

# **HURRICANE®**

## **SUBMERSIBLE AERATOR SPECIFICATION**

### ***A. General***

Provide a total of \_\_\_ **HURRICANE®**, radial mixing aspirating aerators as manufactured by AEROMIX SYSTEMS, Incorporated of Minneapolis, Minnesota, U.S.A. Each aerator shall be \_\_\_ HP horsepower (\_\_\_ kW), 60 hertz, \_\_\_phase, \_\_\_ volts. Each aerator shall consist of a submersible electric motor directly coupled to an impeller. The impeller shall be housed in a replaceable stator assembly beneath the submersible motor. The stator assembly shall accommodate extended diffuser tubes to distribute air and water efficiently throughout the basin. A stationary air intake pipe shall be provided to draw atmospheric air from above the water surface into the aerator where it is thoroughly mixed by the impeller and stator into the wastewater. This aeration shall occur without the use of a separate air blower or compressor. Unidirectional aerators or aerators with submerged gearboxes shall not be allowed.

### ***B. Air Intake Pipe***

Each aerator shall have a vertical air intake pipe constructed of flanged and bolted together sections from schedule 5 pipe, type 304 stainless steel of sufficient length to extend at least one (1) foot (0.3 m) above the maximum water surface elevation. The air intake pipe shall be attached to the aerator base via a heavy-duty stainless steel bolted flange and gasket. Plastic air intake pipes are not acceptable due to low mechanical strength, brittleness in extreme weather, and lack of corrosion resistance.

### ***C. Impeller***

A non-fouling, high-efficiency impeller shall be used. The impeller body shall be constructed of hardened 17-4 stainless steel using a one-piece design for maximum material strength, maximum corrosion resistance, and to avoid stress concentration points. The impeller shall be hardened to a minimum Rockwell 45C for high corrosion and abrasion resistance. The impeller shall be dynamically balanced for minimum vibration and maintenance free operation. During operation, the impeller shall rotate within the stator assembly to provide a shearing action for optimal bubble size and maximized air to water interface. This shearing action shall also macerate suspended solids to further improve wastewater treatment. Non-hardened or coated impellers shall not be allowed.

### ***D. Stator***

The stator shall be a one-piece 17-4 stainless steel design hardened to a minimum Rockwell 45C. The stator shall be easily replaceable without the need to substitute other components of the aerator assembly. The stator shall accommodate at least twelve (12) air diffuser tubes to distribute the air/water mixture away from the aerator assembly along the radial plane of the aerator. The stator shall incorporate threaded openings to allow the installation of air diffuser tubes of varying lengths and diameters to optimize the distribution of oxygen and mixing in the basin. Non-hardened or coated stators shall not be allowed.

### ***E. Aerator Base Assembly***

The aerator base assembly shall be constructed of 304 stainless steel. A bronze wear bushing shall be pressed into the base assembly, providing an air seal and deflection protector for the rotating impeller. The aerator base assembly shall include extended legs with adjustable vibration-dampening feet to allow the aerator to be leveled on most basin bottom surfaces and to absorb vibration during operation.

### ***F. Air Diffuser Tubes***

Aerators can be supplied with air diffuser tubes of varying lengths to properly distribute aeration and mixing over the basin floor and to prevent the re-circulation of aspirated air into the aerator assembly. Each air diffuser tube shall be constructed from round 304 stainless steel tubing with NPT fittings on one end and open on the opposite end. Air diffuser tubes of different lengths shall be configured to provide optimal mixing and air distribution to the basin.

### ***G. Aerator Motor***

The submersible aerator motor shall be built to U.L. and CSA standards for use in Class I Groups C & D hazardous locations. The motor shall have a cast iron housing coated with epoxy paint to withstand corrosion, a 416 stainless steel motor shaft, oil-filled chamber with double mechanical seals, a seal minder (moisture detector), and thermal overload protection. The outer seal shall have no exposed spring or seal faces on which debris may collect and be designed for use in applications involving extreme solids and grit. Each motor shall have 25 feet (7.62 m) of submersible power cable attached at the factory. The cable entry seal shall be watertight and submersible. The motor shall incorporate a sensor to detect water leakage through the outer seal. A separate electrical lead from the motor shall provide a signal from the leakage sensor to the control panel.

### ***H. Air Inlet Filter***

An air inlet filter screen shall be supplied for the top of the air intake pipe to prevent infiltration of airborne debris and particulates. The air inlet filter shall consist of a perforated, galvanized screen with openings no larger than ½ inch (13 mm) provided with a flanged output connection. The total open area of the air inlet filter should be at least equal to twice the open area of the air inlet pipe.

### ***I. Cold Weather Operation***

To prevent the addition of unnecessary controls related for heating devices, the aerator shall have self-heating bearings that develop sufficient operating temperature to minimize ice build-up. Aerators requiring heat packs or heaters are not acceptable.

### ***J. Factory Testing***

Each aerator shall be tested at the factory for correct operation, lubrication, operating temperature, proper assembly and unobstructed impeller rotation. Upon request, a test sheet certifying suitable operation shall be shipped with each aerator.

### ***K. Performance Testing***

The manufacturer shall have available on-site facilities where oxygen transfer rate, velocity, and mixing tests can be executed. Upon request, the manufacturer will provide independently certified oxygen transfer test results satisfying ASCE equipment test requirements.

### ***L. Warranty***

The Manufacturer shall provide a detailed warranty statement outlining the terms and conditions of a twelve (12) month Warranty.