motor frame including the C-face.
- 9) The motor terminal box shall be firmly bolted to the motor frame at four points. The terminal box shall be sized to meet the NEMA standards.

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**B. SHAFT & HELICAL COUPLING**

- 1) The shaft shall be stainless steel full-welded to a forged carbon steel universal joint coupling. Units with solid shafts are not acceptable. The shaft shall be dynamically balanced.
- 2) Units using couplings that require alignment are not acceptable.
- 3) The shaft shall be stabilized by a replaceable bearing located within one inch from the propeller hub.
- 4) Shafts requiring factory replacement to validate warranty requirements are not allowed.

**C. HOUSING**

- 1) The housing shall be non-metallic, non-corrosive, lightweight and flanged for mounting to the aerator. Units using stainless steel housings shall not be allowed. The housing shall form a guard around the hollow shaft and support a field replaceable, water-lubricated bearing press-fitted into the housing lower end.

**D. BEARING**

- 1) A field replaceable water lubricated lower support bearing shall be included. The bearing shall be press fitted into the housing to allow ease of replacement.
- 2) Units utilizing a cantilever design without a lower support bearing or regreaseable tapered roller bearings are not acceptable.
- 3) Bearings requiring factory replacement to validate warranty requirements are not acceptable.

**E. PROPELLER/DIFFUSER**

- 1) The propeller shall be of non-metallic construction. The entire flow of aspirated air shall pass through the propeller via the hollow drive shaft along the axis of the propeller hub. Aluminum or standard marine type propellers are not acceptable.
- 2) The propeller/diffuser shall be designed to allow easy removal and replacement in the field.

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**F. FLOTATION**

- 1) The aerator flotation assembly shall consist of a pontoon constructed of molded low-density polyethylene with ultraviolet inhibitor. The pontoon shape shall be designed with smooth, beveled edges to allow freezing into the ice without breakage.

**G. ELECTRICAL SERVICE MANUAL**

- 1) Cable shall be CSAA/UL approved for severe environments, suitable for underwater service and one continuous length.
- 2) Cable shall be jacketed, flexible stranded with individually wrapped conductors rated SEOOW or equal.

**PART 3 EXECUTION**

**3.1 LOCATION, SUPPORT, AND MOORING**

- A. The manufacturer shall provide recommendations on aerator placement, installation and operation.
- B. Anchor cables and mooring hardware shall be stainless steel or galvanized.

**END OF SECTION**