Specifications – HPD200

SUBMERSIBLE POSITIVE DISPLACEMENT GRINDER PUMP

GENERAL

Contractor shall furnish all labor, materials, equipment and incidentals required to provide _____ (qty.) submersible positive displacement sewage grinder pump(s) as specified herein.

OPERATING CONDITIONS

Pump shall have a capacity of _____ GPM at a total head of _____ feet and shall use a 2 hp motor operating at 1725 rpm.

CONSTRUCTION

Pump shall be a positive displacement type with an integrally built-in grinder unit and submersible type motor. The grinder unit shall be capable of macerating normal domestic and commercial sewage. Discharge shall be 1-1/4" NPT.

NOTE: The following objects should not be introduced into the grinder sump as damage to the pump stator boot will result: glass, metal, seafood shells, plastic objects (toys, utensils, etc.) or other like sharp objects.

ELECTRICAL POWER/CONTROL CORD

The motor power cord shall be SJOOW. The cable jacket shall be sealed at the motor entrance by means of a rubber compression washer and compression nut. A heat shrink tube filled with epoxy shall seal the outer cable jacket and the individual leads to prevent water from entering the motor housing.

MOTOR

Pump motor shall be of the submersible type rated 2 hp at 1725 rpm. Motor shall be for 60 Hz, single-phase, 230V. Motor shall be capacitor start, capacitor run type for high starting torque. Stator winding shall be of the open type with Class F insulation, good for 130ºC (266ºF) 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, that do not have the superior heat dissipating capabilities of oil-filled motors, shall not be considered equal.

Motor shall have an automatic reset line break overload attached to the top end of the motor windings to protect motor per UL 778. The high temperature shut-off will cause the pump to cease operation, should a control failure cause the pump to run continuously in a dry wet well. The thermal overload shall reset automatically when the motor cools to a safe operating temperature.

BEARINGS AND SHAFT

Motor shall have two heavy-duty ball bearings to support pump shaft and take radial and thrust loads. Ball bearings shall be designed for 50,000 hours B-10 life. Stator shall be bolted to seal/bearing housing for easy motor replacement.

The common motor pump and grinder shaft shall be of 400 series stainless steel threaded to take pump impeller and grinder impeller.

SEAL

Motor shall be protected by one rotary mechanical seal. Seal face shall be carbon and ceramic and lapped to a flatness of one light band.

POSITIVE DISPLACEMENT

The progressing cavity stator boot shall be designed for rough duty service and shall be of an axial double-helix positive displacement type. The stator boot shall be constructed of Nitrile, with the progressing cavity chamber molded integral to the stator boot. Stator boot shall be retained within the volute pumping chamber by means of a stainless steel retaining ring secured with 400 series fasteners.

The progressing cavity rotor shall be designed for rough duty service and shall be of a single-lobe axial helix type. The rotor shall be constructed of 300 series stainless steel designed for close slip-fit over motor shaft and retained on motor shaft by means of a lower roll pin.

GRINDER CUTTERS

The combination stator/rotor and grinder unit shall be attached to the common motor and pump shaft. The grinder unit shall be on the suction side of the pump discharge directly into the positive displacement inlet, leaving no exposed shaft to permit packing of ground solids. The grinder shall consist of a single stage. Both stationary and rotating cutters shall be made of 440C stainless steel hardened to Rockwell 60C and ground to close tolerance. The stationary cutter shall be slip- fit into the suction opening of the volute and held in place by three (3) 400 series stainless steel screws. The lower (radial) cutter shall macerate the solids against the I.D. of the cutter ring and extrude them through the slots of the cutter ring. The (radial) cutter shall be threaded to the common pump shaft and secured by means of a 300 series stainless steel washer and screw to the common pump shaft.

LEVEL CONTROL

An automatic control is provided by a heavy-duty UL/CSA listed float switch tethered to the side of the pump, having a piggyback plug on one end. This piggyback float switch operates the pump directly without the need of a control panel.

TESTING

Commercial testing shall be required and include the following:

The pump shall be visually inspected to confirm that it is built in accordance with the specifications as to hp, voltage, phase and hertz.

The motor and seal housing chambers shall be hi-potted to test for moisture content and/or insulation defects.

Pump shall run to check for proper rotation.

Discharge piping shall be attached, the pump submerged in water, and amp readings taken in each leg to check for an unbalanced stator winding. If there is a significant difference in readings, the stator windings shall be checked with a bridge to determine if an unbalanced resistance exists. If so, the stator will be replaced.

PAINT

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.