



SERIES 'HF' HORIZONTAL PUMPS

OPERATION AND
SERVICE GUIDE
O-2510-1
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A. SAFETY

1. Read operating instructions and instructions supplied with chemicals to be used.
2. Refer to Chemical Resistance Data Chart for compatibility of materials in pump with solution to be used.
3. Note temperature and pressure limitations.
4. Personnel operating pump should always wear suitable protective clothing: face mask or goggles, apron and gloves.
5. All piping must be supported and aligned independently.
6. Always close valves slowly to avoid hydraulic shock.
7. Ensure that all fittings and connections are properly tightened.

BEFORE CHANGING APPLICATION OR PERFORMING MAINTENANCE:

1. Wear protective clothing as described in Item 4 above.
2. Flush pump thoroughly with a neutralizing solution to prevent possible harm to personnel.
3. Shut off power to motor at isolating switch.

SUPPLY OF MACHINERY (SAFETY) REGULATIONS 1992 EEC DIRECTIVES - CE MARKING SAFETY GUARDS

The products covered by these instructions are, where appropriate, supplied with guards to prevent accidental contact with moving parts.

It is essential that these guards are fitted correctly and securely after assembly, servicing or repair such that the machine conforms with the essential health and safety requirements - machines must not be put into service until they have been declared in conformity with the Machinery Directive.

AIRBORNE NOISE EMISSIONS

— The products covered by these instructions, when operating under normal design conditions, generate a continuous noise intensity which does not exceed 70db (A) when measured at a distance of 1m from the machine.

Note: No account has been taken of noise resulting from vibration or reverberation of connecting pipework/tanks or the building enclosing the installation.

WARNING

Operators should be sure that no physical contact is made with rotating pump parts which may be accessible through pump suction/discharge ports.

B. GENERAL

1. The pump is constructed of stainless steel. The materials should be chemically compatible with the solution being pumped, and care should be taken to protect the pump components against unnecessary wear and physical abuse. Confirm seal material suitability.
2. Record all model and serial numbers for future reference. Always specify model number and serial number when ordering parts.
3. Pump flow curves are based on pumping water. Increased motor horsepower may be necessary for pumping other liquids or reduced motor horsepower may be permissible when pumping at higher discharge head. Refer to pump curve.
4. Impellers are designed to offer maximum pump output and the motors are sized for non-overloading at maximum flow conditions.
5. Review Parts List and maintain an emergency inventory of replacement items to ensure that pump is returned to service with the least delay.
6. All units are factory tested to meet published or specified flow rates and to confirm that the seal assembly functioned properly at time of shipment.

C. INSTALLATION

Installer is responsible for ensuring that all interconnecting pipe work and fittings are suitable for the application and the temperature and chemical composition of the solution being handled.

1. Pump should be bolted down to floor or other strong point at a location as close as possible to the liquid source.
2. Before connecting suction line to pump, turn impeller by means of a screwdriver inserted through the suction port into the cap nut slot to check that seal rotates freely.
3. Suction pipes up to 15 ft. (5M) long should not be smaller than diameter of suction port; longer pipes should be increased one or two sizes in diameter. This is especially important when handling liquids at high temperatures or when the suction pipe includes multiple elbows or bends.
Cavitation from restricting suction lines results in under performance and premature failure of pump. Ensure that:
 - Suction pipe is as short and straight as possible.
 - Minimum number of elbows/fittings are employed.
 - Elbows are not installed within 10 pipe diameters of pump suction port.
 - Valves in suction pipe **MUST NOT** be used for controlling pump flow; flow control valve should only be installed on pump discharge.

4. All piping must be effectively supported and aligned relative to the pump; ensure that fittings and connections are properly tightened. Do not overtighten connections to pump suction/discharge ports, use PTFE tape to seal.
5. A strainer should be installed in the suction line to prevent foreign material causing damage to the pump. Strainer should be sized such that suction losses are minimized otherwise cavitation of the pump can occur with resultant damage.
6. Pumps should be protected from damage due to dry running by means of a pressure switch fitted adjacent to the pump discharge port; for this purpose SERFILCO offers the "Dri-Stop 3 & 4" pressure activated switches Model DSCP-½ and DSCK- ½ (Request Bulletin A-105R-1)
7. Connect electrical supply to a suitable motor starter, including any necessary connections to Dri-Stop Protection Switches if installed. Verify that starter voltage and overload ratings are appropriate for the motor. Complete wiring in accordance with local regulations. Wire for clockwise rotation when facing motor fan.

D. OPERATION

SAFETY NOTE : Personnel should wear appropriate protective clothing, gloves, face mask or goggles.

1. If pump is installed with a liquid head at the suction pipe (flooded suction), it is only necessary to ensure that liquid is in the suction pipe and pump body, and that any valve(s) in the suction pipe are open, before energizing the motor.
2. If pump is installed without a liquid head at the suction pipe, it will be necessary to prime the pump using following procedure.
 - 2.1 Ensure that suction pipe and pump body are filled with liquid and that there is no air trapped.
 - 2.2 If suction is rigid pipe, priming liquid may be introduced via the discharge line if more convenient.
 - 2.3 If suction line is hose, fill hose ensuring open end is just higher than the pump discharge port, place gloved hand over hose inlet, close discharge valve, if fitted, and submerge hose end into tank of solution.
 - 2.4 Remove gloved hand and energize motor, slowly open discharge valve if fitted, eliminating any air trapped in the system.
3. Operate pump for approximately 2-3 minutes observing and listening for anything unusual; note current drawn by motor. If pump is cavitating, a sound like gravel rotating inside the pump can be heard.

E. INSTALLATION OF DRI-STOP PUMP PROTECTOR - SINGLE MECHANICAL SEAL PUMP

(See Bulletin A-105-1)

1. Dri-Stop Pressure Switch c/w guard assembly should be assembled to a tee fitting installed in the pump discharge pipework.
2. Switch contacts are pressure sensitive, and close at approximately 4 PSI. These contacts should be wired in series with the coil of a suitable push but-

- ton motor starter equipped with a set of contacts which are momentarily made when start button is pressed. These contacts are connected such that they short out the Dri-Stop Switch contacts to enable the motor to be energized.
3. Head/pressure of liquid generated at the pump discharge keeps the Dri-Stop contacts closed and the motor energized, until such a time that the absence of liquid allows the switch contacts to open and deenergize the motor.
4. Provides effective protection in circumstances where the supply of liquid to the pump is instantaneously interrupted eg. tank is empty; suction pipe leaks.

F. TROUBLESHOOTING

1. Motor stops after few minutes of operation:
 - Check for correct voltage, wiring and starter overloads. Measure line current drawn when operating, value should be equal to or less than that shown on motor plate.
 - Check for free rotation by manually turning the motor using the fan.
2. Pump does not deliver required flow:
 - Check for correct rotation, clockwise when viewed on motor fan.
 - Check that suction strainer and pipework is not blocked.
 - Compare pump performance curve based on water with actual installed conditions.
3. Frequent seal failure can be caused by:
 - Abrasives in solution; crystals forming on seal faces; chemical attack on seal components; dry operation; cavitation from restricted or leaking suction pipes. Worn motor bearings or a drive shaft running eccentrically may also be causes of premature failure. Pumps handling solutions that crystallize during shut down (e.g. holidays) should be flushed with a suitable clean liquid.

G. MAINTENANCE & REPAIR

It is recommended that "HF" pumps be returned to SERFILCO Europe in the event that service is required.