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MODELS 7020 & 7021 GUIDE SPECIFICATION Progressing Cavity Grinder Pump



1.01 GENERAL

Contractor shall furnish all labor, material, equipment and incidentals required to provide ____ (QTY.) Model ____ progressing cavity grinder pump(s) as specified herein.

2.01 OPERATING CONDITIONS

Each submersible pump shall be rated at ____ 1 H.P./ ____ 2 H.P., ____ volts, single phase, 60 Hz, 1750 R.P.M. The unit shall produce ____ G.P.M. at ____ feet of T.D.H.

The submersible pump shall be capable of handling sewage and grinding it into fine slurry enabling it to be pumped over long distances in pipelines as small as 1.25" in diameter.

The pump shall be controlled with:

- ____ a piggyback float switch with Qwik-Box and remote high water alarm panel.
- ____ an integral float in the pump with a LPS panel with high water alarm.
- ____ a NEMA 4X simplex control panel with 3 float switches and high water alarm.

3.01 CONSTRUCTION

Each progressing cavity grinder pump shall be equal to the model 7020 (1 H.P.) or 7021 (2 H.P.) submersible progressing cavity type grinder pump as manufactured by Zoeller Engineered Products of Louisville, KY. (800-928-7867). The castings shall be constructed of epoxy coated cast iron. The motor housing shall be finned and oil-filled to dissipate heat. All external-mating parts shall be machined and sealed with a viton square ring. All fasteners exposed to the liquid shall be 300 series stainless steel. The motor shall be protected in the event of cord damage with a sealed junction chamber which will prevent moisture wicking into the motor housing. The motor shall be protected on the lower side with a single mechanical seal. The upper and lower ball bearings shall be capable of handling all thrust and radial 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 pump housing shall incorporate a pressure relief valve to protect the motor from overheating. The pump shall have a SS lifting bracket.

4.01 ELECTRICAL POWER CORD

The submersible pump shall be supplied with 20' (____ 35' 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. Power cable shall enter into the junction chamber through a compression type-sealing gland. Water sealing and strain relief are separated. The entire junction chamber shall be sealed off from the motor housing by through wall terminals to protect the motor from moisture.

____ Provide prewired conduit and junction box for connecting the pump and float switch cords in a flexible and water tight assembly supplying power to the system. Conduit length shall be ____ 25', ____ 35' or ____ 50'.

5.01 MOTOR

The oil-filled motor shall be a Class B insulated NEMA B design rated for continuous duty. At maximum load, the winding temperature will not exceed 220 degrees F unsubmerged. Since air-filled motors are not capable of dissipating heat, they shall not be considered equal. The pump motor shall have an integral thermal overload switch in the windings for protecting the motor. Bimetallic thermal sensors are not acceptable. The capacitor circuit shall be mounted internally in the pump's integral junction chamber.

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 bearing system shall be designed to enable proper cutter alignments from shut off head to maximum load at 5 feet of TDH. The motor shaft shall be made of 416 SS and have a minimum diameter of .750".

7.01 SEALS

Pump shall have a single mechanical seal protecting the motor from the pumped liquid, seal assembly having carbon rotary and silicon carbide stationary faces with Buna-N elastomer and 316 SS spring. It shall be equal to a Crane Type 21 configuration.

8.01 HYDRAULIC ROTOR AND STATOR

The hydraulic rotor shall be a precision machined, highly polished, helix design made of hardened 304 SS. The hydraulic stator shall be a helix design made from an injection molded, abrasion resistant Buna-N elastomer. The geometry of these two interacting parts will result in a double string of sealing cavities - formed when the rotor turns inside the stator. The cavities progress axially from the inlet to the outlet conveying the fluid.

8.02 CUTTER MECHANISM

The cutter and plate shall be constructed of 440C SS with a Rockwell C hardness of 55 - 60. The stationary cutter plate shall have specially designed grooves and orifices machined through it which enable the slurry to flow through the pump housing at an equalized pressure and velocity. The double-bladed angled cutter, rotating against the plate in a scissor-like operation, will shred solids to less than 1/8".

9.01 PAINTING

The exterior castings of the pump shall be protected with green powder coated epoxy finish.

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 stainless steel support legs enabling it to be a free standing unit. The legs will be high enough to allow solids and long stringy debris to enter the cutter assembly.

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

- Simplex system with a ____" diameter by ____" depth basin used with the Z-Rail® system.
- Simplex system with a ____" diameter by ____" depth basin used with the flex-hose disconnect system.

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

- Simplex system with a ____" diameter by ____" depth basin.

For those installations requiring a field assembled system:

- The pump shall be installed with a Z-Rail® system, in a ____" deep basin.
- The pump shall be installed with a flex-hose disconnect system.

12.01 TESTING

Each pump shall be operated and tested in liquid during its production process. 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 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 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 24 months from date of purchase (proof of purchase required) or 24 months from the date of start up when a start up report is on file with Zoeller Company.



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