

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 mixer shall consist of a motor, a direct drive propeller driven at a constant speed, a venturi/nozzle, and an integral float.

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 Each motor shall deliver _____ horsepower at 3,450 rpms and shall be wired for _____ volts, 60 HZ, _____ phase service.
- 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.
- 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 name plate 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.

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3.8 MOTOR SHAFT

- 3.8.1 Each motor shall have a one piece shaft, continuous from the bottom bearing to the mixer'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 the motor shaft.
- 3.8.4 The motor shaft shall measure 5/8 inch in diameter.
- 3.8.5 The motor shaft nominal length shall not exceed more than 1-1/2 inches beyond the motor.

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 self-aligning, self-equalizing, water-lubricated thrust bearing.

3.10 MOTOR TERMINAL

- 3.10.1 The motor terminal shall be of the removable type, submersible connector construction, field replaceable without disturbing the seal of the stator.
- 3.10.2 Strain relief shall be provided at the motor junction box.

4. PROPELLER

- 4.1 The propeller shall be manufactured of non-corrosive material and shall be specifically designed for the application intended.
- 4.2 The propeller shall be streamlined to prevent cavitation and reduce drag and shall have trailback blades.
- 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 gramcentimeters.

5. VENTURI/NOZZLE

- 5.1 The volute shall be manufactured of non-corrosive material.
 - 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 venturi shall have an opening of not less than 5”.
- 5.2 The nozzle shall be manufactured from non-corrosive material.
- 5.3 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.
 - 5.3.1 The venturi/nozzle shall be of a clog resistant design. The smallest opening shall be not less than four inches.
 - 5.3.2 The air suction tube shall be three (3) inch diameter (min).

6. MOUNTING HARDWARE

- 6.1 Motor mounting support shall be designed in such a way as to furnish maximum rigidity and stability with minimum flow interference.
- 6.2 Mounting fasteners shall be type 316 stainless steel.

7. VIBRATION

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

8. ELECTRICAL SERVICE CABLE

- 8.1 Each unit shall be furnished with _____ feet of AWG# _____, UL approved, water resistant electrical cable.

9. HARDWARE

- 9.1 The exposed nuts and bolts shall be type 316 stainless steel.

10. INSTALLATION MOUNTING OPTIONS

10.1 Flotation Assembly

- 10.1.1 The flotation unit shall be manufactured from rotationally molded high density polyethylene with UV inhibitor.
- 10.1.2 The float will be filled with closed cell, non-hygroscopic, molded polystyrene.
- 10.1.3 The float shall be capable of supporting not less than two (2) times the weight of the unit.
- 10.1.4 The float shall have four (4) mooring points, one (1) at each corner.
- 10.1.5 The unit shall be unconditionally guaranteed not to capsize due to ice or turbulence.

10.2 Mast Mounting Assembly

- 10.2.1 The mast shall be a single square stainless steel vertical guide rail to facilitate vertical adjustment, removal, and required inspection of the aspirating mixer.
- 10.2.2 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 pivot ball to interlock with mast for rotational service.

11. OPERATION AND MAINTENANCE MANUALS

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