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## X62 HD HAZARDOUS LOCATION SERIES

### CLASS I, DIVISION 1, GROUPS C & D

### CLASS I, ZONE 1, GROUP IIA & IIB

## SUBMERSIBLE PUMP GUIDE SPECIFICATIONS

### 5 - 20 BHP - 1750 RPM

### Solids Handling Pumps



Covered by US  
Patent Number  
6,364,620

#### 1.01 GENERAL

Contractor shall furnish all labor, material, equipment and incidentals required to provide \_\_\_\_ (QTY.) cCSAus certified Listed solids handling submersible centrifugal sewage pump(s) rated for Class I, Division 1, Groups C or D and Class I, Zone 1, Groups IIA and IIB locations as specified herein.

#### 2.01 OPERATING CONDITIONS

Each submersible pump shall be rated at \_\_\_\_ HP, \_\_\_\_ Volts, \_\_\_\_ Phase, \_\_\_\_ Hz, 1750 RPM. The unit shall produce \_\_\_\_ GPM at \_\_\_\_ feet of TDH.

The submersible pump shall be non-overloading throughout the length of the curve and be capable of operating continuously unsubmerged without damaging the pump. The reserve service factor shall be a minimum of 1.20. The submersible pump shall pass a 3" spherical solid. The submitted performance curve shall show, in addition to the head and capacity performance, the efficiency and motor rating curve. The curve data shall be per the SWPA (Submersible Wastewater Pump Assoc.) approved curve format.

The pump housing configuration shall have a  
 \_\_\_ 4" flanged horizontal discharge.  
 \_\_\_ 6" flanged horizontal discharge.

#### 3.01 CONSTRUCTION

Each pump shall be of the close coupled Model \_\_\_\_\_ submersible type as manufactured by Zoeller Engineered Products of Louisville, Ky. (800-928-7867). The finned castings shall be constructed of epoxy coated class 30 cast iron. The motor housing shall be oil-filled to dissipate heat and enable the unit to operate for continuous duty unsubmerged without damage to the motor. All external-mating parts shall be machined and sealed with a Buna-N square ring. All fasteners exposed to the liquid shall be 300 series stainless steel. The motor shall be protected on the top side with sealed junction chamber, which in the event of cord damage, will prevent moisture wicking into the motor housing. The motor shall be protected by a moisture detection system, which will activate an alarm circuit if liquid is ever present in the upper junction chamber or lower seal cavity. The motor shall be protected on the lower side with a tandem mechanical seal arrangement with each seal having a separate spring assembly. The oil-filled seal chamber located between the two mechanical seals shall contain 2 probes to detect seal leakage. The upper and lower ball bearings shall be capable of handling all thrust and radial loads. The pump housing shall be of the concentric design thereby equalizing the pressure forces inside the housing, which will extend the service life of the seals and bearings. The pump shall have cast iron lifting lugs with 2 -1/2" male NPT conduit connection.

#### 4.01 ELECTRICAL POWER CORD

The pump shall be supplied with 25' (or \_\_\_\_ 50' optional) of multiconductor power cord. It shall be SO type cord capable of continued exposure to the pumped liquid. Power cord shall be sized for the rated full load amp loading of the pump in accordance with the National Electrical Code. Electrical cables shall enter the junction chamber through a compression type sealing gland. Water sealing and strain relief is separated. Each individual conductor shall be sealed against wicking, should the cable become damaged. The entire junction chamber shall be sealed off from the motor housing. The junction chamber shall contain a set of moisture detection probes, activating an alert signal in the case of liquid entry.

#### 5.01 MOTOR

The oil-filled motor, rated for Class I, Division 1, Group C or D and Class I, Zone 1, Groups IIA and IIB locations, construction shall be a Class F insulated NEMA B design rated for continuous duty. At maximum load, the winding temperature will not exceed 250 degrees F unsubmerged. Since air-filled motors are not capable of dissipating heat, they shall not be considered equal. Thermal sensors located in the oil-filled motor housing shall provide temperature protection.

## 6.01 BEARINGS AND SHAFT

Upper and lower ball bearings made of high carbon chromium steel shall be provided to prevent shaft deflection by withstanding all thrust and radial loads. The motor shaft shall be made of 416 SS and have a minimum diameter of 1.5".

## 7.01 SEALS

Pump shall have a dual mechanical seal configuration with the seals mounted in tandem. Each seal assembly having Silicon carbide / silicon carbide lower and carbon ceramic upper faces with Buna-N elastomer and 316 SS spring. It shall be equal to a Crane Type 21 configuration. Double seals with a common intermediate spring shall not be considered equal. The seal chamber shall contain a set of moisture detection probes, activating an alert signal in the case of liquid entry.

Optional seal faces shall be

\_\_\_ Silicon carbide / Silicon carbide \_\_\_ Upper.

\_\_\_ Silicon carbide / silicon carbide Viton \_\_\_ Lower / \_\_\_ Upper.

## 8.01 IMPELLER

The impeller shall be a fully balanced semi-open design not requiring wear ring for maintaining efficiency. The impeller shall be made of ductile iron. It shall be capable of passing a 3.0" solid sphere. It shall have pump out vanes located on the back shroud to keep debris away from the seal area. It is to be keyed and bolted to the shaft. Attempts to improve efficiency by coating impeller shall not be allowed.

Optional impeller design shall be

\_\_\_ Ductile iron vortex.

\_\_\_ Impeller trim \_\_\_ GPM @ \_\_\_ feet of TDH.

## 9.01 PAINTING

The pump shall have a corrosion resistant powder coated epoxy finish on all exterior surfaces.

Optional coating shall be

\_\_\_ double epoxy finish protecting all castings coming in contact with the liquid.

## 10.01 SERVICEABILITY

Components required for the repair of the pump shall be readily available within 24 hours. Components such as mechanical seals and bearings shall not be of a proprietary design and be available from local industrial supply houses. Special tools shall not be required to service the pump. A network of service stations shall be available nationwide in those cases where service requirements are beyond the scope of in-house service mechanics.

## 11.01 SUPPORT

The pump shall have cast iron support legs enabling it to be a freestanding unit. The legs will be high enough to allow a 3" solid sphere to pass below the housing.

For those situations where a freestanding unit is not desired, the following support components are available.

\_\_\_ Non-sparking rail system with pump suspended from a base elbow by means of a sealed bronze pump plate and rail guides attached to the pump. Rail brackets shall be SS. 2" schedule 40 rail pipes and lifting cables are to be provided by others.

\_\_\_ SS intermediate stabilizer required for rail systems used where basin depths are greater than 15 feet.

## 12.01 TESTING

Each pump shall have a 20 - 30 minute operational test before shipment. The test shall be conducted with the pump submerged in a tank thereby duplicating its actual performance. A computer-generated report shall be available following this test. The report will show pump performance, amp draws, efficiencies and power consumption at various performance points for each pump supplied.

\_\_\_ An optional certified test based on the Hydraulic Institute or SWPA Test Standard for submersible pumps.

\_\_\_ Start up services at the job site by an authorized representative of Zoeller Engineered Products shall be required. Start-up report form ZM1074 should be completed in the presence of the installers and returned to the Project Engineer or Zoeller Engineered Products.

## 13.01 WARRANTY

Standard warranty shall be 18 months from date of manufacture, 12 months from date of installation or 12 months from the date of start up with a start up report on file with Zoeller. Additionally, upon receipt and approval of a start up report, a prorated warranty for permanent municipal wastewater lift station installations shall be in effect for up to 60 months or 10,000 hours of operation, whichever comes first.



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