Industrial Flow Solutions Operating, LLC

PUMP SPECIFICATION

LWA® SUBMERSIBLE LIGHT-WEIGHT AGITATOR DEWATERING PUMPS CONSTRUCTION / PERFORMANCE SPECIFICATIONS

PUMP REQUIREMENTS

Supply (qty) ____, ____ inch discharge BJM Pumps electric submersible light-weight agitator dewatering pump(s). The pump shall be driven by a close-coupled ___ HP, submersible electric motor with a nominal rating of _____ volts, ____ ph, 60 Hz, 3600 rpm.
The pump shall be capable of delivering _____ US GPM flow at _____ FT TDH. The pump shall also be able to delivering _____ US GPM at _____ FT TDH. The pump shutoff head shall not be less than_____ FT TDH.

DESIGN AND CONSTRUCTION

The pump shall be designed and constructed to pump liquids containing up to 5% (concentration by weight) abrasive solids without causing excessive wear or early pump failure.

Agitator

The pump shall be designed and fitted with a replaceable hard metal agitator to lift solids that have settled to the bottom of the pumping area, and to move these solids into suspension with the pumped liquid. The agitator design shall have at least 4 conical vanes to create continuous agitation beneath the pump and keep solids in suspension. The agitator shall be made of treated ductile iron with hardness of at least 477 BHN. The agitator shall be attached directly to the pump shaft at the eye of the pump impeller.

Suction Cover

Pumps 5HP and smaller shall be supplied with a hardened suction cover to prevent erosion; a condition that would reduce the pump's hydraulic performance. The suction shall be replaceable, constructed of 25% chrome iron with a minimum hardness of 653 BHN, and installed in front of the impeller.

Pumps 7.5HP and larger shall be supplied with a treated ductile iron suction cover with a replaceable hardened wear ring to prevent erosion which increases the clearance between the impeller and suction cover of the pump; a condition that would reduce the pump's hydraulic performance. The wear ring shall be replaceable, constructed of 25% chrome iron with a minimum hardness of 653 BHN, and installed in front of the impeller.

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Impeller

Pumps 5HP and below shall be supplied with a 25% chrome iron, multi-vane, semi-open type impeller. The impeller shall be dynamically balanced and designed for superior hydraulic efficiency. Each impeller shall be capable of handling 0.4 (11mm) inch diameter spherical solids without clogging.

Pumps 7.5HP and greater shall be supplied with a 25% chrome iron, multi-vane, closed type impeller. The impeller shall be dynamically balanced and designed for superior hydraulic efficiency. Each impeller shall be capable of handling 0.4 (11mm) inch diameter spherical solids without clogging.

Volute

The volute casing design shall be semi-concentric to reduce radial loads. The volute shall be constructed from treated ductile iron to a hardness of not less than 223 BHN.

Top Discharge

The pump design and construction shall have a top discharge, with a 304SS NPT connection. Pumped liquid shall pass through the pump housing, which is integrally cast around the motor housing. This design will function as a cooling jacket allowing the pumped liquid to cool the motor and to permit pumping down to a liquid level of *(choose one*) (7.6) / (7.9) inches without overheating the motor.

The outer pump housing shall be constructed of 304SS. The inner pump housing shall be constructed of treated cast ductile iron with hardness of not less than 223 BHN.

Seals

The pump shall be supplied with four independent seals designed to prevent fluid from entering the motor housing.

The pump seal chamber shall be isolated from the pumped liquid by a lip seal constructed from Buna N rubber.

A double set of mechanical shaft seals shall be installed in an oil filled seal chamber. The seal chamber shall be designed to permit inspection & drainage, and to prevent over-filling, without disassembly of the pump stand, agitator and impeller.

Both mechanical seals shall be hydro dynamically lubricated by an ISO 32 NSF mineral oil.

The rotating and the stationary seal faces in the lower mechanical seal shall be constructed of Silicon Carbide. The rotating and the stationary seal faces in the upper mechanical seal shall be constructed of Carbon/Ceramic. The rotating and stationary seal faces in the two seals shall be held in contact by a common 304SS spring.

The power cable entry shall be sealed by a compression fitting utilizing an FKM grommet in close tolerance with the power cable, attached to the motor cover. The power cable wire leads shall be independently connected to the motor wire leads using uninsulated butt connectors in an epoxy potting. The potting shall be done in a manner to establish an anti-wicking block. Each wire lead shall have its insulation stripped, exposing the copper conductor. Leads shall be connected using an uninsulated butt connector, and then completely covered with epoxy potting material to form a solid barrier.

Motor

The pump motor shall be designed specifically for submersible pump usage and continuous duty of pumped liquid up to 104 degrees F. The motor shall be an induction type, housed in an air-filled chamber. The stator windings and leads shall be insulated with moisture resistant Class F insulation rated for a maximum operating temperature of 311 degrees F.

The motor horsepower shall be non-overloading over the full range of the performance curve, from shut-off to run-out. The combined service factor (frequency, voltage and liquid specific gravity) of the motor shall be a minimum of 1.15.

The motor shall be protected from failure from low voltage or high amperage by an overload switch installed in the motor cover housing.

The motor cover housing shall have a threaded fitting to permit air testing of the motor and power cable inlet seal against leakage.

Power Cable

The pump shall be supplied with a 50 foot power cable connected to the motor lead wires, embedded and sealed in a water and oil resistant epoxy potting. The power cable shall be sized in accordance with NEC standards. The outer jacket of the power cable shall be made of oil resistant CPE, class SOOW.

Optional: *(delete above and insert*): The pump shall be supplied with a _____ foot power cable.

The power cable shall be protected by a strain relief chain, attached to the pump lifting handle. The strain relief chain will be sized to absorb the lifting load and prevent the

power cable leads from being separated from their connection to the motor lead wires (if the power cable is pulled, as in the act of attempting to lift the pump by the cord).

Rotor Shaft

The rotor (pump) shaft shall be constructed of corrosive resistant 304SS and be of sufficient diameter to handle radial loads over the full range of the pump's performance curve while pumping water containing high concentrations of solids.

Supporting the Pump

The pump shall be mounted on an integral stand constructed of steel. The stand shall incorporate a strainer to prevent oversized solids from entering the pump.

The pump shall be fitted with a lifting handle, screwed into the motor cover. Lifting chains shall be supplied by others.

TESTING

The pump shall undergo the following tests, which shall be recorded and certified.

Air pressure	Winding: phase angle and impedance tests
Noise	Insulation to ground
Vibration	

A copy of the test record tag shall be attached to the pump when delivered to the customer or job site.

OVERALL

The pump shall be a BJM Pumps® LWA® series model _____.
The pump shall be _____inches in height, _____ inches in diameter and shall weigh _____ lbs.