

**PUMP SPECIFICATION**

**XP-SK SHREDDER PUMPS**

**For use in Class 1, Division 1, Groups C & D  
Hazardous (Classified) Locations**

**PUMP REQUIREMENTS**

Supply (qty) \_\_\_\_\_, \_\_\_\_\_ inch discharge electric submersible non-clog shredder pump(s). The pump shall be driven by a close coupled \_\_\_\_\_ HP, FM Approved explosion proof submersible electric motor with a nominal rating of \_\_\_\_\_ volts, 3 phase, 60 HZ, \_\_\_\_\_ rpm, with a FLA of \_\_\_\_\_ amps.

The pump shall be capable of delivering \_\_\_\_\_ US GPM flow at \_\_\_\_\_ FT TDH. The pump shall also be able to deliver \_\_\_\_\_ US GPM at \_\_\_\_\_ FT TDH. The pump shutoff head shall be at least \_\_\_\_\_ FT TDH. The pump shall have a maximum submersible depth of 65 FT.

**DESIGN AND CONSTRUCTION**

The pump shall be designed and constructed to pump non-flammable liquids municipal and industrial waste water containing solids up to \_\_\_\_\_ inch spherical diameter, and to shred solids so they do not clog inside the pump or the discharge pipe.

**Impeller**

The pump shall be supplied with a dynamically balanced (choose one) single / double vane non clog impeller made of (choose one) cast iron / chrome iron (550 BHN) on 2, 3 and 5HP models and cast iron (only) on 7.5-20HP models. The impeller is to have a Tungsten Carbide cutting tooth welded to the leading edge tip of the pump impeller vane(s).

The impeller shall be affixed to the motor rotor shaft by placing the impeller onto a shaft, locking it into place with an impeller key, and tightening it to the shaft with an impeller lock washer and nut screwed onto machined threads at the end of the motor shaft.

The space between the front of the impeller vanes and the suction cover shall not exceed 0.02" to avoid recirculation and prevent the loss of hydraulic efficiency.

**Suction Plate**

The pump shall be fitted with a replaceable suction cover bolted directly to the volute. The suction cover shall be made of (choose one) cast iron / chrome iron (550 BHN) on 2, 3 and 5HP models and cast iron (only) on 7.5-20HP models. The suction plate is to have an irregular opening with engineered cutting slots to help grab debris and aid the impeller with its shredding actions.

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**Volute**

The volute shall be made of cast iron and bolted to the pump's seal housing. The volute shall have a flanged discharge (choose one):

3 inch discharge pump models: square 4 bolt flange, (choose, if applicable) with an ANSI 4 bolt adapter flange

4 inch discharge pump models: square 4 bolt flange (choose, if applicable) with an ANSI 8 bolt adapter flange.

6 inch discharge pump models: ANSI 8 bolt flange

**Discharge Elbow**

The pump shall be supplied with a 90 degree discharge elbow flanged at one end bolted to the pump and with a \_\_\_\_\_ (choose from below) discharge.

- |              |                    |
|--------------|--------------------|
| 3" discharge | male NPT           |
| 4" discharge | female NPT         |
| 6" discharge | ANSI 8 bolt flange |

**Seals**

The pump shall be supplied with two independent mechanical seals with a common spring designed to prevent fluid from entering the motor housing. The lower seal faces shall be made of silicon carbide. The upper seal faces shall be carbon and ceramic. The seal elastomers shall be made of Buna N (option Fluorelastomer (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 Shell FM 32 – Food grade NSF approved, a non toxic 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. (optional Fluorelastomer (FKM)).

**Seal Leak Detector**

The pump shall be supplied with a seal leak detector. To detect the presence of water in the seal oil chamber. The probe is connected to a 50V or 50V DC (or less) power source (by operator). The probe in the seal chamber measures the resistance in the fluid (oil). If the resistance drops below a preset amount, an alarm is triggered in the control panel.

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**Motor**

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

The motor shall be FM Approved for Class I, Division 1, Group C & D use in hazardous classified locations. For municipal and industrial waste water.

The stator windings and leads shall be insulated with moisture resistant Class F insulation rated for 310 degrees F. (Option Class H insulation rated for 356 deg 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 1.15.

The motor shall be protected from failure from overheating and from low voltage or high amperage by two auto-resetting thermostats connected in series in the windings.

The motor housing shall be constructed cast iron, ASTM 48, Class 35.

**Rotor / Pump Shaft**

The rotor (pump) shaft shall be constructed of corrosive resistant AISI-420 stainless steel 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. The rotating assembly shall be dynamically balanced.

**Bearings**

The upper bearing shall be a single deep groove row ball bearing. The lower bearing shall be

Single row deep groove ball bearing	2, 3 and 5 hp model pumps
Tandem deep groove ball bearings bearing	7.5, 10, 15 and 20 hp model pumps

The upper and lower bearings shall be lubricated by Chevron SRI high temperature grease. Minimum bearing L10 life shall be 30,000 hours.

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**Power Cord and Control Cord**

The pump shall be supplied with a 33 foot power cord and Seal Leak Detector control cord. Optional lengths available.

The power and control cords are sealed by a rubber bushing. The power cord and controls cords are potted in the junction chamber covered with epoxy resin, forming the cord and cover assembly. The power cord shall be sized in accordance with NEC standards.

The outer jacket of the power cord shall be oil resistant type SOOW (UL, CSA, MSHA).

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

**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 pump cover. Lifting chains shall be supplied by others.

**Testing**

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

Winding:	Phase angle and impedance tests
Noise	Insulation to ground
Vibration	

A copy of the test record tag shall be attached to the pump.

**OVERALL**

The pump shall be a BJM Pumps® XP-SK series model \_\_\_\_\_.

The pump shall be \_\_\_\_\_ inches in height; \_\_\_\_\_ inches in diameter and shall weigh \_\_\_\_\_ lbs (less the weight of the power cord and control cord).