



# ITT

S3GV

Wastewater

## Goulds Pumps

### 3GV Submersible Vortex Sewage Pumps SPECIFICATIONS

#### GENERAL

- Furnish and install \_\_\_\_ Goulds Pumps, Model 3GV, dual seal submersible vortex sewage pump(s), \_\_\_\_ HP, \_\_\_\_ phase, \_\_\_\_ volts, \_\_\_\_ Hz, pump(s) rated for \_\_\_\_ GPM, at \_\_\_\_ Ft. Total Dynamic Head.
- Pump(s) shall be Goulds Pumps, Order No: \_\_\_\_\_ .

#### QUALIFICATIONS

All pump manufacturers must be pre-qualified by the engineer in order to qualify as acceptable manufacturers. Pre-qualification shall be no later than two (2) weeks prior to published bid date for this project. Failure to pre-qualify will be grounds for disqualification after the bid opening date. All decisions of qualification shall reside with the engineer of record at time of bidding.

#### PUMP DESIGN

Pump(s) shall have 3 inch 125 # ANSI discharge flange and shall be capable of handling sewage containing non-abrasive 2", 2½" maximum solids.

#### MECHANICAL SHAFT SEALS

The motor shall be protected by two independent sets of mechanical shaft seals mounted in tandem on the pump shaft. Pump designs with one or two springs acting between rotating faces shall not be allowed as this design would allow sewage to force the seal faces apart during periods of upset or high discharge pressure. The outer mechanical seal shall be constructed of Silicon Carbide vs. Silicon Carbide sealing faces. The inner mechanical seal shall be constructed of Carbon vs. Ceramic sealing faces. Each set (upper and lower) shall be tensioned by an independent spring system constructed of series 300 stainless steel metal components and BUNA-N elastomers. The mechanical seals shall be located in a completely isolated seal oil chamber which will provide lubrication for the seal faces while simultaneously acting as an isolation zone for the stator chamber. This seal oil chamber shall be provided with an internally mounted moisture sensing probe to detect moisture intrusion into this lower chamber of the pump. The moisture sensing probe must be connected to a seal fail circuit (also referred to as a moisture detection circuit) in the control panel. The seal fail circuit option should have an alarm light, audible alarm or both. This seal fail alarm signals that service is required.

#### IMPELLER

The impeller shall be vortex style. Due to design, only single plane spin balancing shall be required for smooth operation. The impeller shall be slip fitted to the shaft and key-driven. The impeller shall be held in place with a bolt and washer system that shall secure the impeller against all axial loads imposed by the hydraulic conditions of operation.



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### CASING

The casing shall be cast from ASTM A48 class 35 gray cast iron of sufficient thickness to withstand 1.5 times the shut off pressure generated by the largest impeller available for this model in accordance with current revision of the Hydraulic Institute Standards. The discharge connection shall be a standard 125 # ANSI 3" flange. The discharge elbow shall be capable of mating to 3x4" wet pit guide rail. The guide rail system shall support the full weight of the submersible pump without the need for any supports under the pump which would cause solids to build up and starve the pump.

### WET PIT INSTALLATION SYSTEM

Pumps are designed for use on guide rail systems for horizontal discharge. See our Accessory catalog section for available disconnect systems.

### MAJOR CASTING MATERIALS

The casing, bearing/seal housing and motor cover shall be of ASTM A48 Class 35 high quality cast iron for strength and long life. Impeller of ductile iron ASTM A395 Grade 60.

### CORROSION PROTECTION

The pump/motor shaft wetted-end shall be series 400 stainless steel.

### MOTOR

The integral motor shall be completely sealed from the environment by use of circular cross section o-rings accurately fitted into machined grooves which shall provide designed compression of metal to metal fits. Designs which require a specific torque on the casing bolts or which require rectangular gaskets or sealing rings shall not be allowed. The motor shall be rated for continuous duty under full nameplate load while at full submergence in the station. The motor shall be provided at the specified site conditions of 115 or 230 volts, single phase or 230 or 460 volts, three phase as required, all shall be at 60 Hz.

Single-phase motors: shall be permanent split capacitor type. All motors require overload protection in the control panel. Pilot duty thermal sensors are standard for single or three phase motors. This feature also requires a terminal connection in the control panel. The stator winding shall be open type with class F insulation suitable for operation in air. The stator shall be a press fit into the motor housing to ensure positive alignment and efficient heat transfer. The motor shall be provided with ball type anti-friction bearings which shall support the heavy-duty rotor shaft and to handle all radial and axial loads imposed by the impeller while limiting shaft deflection at the mechanical seal faces. Sleeve type bearings shall not be considered equal and shall not be allowed. The ball bearings shall be designed for a B-10 life of 40,000 hours minimum.

### POWER CABLE

The first line of defense shall be the compression of the oil and chemical resistant grommet which shall seal the outer jacket of the power cord. The outer jacket of the power cord shall be oil resistant and water resistant. The power cable shall be rated for NEC severe service "S", type "SOW".



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