2 HP SUBMERSIBLE SEWAGE GRINDER PUMP

HWG(X) MODELS

GENERAL

Contractor shall furnish all labor, materials, equipment and incidentals required to provide_____(qty.) either submersible centrifugal standard location sewage grinder pump(s) or hazardous location sewage grinder pump(s) for NEC class 1, division 1, groups C, D Hazardous locations, as specified herein.

OPERATION CONDITIONS

Each pump shall be rated 2 hp, 60 hertz, 3450 rpm, _____ volts, _____ phase. The unit shall produce _____ U.S. GPM at _____ feet TDH.

CONSTRUCTION

Each pump shall be of the sealed submersible type manufactured by Pentair Hydromatic. The pump volute, motor and seal housing shall be high quality gray cast iron, ASTM A-48, Class 30. All external mating parts shall be machined and Nitrile O-ring sealed on a beveled edge. Gaskets shall not be acceptable. All fasteners exposed to the pumped liquids shall be 300 series stainless steel.

ELECTRICAL POWER CORD

Electrical power cord shall be SOOW or W, water resistant 600V, 90°C, UL and/or CSA approved and applied dependent on amp draw for size.

The power cable entry into the cord cap assembly shall first be made with a compression fitting. Each individual lead shall be stripped down to bare wire, at staggered intervals, and each strand shall be individually separated. This area of the cord cap shall then be fitted with an epoxy compound potting which will prevent water contamination to gain entry even in the event of wicking or capillary attraction.

The power cord leads shall then be connected to the motor leads with extra heavy-duty crimp insulated connectors.
The cord cap assembly where bolted to the motor housing shall be sealed with a Nitrile O-ring on a beveled edge to assure proper sealing.

MOTOR

Stator winding shall be of the open type with Class F insulation good for 155°C (311°F) maximum operating temperature. Winding housing shall be filled with a clean high dielectric oil that lubricates bearings and seals and transfers heat from windings and rotor to outer shell. Air-filled motors which do not have the superior heat dissipating capabilities of oil-filled motors shall not be considered equal. Stator shall be heat shrunk into motor housing.

A heat sensor thermostat shall be attached to top end of motor winding and shall be connected in series with the magnetic contactor coil in control box to stop motor if motor winding temperature reaches 221°F. Thermostat to reset automatically when motor cools. Two heat sensors shall be used on 3 phase motors.

BEARINGS AND SHAFT

Motor shall have two heavy duty ball bearings to support pump shaft and take radial and thrust loads and a sleeve guide bushing directly above the lower seal to take radial load and act as flame path for seal chamber. Ball bearings shall be designed for 50,000 hours B-10 life. The common motor pump and grinder shaft shall be of #416 stainless steel threaded to take pump impeller and grinder impeller.

SEALS AND SENSORS

The rotor and stator in the motor housing shall be separated and protected from the pumped liquid by an oil-filled seal housing incorporating two carbon ceramic mechanical seals mounted in tandem. This seal housing shall be equipped with two moisture sensing probes installed between the seals, and the sensing of moisture in the seal chamber shall be automatic, continuous, and not require the pump be stopped or removed from the wet well. The sensor probes shall be electrically isolated, with a resistor between each probe to eliminate grounding to the casing.

IMPELLERS

Impeller shall be 316SST/CF8M multivane, recessed, non-overloading design. They can either be factory or field trimmed to meet specific performance conditions. Impellers shall be dynamically balanced at the factory and machined for threading on to the pump shaft.

GRINDER CUTTERS

Grinder assembly shall consist of grinder impeller and shredding ring and shall be mounted directly below the volute passage. Grinder impeller to be threaded onto stainless shaft and shall be locked with screw and washer. The shredding ring shall be pressed into iron holding flange for easy removal. Flange shall be provided with tapped back-off holes so that screws can be used to push the shredding ring from housing. All grinding of solids shall be from action of the impeller against the shredding ring. Both grinding impeller and shredding ring shall be made of 440F stainless steel hardened to 58-60 Rockwell C.

CORROSION PROTECTION

The pump shall be painted with waterborne hybrid acrylic/alkyd paint. This custom engineered, quick dry paint shall provide superior levels of corrosion and chemical protection. All fasteners to be 300 series stainless steel.

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