

SPECIFICATIONS

Grinder

CPG-DSL, 2HP

(Start And Run Capacitors And Relay In Control Panel)

SCOPE: Furnish and install _____ submersible grinder pump (s). Each pump shall be capable of delivering the following performance points, _____ U.S. GPM at _____ TDH; _____ U.S. GPM at _____ TDH; _____ U.S. GPM at _____ TDH, with a shut off head of _____ TDH (minimum). The pump motor speed shall be 3450 RPM, 2 HP (maximum), _____ Phase, 60 Hertz, _____ Volts. The pump (s) shall be manufactured by a company regularly engaged in the manufacture and assembly of similar units. The pump (s) shall be Champion Pumps model _____.

DESIGN: A centrifugal submersible grinder pump designed to reduce all material found in normal domestic and light industrial sewage, including plastics, rubber, sanitary napkins, and disposable diapers into a finely ground slurry. The resultant slurry is then pumped through small diameter piping into a gravity interceptor or treatment facility. The temperature limitation of the liquid being pumped is 150°F intermittent.

PUMP CONSTRUCTION: The volute, seal plates and motor housing shall be constructed of high quality ASTM A-48 class 20-30 cast iron. The pump (s) shall be painted with a water based air dry enamel of 2.0 mil minimum thickness. All exposed hardware shall be 300 series stainless steel. Discharge connection shall be a standard 1.25 inch NPT in the vertical position.

The pump impeller shall be of the recessed vortex design. Pumps with standard centrifugal semi-open impeller designs shall not be acceptable. The impeller shall be cast iron construction and machined for threading to the motor shaft. The impeller shall be capable of being trimmed to meet specific performance characteristics.

The grinder mechanism shall consist of a radial cutter threaded and locked on the motor shaft by a washer in conjunction with a countersunk flat head capscrew, and a shredding ring containing a minimum of fifteen flow passages with cutting edges. The shredding ring shall be reversible to provide twice the cutting edge life. Both the shredding ring and radial cutter shall be constructed of 440C stainless steel hardened to a min. Rockwell C55 and shall be finish ground for a fine cutting edge. Single or two-stage cutter mechanisms requiring external adjustment for proper clearance are not acceptable.

The unit shall utilize a tandem mechanical shaft seal arrangement and shall operate in an oil atmosphere. The materials of construction shall be carbon for the rotating face and ceramic for the stationary face on the upper seal and silicon carbon for the rotating face and silicon carbon for the stationary face on the lower seal, lapped and polished to a tolerance of one light band, 300 series stainless steel hardware, and all elastomer parts to be Buna-N. The seal shall be commercially available and not a proprietary design of the manufacturer.

Single phase motors shall be of the capacitor start, capacitor run design with the capacitors and start components being located in an external control panel. The three phase motors shall be of the dual-voltage 240/480 design. The pump shall be designed to be non-overloading throughout the entire pump curve. The rotor and stator assembly shall be of the standard frame design and secured to the pump seal plate by four threaded fasteners allowing for easy serviceability. Motor designs incorporating shrink or press fit assembly between the stator and motor housing shall not be acceptable. The motor shall be constructed with the windings operating in a sealed environment containing clean dielectric oil, making it capable of operating in a totally, partially or non-submerged condition for extended periods of time without damage due to the heat being generated.

Air-filled motors shall not be acceptable. The motor windings shall be of Class F insulation. The motor shall meet the standard NEMA design L for single phase and NEMA design B for three phase. The motor shaft shall be of 416 stainless steel. Protection against excessive temperature

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shall be provided by heat sensor thermostat attached to the stator windings and connected in series with the contactor coil in the control panel for all 3 phase models. The single phase models shall provide protection against excessive temperature through the use of an in-line heat/current sensor. The sensor shall be connected in series with, and attached to the motor windings, single phase pumps requiring a sensor to be wired in series with the contactor coil shall not be acceptable. The pump shall have a two bearing design consisting of an upper and lower ball bearing. Bearings shall operate in an oil bath atmosphere for superior life. Permanently lubricated or sleeve bearings are not acceptable.

Thermal sensor shall be available on three phase units to monitor stator temperatures. The stator shall be equipped with a thermal switch embedded in the end coil of the stator winding. This can be used in conjunction with external motor overload protection and wired to the control panel. Single phase shall have an overload switch on the motor windings and do not require any external protection.

The pump shall be equipped with _____ft. of type SJOW or SOW power cable and connected to the motor via quick disconnect pin terminals. Threaded cord grip type cord entries are not acceptable. Pin receptacles shall be crimped and molded to the power cord in a PVC plug. The plug shall be secured with a stainless steel compression plate to prevent water from entering the housing and to provide strain relief at the point of cable entry. A chemical bonding adhesive seals the PVC molding to the cable jacket to prevent water from entering the jacket. A terminal block with brass pin inserts shall connect the power cord leads with the motor leads. A Buna-N o-ring shall provide isolation sealing between the terminal block and the motor housing when the cord plug is removed.

PUMP TEST: The pump manufacturer shall perform the following inspections and tests in accordance with SSPMA standards before shipment from the factory :

1. A check of the motor voltage and frequency shall be made as shown on the name plate.
2. A motor and cable insulation test for moisture content or insulation defects shall be made per UL or CSA criteria.
3. The pump shall be submerged and run to determine that the unit meets pre-determined hydraulic performance points.

START-UP: The pump (s) shall be tested at start-up by a qualified representative of the manufacturer. A start-up report as provided by the manufacturer shall be completed before final acceptance of the pump(s).

DOCUMENTATION: The manufacturer, if requested, will supply a minimum of _____sets of standard submittal data;

Standard submittal data consist of:

- a. Pump catalog data;
- b. Pump performance curve;
- c. Break Away Fitting (BAF) data;
- d. Typical installation drawing;
- e. Control panel data
- f. Panel wiring schematic;
- g. Accessory data;
- h. Installation & Operation Manuals with Parts List.

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