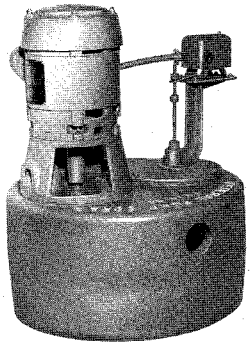
INSTALLATION INSTRUCTIONS
AND
OPERATING & MAINTENANCE MANUAL
TYPE VTC TURBINE
CONDENSATION RETURN UNITS
DATA NO. 504



These instructions cover the installation and maintenance of Federal turbine pumping units. By following these 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 or accessories may sometimes be wrapped individually and packed in the carton.

STORAGE

If the unit is received sometime 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. A discharge pressure gauge should also be provided. If the discharge pipe is longer than 50-ft., the pipe diameter should be one or two sizes 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 electric 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 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 phase and voltage are the same as the electrical current being furnished to the unit.
4. All gate valves in the return and discharge lines must be fully opened.
5. Set curcuit breakers or disconnect switches in the Jon" position.
6. Be sure that the discharge check valves are designed for use with hot water.

After starting the unit, thoroughtly check the following:

1. Be sure that the float switch(es) start and stop the unit properly, as the receiver fills and is emptied. If float switch adjustemtn is necessary, follow the manufacturers instructions (Square D).
2. Be sure that all connections are tight.

DISASSEMBLY AND RE-ASSEMBLY

Type VTC units will give long and trouble free service is properly installed and operated. However, it may ultimately become necessary to replace certain pump parts to return it to its original performance. In this event, the following procedures should be followed:

REMOVAL

Before removing or disconnecting any parts, break the elctrical circuit to the unit by setting the circuit breakers or disconnect switches to the "off" position. Then disconnect all wire connections from the motor. Close the gate valve in the return and discharge piping to prevent flooding of the receiver while the pump is inoperative. Remove the three cap scress (22A) which fasten the motor pedestal (44) to the receiver (76), and remove the motor (110) and pump assembly from the receiver.

DISASSEMBLY

The parts that will probably need replacing are the lower liner (152), the impeller (2), the shaft (33) and the lower bearing (59). These are removed by taking out eh cap screws (22) which fasten the bottom cover (153) in place. Loosen the set screw (46) in the motor end of the coupling (40). Remove the cap screws (22) holding the motor (110) to the motor pedestal (44), and lift off the motor. Remove the coupling from the shaft (33) and pull the shaft out from the impeller end. Press out the old lower bearing (59), and press in a new lower bearing. If press is not availble, use a wood block and hammer. Re-ream the new bearing.

RE-ASSEMBLY

Inspect all parts for any foreign material, which can seriously damage a tubine type pump. Insert the impeller on the shaft. Insert the shaft through the lower bearing and the shaft seal (49). Install lower liner (152) and bottom cover (153). Tighten up on the two adjusting screws (22) in the bottom cover to lock the lower liner in place. Install the coupling. Replace the motor. Install the suction strainer (60) and the rivet (161). Place the pedestal gasket (77) on the receiver. Replace the pump and motor assembly in the receiver and tighten capscrews.

Turn the shaft by hand to be sure that the impeller is not binding. Reconnect wiring and piping. Open all gate valves before turning on pump.

FEDERAL PUMP CORPORATION
1144 UTICA AVENUE • BROOKLYN, N.Y. 11203