Specifications - CPG 3, 5, 7.5HP Double Seal

General:
Furnish and install a quantity of ___ Champion Pump submersible grinder pump(s) Model CPG _____, _____ HP, 3450 RPM, _____ phase, 60 Hz, _____ volts. Each pump shall be capable of delivering the following performance, _____ U.S. GPM at _____ Ft. Total Dynamic Head, with a shut off head of _____ Ft. TDH.

Pump Design:
The centrifugal submersible grinder pump shall be capable of reducing all material found in normal residential and light industrial sewage containing small quantities of plastic, disposable diapers, sanitary napkins, rubber, food particles and other non-abrasive solids into a finely ground slurry. The slurry is then pumped through small diameter piping to gravity interceptor or treatment facility. The temperature limitation of the liquid being pumped is 160°F intermittent and shall be capable of running dry for extended periods. Each pump(s) shall have 2.00" NPT vertical discharge connection.

Pump construction:
Castings: Shall be of high quality ASTM A-48 class 30 cast iron.

Coating/Hardware: Exterior surfaces shall be painted with 2 mill minimum thickness of air dry enamel. All exposed hardware shall be stainless steel.

Impeller: The pump impeller shall be of the recessed vortex design with cast iron construction and machined for threading to the motor shaft. The impeller shall be capable of being trimmed to meet specific performance characteristics.

Grinder mechanism: Shall consist of a radial cutter threaded on the motor shaft and locked in place with a washer in conjunction with a flat head capscrew, and a shredding ring with cutting edges mounted directly below the impeller. The shredding ring's cutting edge life shall be doubled with a reversible design. The shredding ring shall be pressed into the volute and secured with a throat plate and three stainless screws. The shredding ring and radial cutter shall be constructed of 440C stainless steel hardened to a minimum Rockwell C55 and shall be finish for a fine cutting edge. The grinding mechanism shall be constructed to eliminate clogging and jamming under starting and all normal conditions and capable of passing stringy type solids through the pump without roping or winding the material in or below the pump suction.

Mechanical shaft seal: A tandem double seal arrangement shall be utilize and shall operate in an oil atmosphere. Each shaft seal shall prevent leakage between the pump and motor. The upper seal shall be construction of a carbon rotating face and ceramic stationary face, 300 series stainless steel hardware, and all elastomer parts to be Buna-N. The lower seal shall be silicon carbide rotating face and stationary face, 300 series stainless steel hardware, and all elastomer parts to be Viton. The seal shall be commercially available and not a proprietary design of the manufacturer.

Moisture sensor: A moisture sensor detection system consisting of two normally open (N/O) probes shall be installed in the pump seal chamber. These probes will detect any moisture present and shall be connected in series to an alarm device or motor starter coil which will alert the operator that moisture has been detected in the seal cavity.

Motor: Design shall be of the capacitor start and capacitor run for single phase units and capacitors shall be located in an external control box. The three phase units shall be dual-voltage 230/460 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.

The motor windings shall be of Class B insulation and operate 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. The used dielectric oil must be disposed of as non-hazardous waste. The motor shaft shall be of a one piece design and shall be stainless steel.

Temperature sensors: Shall be used to monitor stator temperatures. Thermal switches shall be embedded in the end coils of the stator winding. The sensors shall be normally open and used in conjunction with external motor overload protection and wired to the control panel.

Bearings: Pump shall utilize a three bearing design operating in an oil bath atmosphere, consisting of an upper single row, ball bearing for radial load, a intermediate single row, ball bearing for radial and thrust loads and a lower bronze sleeve bearing for radial loads to prevent shaft deflection. The sleeve bearing shall be located between the two mechanical seals.

Power/control cords: Pump shall be equipped with _____ft. of type SOW cables. The cables shall enter a cast iron box assembly that is bolted to the motor housing and sealed with a Buna-N o-ring. The incoming wires shall be spliced and the box shall be epoxy filled to seal the outer cable jacket and individual strands to prevent liquid from entering the motor housing. Additional sealing and strain relief shall utilize a secondary pressure grommet at point of cable entry.

Tests and inspections: Shall be performed by the pump manufacture.

1. A ground continuity check and motor chamber shall be Hi-potted to test for electrical integrity.
2. Check that motor voltage and frequency matches name plate.
3. The pump shall be pressurized and a air leak test is performed to ensure the integrity of the motor housing.
4. The pump is submerged and ran to determine the unit meets hydraulic performance requirements.

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