

## Operating & Maintenance

These instructions cover the installation and maintenance of Federal centrifugal pumping units. By following the outline and suggestions, the life of the pumping unit can be extended and repairs kept to a minimum.

### INSPECTION

Immediately upon receipt of the shipment, inspect and check with the packing list and report to the transportation company's local agent any damage or shortage. Inspect crate and wrappings before discarding. Parts and accessories may sometimes be wrapped individually and packed in the carton.

### STORAGE

If the unit is received some time in advance of when it can be put to use, it should be inspected, rewrapped in moisture-proof paper, reboxed and stored in a dry location. If the unit is to be stored for a long period of time, rotate the shaft periodically to protect the bearings.

### LOCATION

The unit should be installed in a dry location where it is accessible for inspection and maintenance. Provide clearance around the unit for free air circulation.

The motors must meet the requirements of local conditions and electric current available. Excessive moisture; heat, hazardous fumes or dust may adversely effect the operation of the motors.

The receiver inlet should be low enough to permit all condensate return lines to empty into it by gravity. While no special foundation is necessary for the unit, the surface upon which it is installed should be smooth and level.

### INSTALLATION

The return line to the receiver should have a gate valve and union very near the receiver inlet connection. Each pump discharge line must have a union, a check valve and a gate valve near the pump. If the discharge pipe is longer than 50-feet, the pipe diameter should be one size larger than the pump discharge size.

Connect the vent pipe to the opening provided in the top of the receiver and pipe away from the unit to prevent condensation from dripping on the motors or controls.

All piping should be independently supported to prevent putting a strain on the unit.

ALL returns must be properly trapped to prevent uncondensed steam from entering the receiver. Only liquid condensate (210°F or less) should enter the tank. The presence of live steam in the receiver can cause the pumps to malfunction and can lead to a greatly reduced pump life.

### WIRING

Units are generally factory-wired in accordance with instructions contained in individual orders. Connect electrical service to the unit using materials and wire sizes as required by local code and power company regulations. A circuit breaker or disconnect switch should be provided for each motor on the unit. It is recommended that a magnetic starter be provided for each 3-phase motor.

After making the electrical connections, check the rotation of the pump with the arrow on the motor pedestal. Rotation should be clockwise when viewed from the top of the motor.

### OPERATION

Before starting the unit, thoroughly check the following:

1. Be sure that pipes, receivers and other components of the heating system are free of foreign matter before turning on the pumps.
2. Be sure that the pump shafts (33) rotate freely when turned by hand.
3. Check the motor nameplate to be sure that the voltage, cycles and phase are the same as the electrical current being supplied to the unit.
4. Be sure that the discharge check valves are installed in the proper position so that they open when the pump is in operation. Use only check valves designed for hot water service.
5. All return line and discharge line gate valves must be fully open.



6. Set circuit breaker or disconnect switch in the 'on' position. After starting the unit, thoroughly check the following:

- A. Be sure that the float switch (71A) starts and stops the unit properly as the receiver (76) fills and is emptied. Adjust stops (72) on the float rod(72) to insure proper cycling of the pumps.
- B. Check all connections to be sure that they are tight.

### MAINTENANCE

Federal VCL condensation return units are designed to require a minimum of periodic maintenance. The pump has no stuffing box, and, therefore, no adjusting or replacing of packing is required. Periodically, a standard grade of motor oil (SAE 30) should be inserted into the oil cup (141) to fill the shaft cavity in the casing assembly (51).

### ASSEMBLY AND DISASSEMBLY

VCL units are designed to give long, trouble-free service if installed properly and operated under suitable conditions. However, in time, it may become necessary to replace certain pump parts to return the unit to its original performance level.

In this event, the following procedures should be followed:

### DISASSEMBLY

Before disconnecting any parts, break the electrical circuit to the unit by setting the circuit breakers or disconnect switches to the 'off' position. Then disconnect all wire connections to the motor (110). Close the gate valves in the return and discharge piping to prevent flooding the receiver while the pump is inoperative. Disconnect pump discharge union. Remove the suction plate (38) by unscrewing the four cap screws (22) which hold it to the casing assembly (51). Unscrew the impeller set screw (460) with an Allen wrench (turn counter-clockwise to unscrew). The impeller (2) will then unscrew counterclockwise also. Slip the parts off the shaft (33) and examine for wear and possible replacement of the shaft, mechanical seal (9), shaft seal (49) or lower bearing (59).

### REASSEMBLY

Reverse the steps enumerated above. Be sure that all parts are free of dirt or foreign matter before reassembling the pump. If the motor has been disconnected from the pump, after reconnecting it, pull up on the coupling (40) until spring tension is felt. Then, lock the two set screws (46B) on the motor end of the coupling. Then add oil as required thru the oil cup (141).

### ORDERING PARTS

When ordering parts, always furnish the model number and record number from the Federal Pump Corp. stainless steel nameplate on the unit. Also the part number, part name and quantity required.



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