BJM PUMPS, LLC

PUMP SPECIFICATION

SKG HIGH PERFORMANCE SHREDDER PUMPS

PUMP REQUIREMENTS

Supply (qty) ____, ____ inch discharge electric submersible high performance shredder pump(s). The pump shall be driven by a close coupled ___ HP, submersible electric motor with a nominal rating of _____ volts, ____phase, 60 HZ, _____ RPM

The pump shall be capable of delivering _____ US GPM flow at _____ FT TDH. The pump shutoff head shall be at least_____ FT TDH. The pump shall be capable of a maximum submergence depth of 65 ft.

DESIGN AND CONSTRUCTION

The pump shall be designed and constructed to pump liquids containing “flushable wipes”, and to shred solids so they do not clog the pump or the discharge pipe. Solids passage shall be a minimum of 2 inches.

Impeller

The pump shall be supplied with a 2 plane dynamically balanced double vane non clog impeller made of ASTM A532 Type II 12% chrome iron with a hardness not less than 30 Rc. The impeller shall incorporate wash out vanes on the rear of the shroud to prevent solids buildup near the lower mechanical seal.

The impeller shall be affixed to the motor shaft by placing the impeller onto a shaft, sliding it into place over an impeller key, and tightening it to the shaft with an impeller lock washer and threaded cutter bar.

The space between the front of the impeller and the suction cover shall not exceed 0.020” to avoid recirculation and prevent the loss of hydraulic efficiency.

Suction Cover

The pump shall be fitted with a replaceable suction cover bolted directly to the volute. The suction cover shall be made of ASTM A532 Type II 12% chrome iron, with hardness not less than 30 Rc. Suction cover will have a threaded opening to allow the installation and adjustment of the cutter housing.

Shredding Components

The pump shall be fitted with a single cutter bar constructed of 440C SS with a minimum hardness of 58 Rc, which is threaded onto the shaft, below the impeller. This cutter bar will ride in close tolerance with both a radial and axial cutting ring, both constructed of 440C SS with a minimum hardness of 58 Rc, to allow shredding in 2 planes. The radial and axial cutting rings will be mounted in an adjustable cutter housing which is threaded into the suction cover of the pump, and locked in place with set screws. The clearance between the axial cutting ring and the cutter bar shall be set to 0.003”

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Volute

The volute shall be made of cast iron and bolted directly to the pump's seal housing. The volute shall have a 3 inch flanged discharge with square 4 bolt flange, (choose, if applicable) with an ANSI 4 bolt adapter flange

Discharge Elbow

The pump shall be supplied with a 3 inch 90 degree discharge elbow flanged at one end bolted to the pump and with a 3 inch female NPT discharge.

Seals

The pump shall be supplied with a double mechanical seal designed to prevent fluid from entering the motor housing. The lower seal faces shall be made of silicon carbide vs. silicon carbide. The upper seal faces shall be carbon and silicon carbide. The seal elastomers shall be made of fluoroelastomer (FKM). The seals shall be held in contact by a common 304SS spring between the lower and upper seals.

The two mechanical shaft seals shall be lubricated by an ISO 32 NSF Approved, food grade mineral oil, in a seal chamber separate from the volute and motor pump housing.

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

Seal Minder®

The pump shall be supplied with a **Seal Minder** probe; to detect the presence of water in the seal oil chamber. The probe is connected to a 9VDC power source (by operator). The probe in the seal chamber measures the electrical resistance in the fluid (oil). If the resistance drops below a preset amount, an alarm is triggered in the control panel.

Motor

The pump motor shall be a NEMA design B induction air filled motor designed specifically for submersible pump usage and continuous duty of pumped liquid up to 104 degrees F (40 degrees C).

The stator windings and leads shall be insulated with moisture resistant Class F insulation rated for 311 degrees F (155 degrees C).

The motor horsepower shall be non-overloading over the full range of the performance curve, from shut-off to full-flow. The combined service factor (frequency, voltage and liquid specific gravity) of the motor shall be 1.10.

The motor shall be protected from failure from overheating and from low voltage or high amperage by a separate thermal overload switch installed in the motor top cover.

The motor design is capable of a turn down ratio that will allow a frequency operation range from 60Hz to 45Hz.

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The motor housing shall be constructed of corrosive resistant 304SS for longer life.

The motor top cover shall be constructed of cast iron and have a threaded fitting to permit air testing of the motor cover and electrical cable inlet seals, to prevent leakage.

Rotor / Pump 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 high concentrations of solids.

Rotor shall be made of steel and cast aluminum and shall be dynamically balanced.

Bearings

The upper and lower bearings shall be single row deep groove ball bearings.

The upper and lower bearings shall be lubricated with high temperature polyurea based grease. Minimum bearing L10 life shall be 30,000 hours.

Power Cable

The pump shall be supplied with 33 feet of power cable and Seal Minder sensor cable (alternative lengths optional) connected to the motor lead wires in a water and oil resistant sealed 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 _____feet of power cable and Seal Minder sensor cable.

Each cable shall be protected by a strain relief, attached to the motor cover. The strain relief will be sized to absorb the load and prevent the cable leads from being separated from their connection to the motor lead wires, if the cable is pulled, as in the act of attempting to lift the pump by the cables.

The power and Seal Minder cable entries shall each have a dual sealing system. The first seal will be comprised of a compression squeezed sealing gland made of FKM rubber in a cast iron gland housing, attached to the pump cover. The power leads will have a second, independent seal comprised of a high temperature dielectric potting compound.

Supporting the Pump

The pump shall be mounted on an integral stand constructed of cast iron that may be removed by loosening bolts when the pump is mounted on a slide rail.

The pump shall be fitted with 2 lift rings, screwed into the motor top cover. Lifting chains shall be supplied by others.

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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	Displacement: measured at each bearing

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 Pump® SKG series model _____.

The pump shall be _____inches in height; _____ inches in diameter and shall weigh _____ lbs.