

PENGUIN SERIES HV SINGLE/DOUBLE MECHANICAL SEAL HORIZONTAL CENTRIFUGAL PUMP INFORMATION & TROUBLE SHOOTING GUIDE

- Available **single Diplo, single mechanical, or double water flush** (information).
 1. **Single Diplo**
 - a. Has no metallic spring or washer to corrode over time.
 - b. The seal tension is provided by a Viton or EPR rubber boot gripping force on the shaft that increases with pressure while always remaining higher than the torque needed to drive the seal face.
 - c. **Suction pressures up to 60 psi**
 - d. Ideal for areas or where contaminants may clog conventional designs.
 - e. The face is evenly distributed on the periphery of the carbon to reduce the high peak loads associated with spring loaded seals.
 - f. **Some dry run capability when carbon seal face is employed.** Carbon has good lubricity and low friction. **Silicon carbide is a hard faced seal and has no dry,run capability.** Use silicon carbide only when all else fails.
 - g. Available in carbon, ceramic, silicon carbide, Viton, EPR
 2. **Single Mechanical**
 - a. Has a metallic spring and washer to provide seal tension. The spring and washer do not normally come into direct contact with the liquid being pumped except when the seal leaks or fails.
 - b. **Suction pressures 10 psi maximum.**
 - c. Same materials of construction as the Diplo seal.
 - d. Features include precision lapped sealing faces, mating face finishes, lower friction, and no rubbing friction between shaft and seal parts.
 - e. **Silicon carbide not recommended.**
 - f. **Brief dry run capability when carbon is employed.**
 3. **Double Water Flush**
 - a. Consist of two single mechanical seals with one spring between them.
 - b. **Requires an external pressurized water line** (city water pressure) to connect to the seal cavity and flush the seal faces whenever the pump is in operation. Use the provided connections-----water goes in the bottom fitting and out the top. Use the valve to **maintain a water flow of 3-5 gph** as shown on the provided flow meter. This will automatically maintain the **pressure inside the seal cavity to 4-5 psi.**
 - c. **Maximum suction pressure is 10 psi.**
 - d. The pump has **dry capability provided the water flush line is in when the pump is in operation.**
 - e. The double seal cools the seal cavity and keeps abrasives flushed off the seal faces.
 - f. For use on caustics, electroless nickel and copper.
 4. **True volute design** helps reduce vibrations, shaft fatigue, shock losses, and radial thrust loads; prevent premature bearing failures; prolong mechanical seal life.
 5. **Rear impeller vanes** are designed to help assure proper mechanical seal lubrication on start-up and to help balance axial forces hydraulically.

6. **Seal insert design** allows the less expensive seal insert to be replaced in lieu of the entire pump housing when the pump has run dry for too long a period of time. If the seal only last for minutes, then either the application is bad or human error.

Mechanical seal life ranges from a few minutes up to three years.

7. All HV pumps are wet tested at the factory prior to shipping to allow the seal faces to seat properly and to assure there are no leaks from the pump.
 8. For external mounted seals as used in HV single mechanical and double water flush pumps, when the seal is damaged and requires replacement, the impeller w/sleeve must also be replaced.
- **Trouble Shooting Guide:**
 1. **Insufficient or no discharge liquid being pumped**
 - a. Air leaks in suction piping
 - b. Pump not primed (flooded suctions are highly recommended)
 - c. System head higher than anticipated
 - d. Closed valve
 - e. Viscosity or Specific Gravity too high (2000 SSU, 2.0 SG maximum)
 - f. Suction lift too high or insufficient NPSH
 - g. Clogged suction line
 - h. Motor rotation incorrect
 2. **Insufficient pressure**
 - a. Air or gas in liquid
 - b. Impeller diameter too small
 - c. System head lower than anticipated
 - d. Motor speed too low
 3. **Loss of prime**
 - a. Leak in suction piping
 - b. Foot valve or suction opening not submerged enough
 - c. Foot valve too small or leaking
 - d. Air or gas in liquid
 - e. Foreign matter in impeller
 - f. Leaking foot valve
 - g. Suction lift too high
 4. **Excessive power consumption**
 - a. Head lower than rating
 - b. Excessive flow
 - c. Specific Gravity or viscosity too high
 5. **Vibration, Noise**
 - a. Pump cavitating from improper suction feed
 - b. Motor or piping not properly secured
 - c. Foreign object in impeller

RECOMMENDED SPARE PARTS FOR MODEL HV-N SINGLE DIPLO PUMP

1 ea Diplo seal.....1 ea seal insert.....1 ea impeller w/sleeve.....

