Submersible Non-Clog Pumps

**SCOPE:** Furnish and install _______ submersible non-clog sewage pump(s). Each pump shall be capable of delivering the following performance points.____ U.S. GPM at ________TDH;

U.S. GPM at ________TDH, with a shut off head of ________TDH (minimum) and ________% minimum efficiency at ________U.GPM.

PUMP DESIGN: Each pump shall be capable of handling raw, unscreened domestic sewage consisting of water, fibrous materials, and ______ inch diameter spherical solids. The pump(s) shall be capable of handling liquids with temperatures to 104 degrees F continuous, 160 degrees F intermittent, and shall be capable of running dry for extended periods.

PUMP CONSTRUCTION: The volute, seal plates, impeller and motor housing shall be constructed of high quality ASTM A-48 class 30 cast iron. Pump(s) shall be painted with a water based air dry enamel of 2.0 mil minimum thickness. All exposed hardware shall be 300 series stainless steel. The pump construction shall contain no points of critical clearance nor require periodic adjustment or replacement to maintain operating efficiency. Discharge connection shall be a standard 125 pound, ______ inch flange. All gaskets shall be of the compression square ring type eliminating critical slip fits and the possibility of damage during service associated with sliding o-ring sealing arrangements.

The impeller shall be of the non-clog design with pump out vanes on the back side. The impeller shall be dynamically balanced to ISO G6.3 specifications.

The double mechanical shaft seal shall be of the single spring design operating in an oil-filled seal cavity. Pump-out vanes in the back of the impeller shroud shall develop a radially increasing pressure differential from the impeller hub outward. This pressure differential shall be transmitted by means of a Buna-N elastomer diaphragm to the oil in the seal cavity, thus producing a higher pressure inside the seal cavity forcing the oil in the seal chamber. Units utilizing one probe and float device are not acceptable.

Air-filled motors shall not be acceptable. The motor windings shall be of Class _______ insulation. The motor shall meet the standard NEMA design L for single phase and NEMA design B for three phase.

The pump shaft shall be of 416 stainless steel. The lower bearing shall be of the double row ball type to accept radial and thrust loads, and the upper bearing of the single ball type for radial loads on the Large 4” - 8” pumps and the lower bearing shall be of the single row ball type to accept radial and thrust loads, and the upper bearing of the sleeve type for radial loads on the small 4” pumps. Bearings shall operate in an oil bath atmosphere for superior life. Permanently lubricated bearings are not acceptable.

Thermal sensors shall be used to monitor stator temperatures. The stator shall be equipped with a thermal switch embedded in the end coil of the stator winding. This shall be used in conjunction with supplemental to external motor overload protection and wired to the control panel.

PUMP TEST: The pump manufacturer shall perform the following inspections and tests in accordance with Hydraulic Institute type B standards before shipment from the factory:

1. A check of the motor voltage and frequency shall be made as shown on the name plate.
2. A motor and cable insulation test for moisture content or insulation defects shall be made per UL criteria.
3. The pump shall be completely submerged and run to determine that the unit meets three pre-determined hydraulic performance points.
4. A written report shall be available showing the aforementioned tests have been performed in accordance with the specifications.

START-UP: The pump(s) shall be tested at start-up by a qualified representative of the manufacturer. A start-up report as provided by the manufacturer shall be completed before final acceptance of the pump(s).

DOCUMENTATION: The manufacturer, if requested, will supply a minimum of _______sets of standard submittal data; Standard submittal data consist of:

- Pump catalog data;
- Pump performance curve;
- Break Away Fitting (BAF) data;
- Access cover data;
- Typical installation drawing;
- Control panel data;
- Panel wiring schematic;
- Accessory data;
- i. installation & Operation Manuals with Parts List.

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**DATE**: 02/05

**USA**: (937) 778-8947 • **Canada**: (905) 457-6223 • **International**: (937) 615-3598

**BARNES®**

**Specifications**

4”, 6” & 8” Horizontal Discharge

**SE - Double Seal, Oil-Filled**

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