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 Covered by US  
 Patent Number  
 6,364,620

## X72 HD HAZARDOUS LOCATION SERIES

CLASS I, DIVISION 1, GROUPS C &amp; D

CLASS I, ZONE 1, GROUP IIA &amp; IIB

GRINDER PUMP GUIDE SPECIFICATIONS

10 &amp; 15 HP



### 1.01 GENERAL

Contractor shall furnish all labor, material, equipment and incidentals required to provide \_\_\_\_ (QTY.) centrifugal grinder pump (s) as specified herein.

### 2.01 OPERATING CONDITIONS

Each pump shall be rated at \_\_\_\_ HP, \_\_\_\_ Volts, \_\_\_\_ Phase, \_\_\_\_ Hz., 3450 RPM. The unit shall produce \_\_\_\_ GPM at \_\_\_\_ feet of TDH.

The pump shall have a \_\_\_\_3" or \_\_\_\_4" flanged discharge and be capable of handling sanitary sewage and grinding it into a fine slurry enabling it to be pumped over long distances or high vertical lifts in pipelines as small as 3.00" (DN50) in diameter.

\_\_\_\_ High head model

### 3.01 CONSTRUCTION

The centrifugal grinder pump shall be equal to the Model \_\_\_\_ submersible type as manufactured by the Zoeller Engineered Products Company of Louisville, Ky. (800-928-7867). The castings shall be constructed of baked on epoxy coated class 30 cast iron. The motor housing shall be finned and oil-filled to dissipate heat and enable the unit to operate unsubmerged without damage to the motor. Air-filled motors shall not be considered equal because of their inability to dissipate heat from 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 an attached sealed junction box chamber which in the event of cord damage will prevent moisture wicking into the motor housing. The motor shall be protected on the lower side with a tandem mechanical seal arrangement with each seal having a separate spring assembly. The upper and lower ball bearings shall be capable of handling all thrust 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 top cap shall have cast in lifting lugs. 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. Thermal sensors located in the oil-filled motor housing shall provide temperature protection.

\_\_\_\_ Optional viton square ring seals.

### 4.01 ELECTRICAL POWER CORD

The pump shall be supplied with \_\_\_\_ 25' (7.6 m) / \_\_\_\_ 50' (15.2 m) of multiconductor power cord. It shall be SOW/SOOW type cord capable of continued exposure to the pumped liquid. Power cord shall be sized for the rated full load amp rating of the pump in accordance with the National Electrical Code. Power cable shall enter into 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, shall be a Class F insulated NEMA A design rated for continuous duty. At maximum load, the winding temperature will not exceed 250 °F (121 °C) 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" (39 mm).

## 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 close running multi-vane impeller shall be a fully balanced ductile iron casting with pump out vanes on the back shroud to keep debris away from the seal area. It shall be keyed and bolted to the motor shaft.

## 8.02 CUTTER MECHANISM

The cutter and plate shall be constructed of 440 SS with a Rockwell C hardness of 55-60. The stationary cutter plate shall have specially designed orifices machined through it which enable the slurry to flow through the pump housing at an equalized pressure and velocity. The "star" cutter, rotating at 3450 RPM, shall shear all solids into a small particulate before passing through the orifices. Other cutter designs with tight clearances and those that grind on the circumference of the rotary plate shall not be considered equal.

## 9.01 PAINTING

The exterior castings of the pump shall be protected with a baked on epoxy powder coat paint.

As an optional feature include:

\_\_\_ Double epoxy coating protecting all external surface areas shall be required

## 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 support legs enabling it to be a freestanding unit. The legs will be high enough to allow solids and long stringy debris to enter the cutter assembly.

For those installations requiring a field assembled rail system:

\_\_\_ Non-sparking rail system with pump suspended by means of a sealed pump plate attached to the pump. Rail and guide brackets shall be SS. Rail pipes to be provided by others.

\_\_\_ SS intermediate stabilizer

For those "Outdoor" installations requiring a factory assembled basin package:

\_\_\_ Simplex system with a \_\_\_ diameter by \_\_\_ depth basin.

\_\_\_ Duplex system with a \_\_\_ diameter by \_\_\_ depth basin.

## 12.01 TESTING

Each pump shall run in liquid before being shipped. It shall be checked at its maximum running point for performance, amps, grounding, winding insulation, and water tightness.

\_\_\_ An optional certified test based on the Hydraulic Institute's or SWPA (Submersible Wastewater Pump Association) Test Standard for submersible pumps.

\_\_\_ Start up services at the job site by an authorized representative of Zoeller Engineered Products Company 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 Company.

## 13.01 WARRANTY

Standard warranty shall be 18 months from date of manufacture, 12 months from date of purchase 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.