FEDERAL PUMPS

TYPE VSABM
SEWAGE PUMP

Operating & Maintenance

These instructions cover the general points of installing, operation and maintaining Type VSABM non-clog dry pit sewage pumps. Each pump requires proper intallation and maintenance to insure long dependable service.

INSPECTION OF EQUIPMENT

Immediately upon receipt of shipment, inspect and check with shipping papers. Any damage or shortage should be reported to the transportation company's local representative. Inspect crating and wrappings before discarding. Parts and accessories are sometimes packed individually or fastened to the crate.

STORAGE

If the unit is received sometime before it can be used, it should be inspected, the electrical equipment wrapped in moisture-proof paper, and stored in a dry location. Before storing, make sure that all machined surfaces are moisture-free and well coated with anti-rust compound. If the unit is to be stored for a long time, all cast iron should be well slushed with oil, and the shaft rotated periodically to protect the bearings.

LOCATION

The pumps should be mounted in a dry location where they will be easily accessible for inspection and maintenance. Allow ample clearance around the unit for free air circulation and be certain that there is sufficient clearance over the unit for future removal and inspection.

OPERATION

For motor instructions, refer to motor manufacturer's instruction tagor booklet attached. Check motor characteristics on the motor nameplate and connect wiring in accordance with instructions. Check rotation of shaft against the arrow on the pump pedestal. Report any motor problems to factory or local authorized motor service center immediately.

ROTATION

The pump shaft must rotate in the direction of the rotation arrow on the pump. See motor instructions for reversing direction of rotation.

GENERAL DESCRIPTION

The Type VSABM sewage pump is i a vertical dry pit sewage pump equipped with a non-clog type impeller. The pump construction permits the removal of the entire rotating element, after removing motor without disturbing the suction or discharge piping. The motor is mounted dir~ctly on the pump pedestal and can be disassembled by removing the motor cap screws (#22) shown on the cross-sectional drawing. The casing is of the centrifugal volute design with integral discharge nozzle. The pump unit is mounted on a base ~elow which the suction elbow guides the liquid to the impeller. A handhole is ptovided in the elbow for inspection of the impeller eye. The impeller is fully enclosed, non-clog, and held on the shaft by a key and impeller nut (#5) and impeller washer (#4).

PACKING GLAND

The stuffing box is integral with the pump pedestal, and contains (5) rings of 1/4" square asbestos packing. To properly pack the pump, packing rings should be cut slightly short so as to preventlbutting of the ends and buckling. Each ring should be inserted separately and ~ushed as far into the stuffing box as possible, seating it firmly. Stagger successive rings so that joints are 90° or 180° apart. Do not take up on the packing gland too tightly, or the shaft might become scored. The stuffing box and the lower sleeve bearing are provided with a reservoir type spring-loaded automa~ic greaser. When filled, this cup exerts pressure on the grease, insuring lubrication of the stuffing box packing and the sleeve bearing.

BEARINGS

The pump shaft is supported by two beari~gs, the upper bearing is a single row ball bearing and the lower bearing

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is a bronze sleeve bearing. Both bearings require periodic greasing, depending upon frequency of operation. The upper bearing is greased through its zerk grease fitting and the lower bearing is greased by periodic packing of the spring-loaded greaser with a good grade of grease. Overgreasing of the ball bearing can cause ball bearing to overheat and ultimately fail.

ALIGNMENT

Accurate alignment of the pump and motor is essential. The VSABM pump has been rabbetted to insure proper alignment. Before starting the unit for the first time, turn the shaft by hand to insure that the rotating element is free and not bound up. Recheck the alignment again after the permanent piping has been completed.

PIPING

The suction piping should be as short and direct as possible. Avoid high spots which can form traps for air pockets. Use eccentric increasing fittings if the suction piping is to be increased above the size of the pump suction connection. The suction pipe should have a continuous rise from the source to the pump in order to avoid air traps. Never use a pipe smaller than the pump suction connection in the suction line. Do not install elbows in the suction line near the pump suction connection. If elbows are necessary, install them no closer than ten pipe diameters from the pump connection. Generally, the suction pipe should be one pipe size larger than the pump connection size, and in some cases, two pipe sizes larger. Avoid air leaks in suction lines. A gate valve should be installed in the suction line to facilitate dismantling of pump when necessary. The discharge pipe should never be smaller than the pump discharge connection, and in the case of long discharge runs, one or two sizes la-ger, to reduce friction loss.

The discharge piping should have a swing check valve and a gate valve installed near the pump connection, with the check valve nearest the pump. The check valve protects the pump against pressure surges and back spin. All piping must be independently supported to prevent strain on the pump, which can cause rapid wear of pump parts. In long pipe lines, expansion joints can be installed to prevent piping strains from being transmitted to the pump.

OPERATING PROBLEMS

If the recommended procedure has been followed in installing the pump, it should operate satisfactorily with no other attention than adjustments and bearing lubrication. A list of common pump operating problems and their probable causes follows:

1. Failure to deliver liquid. (a) Basin or pit not filled (b) Insufficient speed. Check voltage and current at each phase. (c) Discharge pressure required by the system is greater than that for which the pump was designed. (d) Impeller plugged up. (e) Wrong direction of rotation.
2. Insufficient capacity. (a) Speed too low. (b) Discharge pressure required by the system is greater than that for which pump was designed. (c) Impeller partly clogged. (d) Mechanical defects, such as worn wearing surfaces and impeller damage. (e) Suction strainer, if any, too small or partly clogged.
3. Insufficient pressure. (a) Air entrained in liquid. (b) Mechanical defects (see above).
4. Pump overloads driver. (a) Speed too high. (b) Total dynamic head too low, pumping too much liquid. (c) Liquid pumped is of different specific gravity or viscosity than that for which the pump was designed. (d) Mechanical defects.
5. Pump vibrates. (a) Misalignment. (b) Foundation not rigid. (c) Impeller partly clogged causing imbalance. (d) Mechanical defects, shaft bent. (e) Rotating element binding. (f) Worn motor bearings. (g) Pump dry, wearing furfaces rubbing.

ORDERING PARTS

When ordering repair parts, always furnish the pump model number and the pump record number, from the pump nameplate. Itemize each part required using the part no. and the part name as shown on the cross-section and parts list applicable to the pump. State the number of pieces required for each part. Motor parts should be obtained from the motor manufacturer.

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