

**OPERATING CONDITIONS** – Each pump shall be rated \_\_\_\_\_ hp, \_\_\_\_\_ volts, \_\_\_\_\_ phase, \_\_\_\_\_ hertz, and \_\_\_\_\_ rpm. The unit shall produce \_\_\_\_\_ U.S. GPM at \_\_\_\_\_ feet TDH.

**CONSTRUCTION** – Each pump shall be of the sealed submersible grinder type, model V<sup>2</sup> as manufactured by Myers. 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 liquid shall be 300 series stainless steel.

**POWER CORD** – Power cord shall be SOOW water resistant 600V, UL and/or CSA approved. The single cord shall incorporate both power and sensor leads and shall be a minimum of five 12 gauge conductors. The pump shall be protected with compression fitting and epoxy potted area at the power cord entry to the pump. A separation between the junction box area of the pump and the motor, by a stator lead sealing gland or terminal board, shall not be acceptable. 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 filled 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 be connected to the motor leads with extra heavy connectors having copper inserts with a crimped wire-to-wire connection rather than a terminal board that allows for possible leaks. The cord cap assembly shall be sealed with a Nitrile O-ring on a beveled edge to assure proper sealing.

**QUICK DISCONNECT POWER CORD** – Power cord shall be SOOW water resistant 600V, UL and/or CSA approved. The single cord shall incorporate both power and sensor leads and shall be a minimum of five 12 gauge conductors. The pump shall be double protected with a compression fitting and an epoxy potted area at the power cord entry to the pump. A separation between the junction box areas of the pump and the motor, by a stator lead sealing gland or terminal board, shall not be acceptable. 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 installed in a socket and enclosed in an over molding. Mating pins shall be provided and attached to the individual Teflon lead wires and enclosed in another over molding which will be affixed to the cord cap. This area of the cord cap shall then be filled with an epoxy potting compound. This assembly will prevent water contamination from gaining entry even in the event of wicking or capillary action. Strain relief shall be integral to the power cable and must be clamped over the molding and vulcanized to the outer jacket of the cable. The cord cap assembly shall be sealed with a Nitrile O-ring on a beveled edge to assure proper sealing.

**MOTOR** – The stator, rotor and bearings shall be mounted in a sealed submersible type housing. The stator windings shall have Class F insulation (155°C or 311°F) and a dielectric oil-filled motor, NEMA B design (three-phase), NEMA L design (single-phase). Because air-filled motors do not dissipate heat as efficiently as oil-filled motors, they shall not be acceptable. The pump and motor shall be specifically designed so that they may be operated partially dry or completely submerged in the liquid being pumped. The pump shall not require cooling water jackets. Supplemental cooling shall not be acceptable.

**BEARINGS AND SHAFT** – An upper single row ball radial bearing and a lower double row angular contact

bearing shall be provided. Bearings shall be permanently lubricated by the dielectric oil that fills the motor housing. Ball bearings shall be designed for 50,000 hours B-10 life. The shaft shall be machined from solid 400 series stainless steel and be designed with large diameters and minimum overhang to reduce shaft deflection and prolong bearing and seal life.

**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 type 21 carbon ceramic mechanical seals mounted in tandem. The seal housing shall be equipped with a moisture sensing probe 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.

**IMPELLER** – The impeller shall be constructed of 316 stainless steel and be designed for rough duty service. It shall be a eight-vane, semi-open design with two wash out vanes on the rear shroud. The impeller shall be a non-overloading design.

**GRINDER MECHANISM** – The stationary cutter shall be circular in design and contain evenly spaced cutting slots that extend outwards from the inlet of the pump. The slots are tapered inward toward the inlet to help direct slurry through the cutting slots into the pump. The slots are to be angled, or undercut, to help maintain a sharp axial cutting edge, even as the axial face wears during use. The stationary cutter shall be pressed into the suction opening of the volute and held in place by four 300 series stainless steel screws. The stationary cutter shall be provided with tapped back-off holes so that screws can be used to remove the cutter from the volute. The rotating cutter shall contain three axial cutting arms extending from the hub, perpendicular to the pump shaft, that are shaped to aid in the rejection of suspended debris that has not been sufficiently reduced in size by the axial cutting action. The curved, leading edge of the cutting arms shall create a scissor action with the cutting slots of the stationary cutter plate to minimize the required torque. This will allow the cutter to macerate tough objects and prolong cutter life. Serrations on the hub of the cutter add additional cuts that prevent debris from becoming entangled within the rotating cutter. The rotating cutter shall thread onto the end of the pump shaft and be secured by a 300 series stainless steel washer in conjunction with a 300 series stainless steel flat head cap screw threaded into the end of the shaft. Both stationary and rotating cutters shall be made of 440C stainless steel, hardened to Rockwell 57-60C and ground close to tolerance. The grinder shall be capable of grinding normal domestic sewage into a fine slurry.

**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.