



# Technical Specification

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## TP 50 Series Non-Clog Submersible Pump Explosion Proof Construction

- **SCOPE**

These specifications cover the design, performance and installation of submersible Non-Clog pumps intended for wet well 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 TP \_\_\_\_ Submersible Non-Clog Pump(s), each consisting of a single-stage, non-clog centrifugal pump, 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 wastewater or sewage at: \_\_\_\_ GPM at \_\_\_\_ FT TDH. As this pump will be utilized for solids handling, it must be capable of repeatably passing spherical solids up to \_\_\_\_" in diameter.

- **PUMP DESIGN**

The liquid end shall be a centrifugal pump with a short overhang shaft, shared by the 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 deep groove ball bearing, axially retained to sustain both axial and radial loads. The upper bearing shall be a deep groove ball bearing, axially floating to sustain radial loads only. The impeller shall be cast in one piece and of the \_\_ open multi-vane / \_\_ vortex design. Watertight integrity shall be maintained by a potted Cable Entry Assembly in a side entry chamber integral with the motor housing, Mechanical Shaft Seals and between major castings, by O-Rings, confined within closely fitted, high surface quality rabbet joints, compressed to the prescribed dimension only by metal-to-metal contact.

- **MATERIALS OF CONSTRUCTION**

Major castings: ASTM A48 Class 40B Cast Iron - 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 (sizes 16-24) Radial Lip Seal; Motor Side (sizes 38-54) Silicon Carbide/Silicon Carbide - Cable Jacket: Chloroprene Rubber - Exterior Protective Coating : High Build Epoxy.

- **IMPELLER**

Impeller will be cast as one piece and shall be one of the following designs:

( ) single-vane open, radial non-clog (ASTM A48 class 40B cast iron construction)

( ) multi-vane open (single-shrouded), torque flow, vortex (ASTM A48 class 40B cast iron construction)

Impellers shall be statically and dynamically balanced, to assure that vibration amplitudes, measured at the level of the upper bearing while operating in a vertical position, remain within the limits specified by the Hydraulic Institute.

- **ELECTRIC MOTOR**

Each pump shall be driven by a Submersible Squirrel Cage type Electric Motor, rated at \_\_\_\_ HP, \_\_\_\_ 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.

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

All stator windings and leads shall be insulated with moisture resistant Class F insulation, capable of withstanding 155°C Max. temperature, dipped and baked three times. 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.



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In each phase winding there shall be embedded a temperature sensor. 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 an 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.

- **SEAL PROBE**

A dual wire conductive seal probe shall be provided with pump. Probe shall be mounted into mechanical seal chamber and when interlocked with control panel, probe shall indicate the presence of contaminants within mechanical seal chamber. Option for externally mounted devices are readily available and field retrofitable for all pumps.

- **WET WELL AUTO-COUPLING APPLICATION**

An Auto-Coupling assembly shall be employed to eliminate 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 Auto-coupling Base, without any reliance on additional supports.

- **WET WELL 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.