

Technical Specification

GRP 12/19 Series Grinder Pump Explosion Proof Construction

- **SCOPE**

These specifications cover the design, performance and installation of submersible Grinder pumps intended for wetwell applications. The pump assembly, including the liquid end and motor shall be of the design and production of only one manufacturer, and shall be in full compliance with these specifications.

- **GENERAL CONDITIONS**

Furnish and install Qty ___ HOMA Model GRP ___ Electric Submersible Grinder Pump(s), each consisting of a single-stage, non-clog centrifugal pump, with a cutter attachment, close coupled by a common shaft to a squirrel cage, induction type electric motor, assembled in a single body, watertight aggregate, suitable for wet well.

- **PERFORMANCE GUARANTEE**

The pump shall be capable of delivering raw, unscreened sewage at: ___ GPM at ___ FT TDH.

- **PUMP DESIGN**

The liquid end shall be a centrifugal pump with a rotating cutter mounted on the shaft immediately adjacent to the impeller. The stationary cutter disk shall be mounted in an axially adjustable bottom plate. A short overhang shaft, shared by the rotating cutter, impeller and motor, will have generous shoulder fillet radii to minimize stress concentration and fatigue. The shaft shall be supported by anti-friction bearings. The lower bearing shall be a double-row, deep groove ball bearing, axially retained to sustain both axial and radial loads. The upper bearing shall be a single-row, deep groove ball bearing, axially floating to sustain radial loads only. Power cables shall enter the motor through a Potted Cable Inlet Assembly in a side entry chamber integral with the motor housing. The cable entry design shall ensure a watertight and submersible seal. The entry shall include an elastomer grommet that is flanked by washers. Watertight integrity shall additionally be maintained by a mechanical shaft seal, and by O Rings, confined within closely fitted, high surface quality rabbet joints, compressed to the prescribed dimension only by metal to metal contact. The impeller shall be cast in one piece and of the multi-vane, centrifugal (radial) design.

- **MATERIALS OF CONSTRUCTION**

Major castings: ASTM A48 Class 40B Cast Iron- The cutter parts shall be made of Stainless Steel similar to AISI 440C, alloyed with cobalt, vanadium and molybdenum for a hardness of 55 Rockwell C minimum, to provide lasting abrasion resistance.- Shaft: AISI 430F Stainless Steel. - Fasteners: AISI 304 Stainless Steel. - All O-Rings: Nitrile Rubber. - Shaft Seals: Impeller side; Silicon Carbide/Silicon Carbide and Motor side; Radial Lip Seal.. Cable Jacket: Chloroprene Rubber. Exterior Protective Coating: High Build Epoxy.

- **ELECTRIC MOTOR**

Each pump shall be driven by a Submersible Squirrel Cage type Electric Motor, rated at ___ HP, 3450 RPM ___ Volts ___ Phase. Motor shall be NEMA Design B for continuous duty, capable of sustaining 10 starts per hour. The pump and motor shall be produced by one manufacturer and shall be of submersible design.

All stator windings and leads shall be insulated with moisture resistant Class H insulation. Upon assembly, the stator shall be heat-shrink fitted into the stator housing; the use of bolts, pins or other fastening devices which would require penetration of the stator housing, shall not be acceptable.

In each phase winding there shall be embedded a temperature sensor, wired in series. Any of these thermal sensors shall cut out electric power if the temperature in its winding exceeds 140°C, but shall automatically reset when the winding temperature returns to normal. The motor shall have a SF (Service Factor) of 1.15 and shall be non-overloading for the selected performance curve. Full load current shall not exceed ___ FLA at ___ Volts. Single Phase motors shall be of the run capacitor type, to deliver high starting torque.

Motor shall be approved for use in Hazardous (Classified) areas. Pumps shall be suitable for operation in Class I, Division 1 Groups C & D Areas only, and shall be approved by Factory Mutual (FM) for use in the area classification indicated.



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- **SEAL PROBE**

A two-wire conductive seal probe shall be provided with pump. Probe shall be mounted into mechanical seal chamber and shall be accessible without disassembly of pump. Internal seal probe designs which require disassembly of pump for inspection shall not be permitted. When interlocked with control panel, probe shall indicate the presence of contaminants within mechanical seal chamber.

- **WETWELL AUTOCOUPLING APPLICATION**

An Autocoupling assembly shall be employed to eliminates the need for entering the wet well to service pumps. The system shall allow the lowering of the pump unit(s) into the well along rigid guide pipes, resulting in a self-engaging, firm, leakproof coupling of the volute outlet to a receiving base anchored to the floor which forms the discharge pipe connection. To assure a leakproof junction between movable and stationary components, a resilient seal ring shall be employed which is easily replaceable as part of the pump assembly, is axially and evenly compressed upon contact. Metal-to-metal contact faces shall not be allowed. Once seated, the pump shall be entirely supported by the Autocoupling Base, without any reliance on additional supports.

- **WETWELL PORTABLE APPLICATION**

The pump unit, without modification to the basic, watertight pump-motor aggregate, shall be suitable for portable use when combined with a ring stand.