



# SPECIFICATIONS

## Submersible Solids Handling Pump

### Series: 4BSE-DS

#### General:

Furnish and install a quantity of \_\_\_\_ Barmesa® Pumps submersible sewage pump(s), Model 4BSE\_\_\_\_DS, \_\_\_\_HP, \_\_\_\_RPM, \_\_\_\_phase, 60 Hz, \_\_\_\_volts, with a 4 inch horizontal discharge 125 ANSI discharge flange connection. Each pump shall be capable of delivering the following performance, \_\_\_\_ US GPM at \_\_\_\_ ft total dynamic head, with a shut off head of \_\_\_\_ ft TDH minimum, and \_\_\_\_% efficiency at \_\_\_\_ US GPM at \_\_\_\_ft TDH operating point.

#### Pump Design:

The centrifugal sewage pump(s) shall be capable of handling 3 inch diameter spherical solids of raw, unscreened domestic sewage consisting of water, fibrous materials. The pump(s) shall be capable of handling liquids with temperatures to 104 °F continuous, and shall be capable of running dry for extended periods.

#### Pump Construction:

**Castings:** The volute, seal plates, impeller and motor housing shall be constructed of ASTM A-48 class 30 cast iron.

**Coating/Hardware:** Exterior surfaces shall be painted with a water based air dry enamel. All exposed hardware shall be 300 series stainless steel.

**Gaskets:** 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.

**Impeller:** The impeller shall be of \_\_\_\_ vane, solid handling design with pump out vanes on the back side. Single and multi-vane impellers shall be capable of being trimmed to meet specific performance characteristics. The impeller shall be dynamically balanced to ISO G6.3 specifications.

**Double mechanical seal:** Shall be of the single spring design operating in an oil-filled seal cavity. The inner seal shall be constructed of carbon for the rotating face and ceramic for the stationary face, 300 series stainless steel hardware, and all elastomer parts to be of Buna-N. The outer seal shall be of silicon carbide faces, 300 series stainless steel hardware, and all elastomer parts to be of Buna-N. The seal shall be commercially available and not a manufacturers proprietary design.

**Seal leak sensor:** A seal leak detection system consisting of two normally open (N/O) probes shall be installed in the pump seal chamber. These probes will detect any moisture present and shall be connected in series to an alarm device or motor starter coil which will alert the operator that moisture has been detected in the seal cavity.

**Motor:** Design shall be of the capacitor start and capacitor run and overload protection for single phase units. Capacitors shall be located in an external control box. The pump shall be designed to be non-overloading throughout the entire pump curve. The rotor and stator assembly shall be of the standard frame design and secured to the pump seal plate by four threaded fasteners allowing for easy serviceability.

The motor windings shall be of Class F insulation and operate in a sealed environment containing clean dielectric oil, making it capable of operating in a totally, partially or non-submerged condition for extended periods of time without damage due to the heat being generated. The used dielectric oil must be disposed of as non-hazardous waste. The motor shall meet the standard NEMA L for single phase and NEMA B for three phase.

**Thermal Protection:** 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 and supplemental to external motor overload protection and wired to the control panel.

**Shaft:** The pump shaft shall be of a one-piece design and shall be of 416 stainless steel.

**Bearings:** 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. Bearings shall operate in an oil bath atmosphere for superior life.

**Power/Control Cords:** Shall be equipped with \_\_\_\_ ft of type SOW power and control cords. The cords shall enter a cast iron terminal box assembly that is bolted to the motor housing and sealed with a Buna-N o-ring. The incoming lead wires shall be spliced in the terminal box. After splicing, the terminal box shall be filled with epoxy to seal the outer cable jacket and the individual strands to prevent water from entering the motor housing. Additional sealing and strain relief shall utilize a secondary pressure grommet at point of cable entry.

**Tests and inspections:** Shall be performed by the pump manufacture.

1. A ground continuity check and motor chamber shall be Hi-potted to test for electrical integrity.
2. Check that motor voltage and frequency matches name plate.
3. The pump shall be pressurized and a air leak test is performed to ensure the integrity of the motor housing.
4. The pump is submerged and operated to determine the unit meets hydraulic performance requirements.