



VSCP Vertical Suspended Column Pump Operation & Maintenance Manual

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PUMP IDENTIFICATION

Congratulations! You are the owner of the very best Column pump commercially available. With proper care and maintenance it will provide you with reliable service for many years.

ESSCO pumps are of the heavy duty design. ESSCO offers a wide variety of impeller designs to allow for equipment flexibility. ESSCO pumps are ideally suited for applications such as sewage, grit (heavy and/or fine), slurry, food waste handling, food handling and a variety of other services.

This manual applies to:

All sizes of vertical suspended column pumps regardless of liquid end type.

PUMP DESCRIPTION

CAUTION NOTES AND STORAGE OF PUMPS

These instructions apply to the pump only and are intended to be general and not specific. If the operating conditions change, refer to the factory or local fac-

tory representative or distributor for re-application.

If the pump is not to be installed and operated immediately, it should be stored in a clean, dry place. ESSCO assumes the units will be placed in operation a few weeks after shipment and no special protection is given the pump, drive or motor. The shaft should be rotated once every two weeks. All exposed, unpainted surfaces should be protected from rust.

Always refer to the manuals provided by manufacturers of the other equipment for their separate instructions and maintenance schedules.

CAUTION IMPORTANT SAFETY NOTICE

The installation, use and operation of this type of equipment is affected by various federal, state and local laws and the regulations concerning OSHA. Compliance with such laws relating to the proper installation and safe operation of this type of equipment is the responsibility of the equipment owner and all necessary steps should be taken by the owner to assure compliance with such laws prior to operation of the equipment.

ESSCO Pumps & Controls

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Caution: Be sure to follow all safety requirements for the area you are working in. Good safety procedure dictates that the motor assembly should be removed from the pump and the electrical wiring be removed by a qualified electrician and the assembly taken to a proper repair facility. All work must be done in a well ventilated area. Do not change the seal in a confined space!

Before Installation

1. Tighten all bolting snugly.
2. When moving the pump while in a horizontal position, complete support must be given to column, case and motor mount, to prevent damage from a bent shaft or column.
3. Rotate by hand. If the unit appears to be binding, it could be due to the impeller touching the back plate or suction plate (Non Clog pump only). Loosen the top impeller adjusting locknut on the shaft. Tighten lower locknut until the impeller is drawn up against

the back plate, and then loosen 1.5 turns. If the unit still binds after impeller adjustment it may indicate a bent shaft, or stress in the column. Do not operate until binding has been eliminated.

4. Check all lubrication lines to be sure they are tightly connected to appropriate bearing. Check lines for damage, and replace if dented or damaged in any other way.

Installation

1. After the unit is in a vertical position, remove the shipping supports and all strapping. Lower carefully into wet well.
2. Adjust discharge pipe locknuts, if necessary, so that there is no load on the case or column. Column must be absolutely vertical, or plumb. It may be necessary to shim the mounting plate to get to a plumb positions.

COLUMN PUMP MUST BE PLUMB AND ALL PIPING STRAIN REMOVED FROM THE PUMP, OR PUMP WILL BE DAMAGED IN OPERATION.

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3. After column is plumb, secure anchor bolts.
4. Bearing lubrication.
 - a. If lower bearing is rubber, connect water line to lower bearing mounting plate connection. If a valve is used to control the water, the valve must be opened before starting to insure that water is in the bearing. If a solenoid valve is used, it should be set to open before the motor starts, and close after the motor stops.
 - b. If a bronze lower bearing is used, the mounting plate connection will be a grease fitting. A grease similar to Mobilux EP No. 2 should be used.
 - c. If intermediate oil lubricated bearings are used, fill oil reservoir with SAE 30 W non-detergent oil. The intermediate bronze bearings are impregnated with oil, so the oil reservoir is only to replace oil the bearing loses in operation.
 - d. If intermediate grease lubricated bearings are used, the mounting plate connection will be a grease fitting. A grease similar to Mobilux EP No. 2 should be used.
5. Check rotation. Turn on water to lower bearing, jog motor, and note rotation. It should be clockwise when looking down on the pump. If rotation is incorrect, change any two leads on a three phase motor to correct.
6. If liquid level controls are used, set the proper levels. The pump should not start until the liquid level is at least above the lower bearing. The low level shutoff may be at any lower bearing is properly lubricated regardless of the sump liquid level.

Maintenance

Motor

The motor manufacturer's recommendations should be followed. Some motors have packed and sealed bearings, so there is no need, or provision for, regular external lubrication. If there is a grease fitting on the motor end bell, lubrication should be provided as recommended by the manufacturer.

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Coupling

A non-lubricated coupling is the ESSCO standard, so no lubrication maintenance is required. The coupling should be inspected every six months for wear and parts replaced as necessary.

Pump

Inspect oil level reservoir or automatic grease lubricator(s) (if installed) weekly. The reservoir is used to replenish oil in the intermediate bearing. Oil use should be low. If the reservoir empties in one week, this may indicate a faulty bearing and it should be inspected. All connections should be checked for possible leaks.

If a water solenoid valve is used, inspect to be certain the water flow is on before and during operation.

If a bronze lower and/or intermediate bearings are used, 1 oz. of grease should be injected every four hours and before each starting if shut down more than four hours.

Operational Problem Checkpoints

NO LIQUID DELIVERED

1. Speed too low; check voltage and frequency.
2. Discharge head too high.
3. Suction or discharge line plugged.
4. Wrong direction of rotation.
5. Discharge valve closed.

NOT ENOUGH LIQUID DELIVERED

1. Speed too low; check voltage and frequency.
2. Suction or discharge line partially plugged.
3. Total discharge head too high.
4. Damaged impeller or casing.

NOT ENOUGH PRESSURE

1. Speed too low; check voltage and frequency.
2. Air or gas in liquid.
3. Leaks in suction.
4. Impeller diameter too small.
5. Damaged impeller or casing.

MOTOR RUNS HOT

1. Speed too high.
2. Head lower than rating, allowing

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3. pump to handle too much liquid.
3. Liquid heavier and more viscous than rating.
4. Impeller binding or rubbing.
5. Voltage and frequency lower than rating.
6. Defects in motor.
4. ciently submerged.
4. Misalignment of coupling and shaft.
5. Worn or loose bearings.
6. Shaft bent.
7. Foundation not rigid.

BEARINGS WEAR RAPIDLY

1. Misalignment.
2. Bent shaft.
3. Vibration.
4. Lack of lubrication.
5. Bearing improperly installed.
6. Moisture in oil.
7. Dirt in bearing.

PUMP WORKS FOR AWHILE, THEN LOSES SUCTION

1. Leaky suction line tail pipe.
2. Suction or discharge line partially plugged.
3. Air or gas in liquid.
4. Air leaks in suction.
5. End of suction line uncovered.

VIBRATION

1. Impeller Plugged on Non Clog Pumps.
2. Gas or vapor in the liquid.
3. Inlet to suction line not suffi-

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