OPERATION AND
SERVICE GUIDE
O-2545
AUG. 2003

SERIES 'HN' HORIZONTAL PUMPS

Refer to Bulletin P-111 and Parts List P-7225.

Care should be taken to protect the pump components against unnecessary wear and physical abuse. Review parts list and maintain an emergency inventory of replacement items to assure that pump is returned to service with the least delay. Record model, serial and product code numbers for future reference and specify numbers when ordering parts.

⚠ SAFETY PRECAUTIONS BEFORE STARTING PUMP

1. Read operating instructions and instructions supplied with chemicals to be used.
2. Refer to a 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 of the pump
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

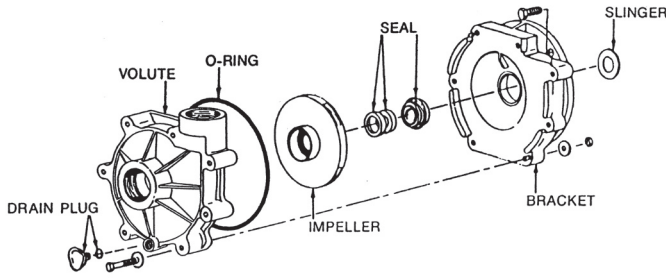
1. Wear protective clothing as described in Item 4 above.
2. Flush pump thoroughly with a neutralizing solution to prevent possible harm to personnel.
3. Shut off power to motor at disconnect switch.

IMPORTANT

1. The Series HN pump is not a self-priming pump. It is recommended that the pump have a constant flooded suction. Damage to pump seal can result within 30 seconds of the onset of dry run operation. A vortex or other means of air introduced into the pump will cause premature pump/seal failure.
2. Rotation of motor must be correct. Incorrect rotation will cause an extreme reduction in flow rate, discharge head, and could also cause the impeller to unscrew, A rotation arrow affixed to the motor indicates proper rotation. View the motor from the fan end and bump start the pump motor to verify correct rotation. Check pump rotation with liquid in the pump. Dry rotation of the mechanical seal can cause immediate failure of the seal components.

PUMP END ASSEMBLY

1. Clean and inspect all pump parts ("O"-ring, seal seats, motor shaft, etc.).
2. Apply sealant in bracket bore hole and possibly around seal case according to sealant instructions.
   NOTE: For SS seal, chamfer the edge of the bracket bore hole.
3. Press carbon graphite seal into bracket while taking care not to damage carbon graphite face.
4. Place slinger (rubber washer) over motor shaft and mount bracket to motor.
5. Carefully lubricate boot or "O"-ring around ceramic piece and press into impeller. (If ceramic has an "O"-ring, the marked side goes in.) NOTE: Use glycerine for EPDM.
6. Sparingly lubricate carbon-graphite and ceramic sealing surfaces. Water, glycerine, or a lightweight machine oil may be used, depending on the elastomers used in the pump. *Do not use silicon lubricants or grease!*
7. Thread impeller onto shaft and tighten. If required, remove motor end cap and use a screwdriver on the back of the motor shaft to prevent shaft rotation while tightening. Replace motor end cap.
8. Electrically, connect the motor so that the impeller will rotate CCW when facing the pump with the motor toward the rear. *Incorrect rotation will damage the pump and void the warranty! For 3 phase power, electrically check rotation of impeller with volute disassembled from bracket. If pump end is assembled and rotation is incorrect, simply exchange any two leads.*
9. Seal "O"-ring in volute slot and assemble volute to bracket.



10. Install drain plug with its "O"-ring in volute drain hole.

DISASSEMBLY

1. Shut off power to motor before disconnecting any electrical wiring from the back of the motor.
2. Disassemble the bracket-motor assembly from the volute, by removing the 7-¼", 20x2½ cap screws. (The volute may be left in-line, if you wish.)
3. Remove cap covering shaft at back of motor and, with a large screwdriver, prevent shaft rotation while unscrewing the impeller.

4. Remove ceramic piece from impeller.
5. Detach bracket from motor.
6. Remove carbon-graphite seal from bracket by pressing out from the back. *Do not dig out from the front!*

INSTALLATION

1. Locate pump as near the source to be pumped as possible. A flooded suction situation is preferred. The pump is *not* self-priming, therefore, if the fluid level is below the pump, a foot valve must be installed and the pump primed prior to start-up. (Figure 2)

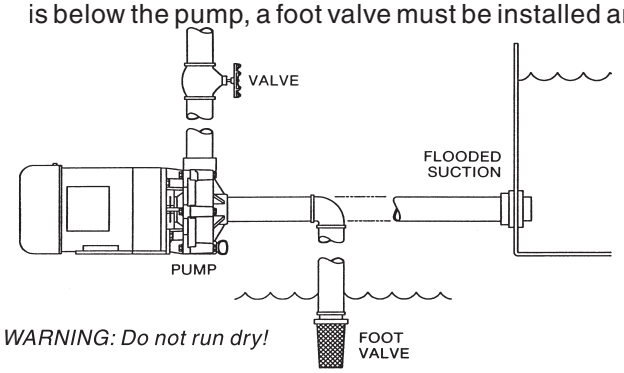


FIGURE 2

2. Mount motor base to a secure, immobile foundation.
3. Use only plastic fittings on both the suction and discharge ports. Seal pipe connections with Teflon paste. These fittings should be self-supported and in neutral alignment with each port. (i.e. Fittings must *not* be forced into alignment which may cause premature line failure or damage to the pump volute.)
4. Never restrict the intake. Keep both suction and discharge lines as free of elbows and valves as possible. Always use pipe of adequate diameter. This will reduce friction losses and maximize output.
5. The 'HN' pump *is not self-priming! It must not be run dry!* We recommend a flooded suction installation.

ELECTRICAL HOOK-UP

All electrical wiring should meet state and local ordinances. Improper wiring may not only be a safety hazard, but may permanently damage the motor and / or pump!

1. Check that supply voltages match the motor's requirements.
2. Check motor wiring and connect, according to instructions on motor, to match supply voltage. Be sure of proper rotation! (Refer to pump end, assembly instruction #8.) *Improper rotation will severely damage pump and void warranty!*
3. Power cord should be protected by conduit or by cable and be of proper gauge. It should be no longer than necessary.
4. Power should be drawn directly from a box with circuit breaker protection or with a fused disconnect switch.
5. Always switch off power before repairing or servicing pump and / or motor.

MAINTENANCE

Lubrication:

Motor - Lubricate as per instructions on motor.
Rotary seal - Requires no lubrication after assembly.
Pump must be drained before servicing or if stored below freezing temperatures. Periodic replacement of seals may be required due to normal carbon wear.

TROUBLE SHOOTING

Motor will not rotate

1. Check for proper electrical connections to motor.
2. Check main power box for blown fuse, etc.
3. Check thermal overload on motor.

Motor hums or will not rotate at correct speed

1. Check for proper electrical connections to motor and proper cord size and length.
2. Check for foreign material inside pump.
3. Remove bracket and check for impeller rotation without excessive resistance.
4. Remove pump and check shaft rotation for excessive bearing noise.
5. Have authorized serviceman check start switch and / or condenser.

Pump operates with little or no flow

1. Check to insure that pump is primed.
2. Check for leaking seal.
3. Improper line voltage to motor or incorrect rotation.
4. Check for clogged inlet port and / or impeller.
5. Defective check or foot valve.
6. Check inlet lines for leakage, either fluid or air.

Pump loses prime

1. Defective check or foot valve.
2. Seal leaking.
3. Inlet line air leakage.
4. Fluid supply low.

Motor or pump overheats

1. Check for proper line voltage and phase, also proper wiring.
2. Binding motor shaft or pump parts.
3. Inadequate ventilation.
4. Fluid being pumped should not exceed 194°F (90°C) for extended periods of time.

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