

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 _____ floating aerators. Each aerator shall consist of a motor a direct drive propeller driven at a constant speed, and an integral float.

2. PERFORMANCE

- 2.1 Each aerator shall be capable of a high oxygen transfer rate at a minimum of 3.0 pounds per motor horsepower hour under clean water standard conditions.
- 2.2 Each aerator shall be capable of a direct pumpage rate of _____ gpm.

3. SUBMERSIBLE MOTOR

- 3.1 Each motor shall deliver _____ horsepower at 3450 rpm and shall be wired for _____ volts, at 60 HZ, _____ phase service U.L. Recognized C.S.A. Certified.
- 3.2 The motor shall be totally enclosed, water-cooled, water-lubricated, and corrosion-resistant.
- 3.3 The motor shall, in all cases, equal or exceed standard NEMA specifications.
- 3.4 The motor winding shall be non-hygroscopic, hermetically sealed.
- 3.5 Basic insulation shall equal or exceed NEMA Class H.
- 3.6 A minimum service factor of 1.15 shall be furnished.
- 3.7 A nameplate shall be provided with each motor and shall be securely fastened thereto. The voltage, motor speed, basic insulation class, amperage, service factor, serial number, and manufacturer's name and address shall be stamped or otherwise permanently affixed.
- 3.8 **MOTOR SHAFT**
 - 3.8.1 Each motor shall have a one-piece shaft, continuous from the bottom bearing to the aerator's propeller.
 - 3.8.2 The motor shaft shall be manufactured from type 303 stainless steel.

- 3.8.3 The motor shaft shall be machined to a tolerance of plus or minus .002 T.I.R. from lower bearing to upper end of motor shaft.
- 3.8.4 The motor shall measure 1 inch in diameter.
- 3.8.5 The motor shaft shall not exceed 2-7/8 inches in length beyond the motor shaft end bell. The motor shaft shall have a 15-tooth 16/32 diametrical fillet root side-fit, class "A" fit per ASA B5.15-1950 short dedendum internal spline.

3.9 MOTOR BEARINGS

- 3.9.1 Bearings shall be water-lubricated. No ball bearings shall be used.
- 3.9.2 The top and bottom motor bearings shall be radial sleeve type.
- 3.9.3 The lower thrust bearing shall be a Kingsbury type, with a thrust rating of 1500 lbs. minimum.

3.10 MOTOR TERMINAL

- 3.10.1 The motor terminal shall be of the removable type, field replaceable without disturbing the seal of the stator.
- 3.10.2 Strain relief shall be provided at the motor junction box by a suitable type strain relief.

4. DRIVE STRUCTURE ASSEMBLY

4.1 MOTOR MOUNT

- 4.1.1 The motor mount shall be designed to furnish maximum rigidity and stability with minimum flow interference and constructed of corrosion resistant material.

4.2 MOUNTING COLLAR

- 4.2.1 The mounting collar shall be designed to hold the drive structure assembly into the flotation without the need for any fasteners and constructed of corrosion resistant material.

4.3 PAINT

- 4.3.1 The motor mount and the mounting collar will be coated with two coats of Tnemec Series 66 epoxy paint for a 6-mil thickness

4.4 DIFFUSER

4.4.1 The diffuser shall be manufactured from non-corrosive material and be not less than 1/8' minimum sectional thickness and of material suitable for continuous wastewater and ultraviolet exposure.

4.4.2 The design of the diffuser head shall be such that the liquid spray will be discharged in an angle of 90 degrees to the motor shaft over a 360-degree omnidirectional pattern in the horizontal plane.

4.5 STRAIN RODS AND SUPPORT TUBES

4.5.1 Strain rods shall be a minimum 3/4 inch diameter, 316 stainless steel, of the required length.

4.5.2 Support tubes shall be 1 inch OD, 316 stainless steel tubing.

4.6 DRIVE STRUCTURE FASTENING HARDWARE

4.6.1 All drive structure mounting hardware shall be of type 316 stainless steel.

4.7 JUNCTION BOX ASSEMBLY

4.7.1 The junction box shall be made of corrosion resistant materials in LB configuration and UL recognized C.S.A certified.

4.7.2 Splice connectors shall be UL recognized C.S.A certified.

4.7.3 Cord grips for power cable shall be of the strain relief type and non-corrosive.

5. PROPELLER

5.1 The propeller shall be precision cast of stainless steel and shall be specifically designed for the application intended.

5.2 The propeller shall be splined to accept the motor shaft within this specification.

5.3 The propeller shall be held onto the motor shaft by the thrust developed by the propeller. No fasteners shall be required.

5.4 The propeller shall run open and unrestricted to resist fouling. Equipment with volutes or draft tubes will not be acceptable.

- 5.5 The propeller shall be streamlined to prevent cavitation and reduce drag and shall have trailback blades.
- 5.6 The propeller shall be hydraulically balanced to assure equalization of load under full operation.
- 5.7 The propeller shall be dynamically balanced within 5 gram-centimeters.

6. MOTOR STARTER PROTECTION

- 6.1 Each aerator shall be furnished with the appropriately sized combination manual I.E.C. type motor starter protector.
- 6.2 Each manual motor starter protector shall be UL recognized C.S.A. certified.
- 6.3 Each motor starter protector shall have a built in heater element to provide overload protection.
- 6.4 Each motor starter protector shall be housed in a U.L. recognized C.S.A. certified NEMA 3R enclosure.

7. ELECTRICAL SERVICE CABLE

- 7.1 Electrical service cable shall be UL listed C.S.A approved, four conductor, non-wicking, round electrical cable, type SJTOW, SEOOW, or SOW. No other power cable shall be acceptable.

8. FLOTATION

- 8.1 The flotation unit shall be manufactured from rotationally molded polyethylene with UV inhibitors and not less than 8 inches minimum sectional thickness and shall be square in shape for added stability.
- 8.2 The float shall be vacuum filled with closed cell, non-hygroscopic, steam fused polystyrene foam.
- 8.3 The float shall be capable of supporting not less than two (2) times the weight of the unit and measure 48 inches square.
- 8.4 The float shall have four (4) mooring points, one (1) at each corner.

9. STABILITY

9.1 The unit shall be designed so that 95% of the weight of the unit is below the top level of the float.

9.2 The aerator shall be unconditionally guaranteed not to capsize due to ice or turbulence.

10. TESTING

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

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

11. OPERATION AND MAINTENANCE MANUALS

11.1 Operation and maintenance manuals shall be furnished before start up of the equipment.