

TYPHOON SURFACE AERATOR SPECIFICATION

A. *General*

Provide a total of _____ TYPHOON Surface Aerators as manufactured by AEROMIX Systems, Incorporated of Minneapolis, Minnesota, USA. Each aerator shall be _____ horsepower (_____ kW), _____ rpm and shall consist of an electric motor, propeller, and integral flotation system with intake cone. The propeller shall be affixed to the lower end of the motor shaft. The rotating propeller shall draw water up through the intake cone and project it outward above the water line in fine droplets at a low trajectory causing intimate contact between the water and atmospheric oxygen.

B. *Aerator Motor*

1. All motors furnished shall be totally enclosed, fan cooled, cast iron frame, epoxy painted, and generally rated for severe chemical duty. Service factor shall be at least 1.15. Motor windings shall be nonhygroscopic, triple impregnated with insulation equal to National Electric Manufacturers Association (NEMA) class F or better and Class B temperature rise. All motors will operate at _____ VAC, _____ hertz, _____ phase, _____ % efficiency, _____ RPM.
2. Each motor shall incorporate a drain hole located at the lowest point in the motor bell housing. Overall water tightness shall be equal to International Electrical Code (IEC) IP55 rated with an IP56 junction box.
3. A nameplate shall be attached to each motor with the voltage, rpm, insulation class, rated amperage, service factor, phase, and efficiency stamped or permanently marked.
4. Each motor shall have a one piece solid stainless steel shaft extending from the motor top bearing through the motor bottom bearing to the propeller or a rigidly coupled extended shaft. Rigidly coupled shafts shall be stainless steel and the entire assembly shall have a total indicated runout of 0.005 inches or less to prevent vibration. Rigidly coupled shafts shall also include a deflector disk to prevent water infiltration into the motor. Flexible couplings shall not be allowed to connect the motor and propeller shaft due to vibration and bearing wear concerns.
5. All motor bearings shall be re-greasable to extend bearing life and shielded on the bottom side only. Top and bottom motor bearings shall be of combined radial and axial thrust type and shall come packed with appropriate grease.

C. *Diffuser*

The diffuser head shall discharged the pumped liquid over a 360 degree pattern at low trajectory for maximum oxygen transfer. It shall have rounded edges and be smoothly contoured to provide low headloss. The diffuser shall be constructed of fiberglass reinforced plastic for maximum abrasion resistance and minimum headloss. An EPDM seal and stainless steel disk shall be incorporated on the aerator shaft at the base of the diffuser to prevent water infiltration into the diffuser.

D. *Motor Mount*

The motor mount shall be fabricated from 304 stainless steel and consist of an upper mounting plate, lower mounting plate, and float attachment posts. The upper mounting plate shall include a registered fit opening with precision drilled bolt holes for mating with the motor base and mounting bolts. The lower mounting plate shall mate with the mounting posts and diffuser. The diffuser and motor mount combination shall absorb all normal and shock loads due to proper operation and start-up. The motor mount and mounting posts shall distribute these loads to the float at specific reinforced areas.

E. *Propeller*

The propeller shall be a precision casting of 316 stainless steel and designed with 3 non-fouling blades. Each propeller shall be of the proper pitch such that the drive motor is loaded at between 88 and 98% of the nameplate horsepower.

F. *Flotation*

The float shall be adequately sized and stable to support the operating equipment without the need for counter balancing, cone cross, or ballast. The float shall be fabricated of 14 gauge 304 stainless steel or fiberglass reinforced plastic. Mooring attachments shall be provided such that mooring stresses do not flex or twist the float structure. All floats shall be foam filled with water resistant closed cell polymer marine grade foam. The central part of the float shall be shaped to form a smooth transition and pathway for water flow to the diffuser.

G. *Volute and Intake Cone*

The propeller shall operate in a cylindrical volute fabricated of a minimum 14 gauge 304 stainless steel. Roundness shall be controlled such that propeller tip clearance is uniform during rotation. A reinforced mounting flange shall be provided at the top of the volute to connect with the motor mounting posts which pass through the float.

A fabricated 304 stainless steel cone shall form the bottom of the volute. The cone shall incorporate anti-rotation devices to straighten the flow prior to the propeller. The cone shall also provide a flat surface on which to rest the aerator when not installed.

H. *Balancing*

The entire rotating assembly shall be statically and dynamically balanced to operate without excessive vibration. Dynamic balancing shall be done at rated motor rpm, with the shaft in the propeller down position. Balancing results shall be made available upon request for each aerator supplied.

I. Experience

The aerator manufacturer shall provide, upon request, documentation showing evidence of successful equipment operation under similar conditions for at least 5 years.

J. Factory Testing

Each aerator shall be tested at the factory for correct operation, lubrication, operating temperature, lack of vibration, and dry amp draw. Upon request, a test sheet certifying suitable operation shall be shipped with each aerator.

K. Warranty

A warranty statement shall be provided by the manufacturer which defines the terms of a 12 month warranty.

L. Performance Testing

The manufacturer shall have available on site a testing tank with minimum volume of 100,000 gallons where oxygen transfer rate, velocity, and mixing tests can be executed. Upon request, the manufacturer shall provide independently certified oxygen transfer test results satisfying ASCE equipment performance requirements.

M. Safety

The manufacturer shall provide visible safety warning labels on the shipped equipment, that comply with OSHA regulations (29 CFR 1910).