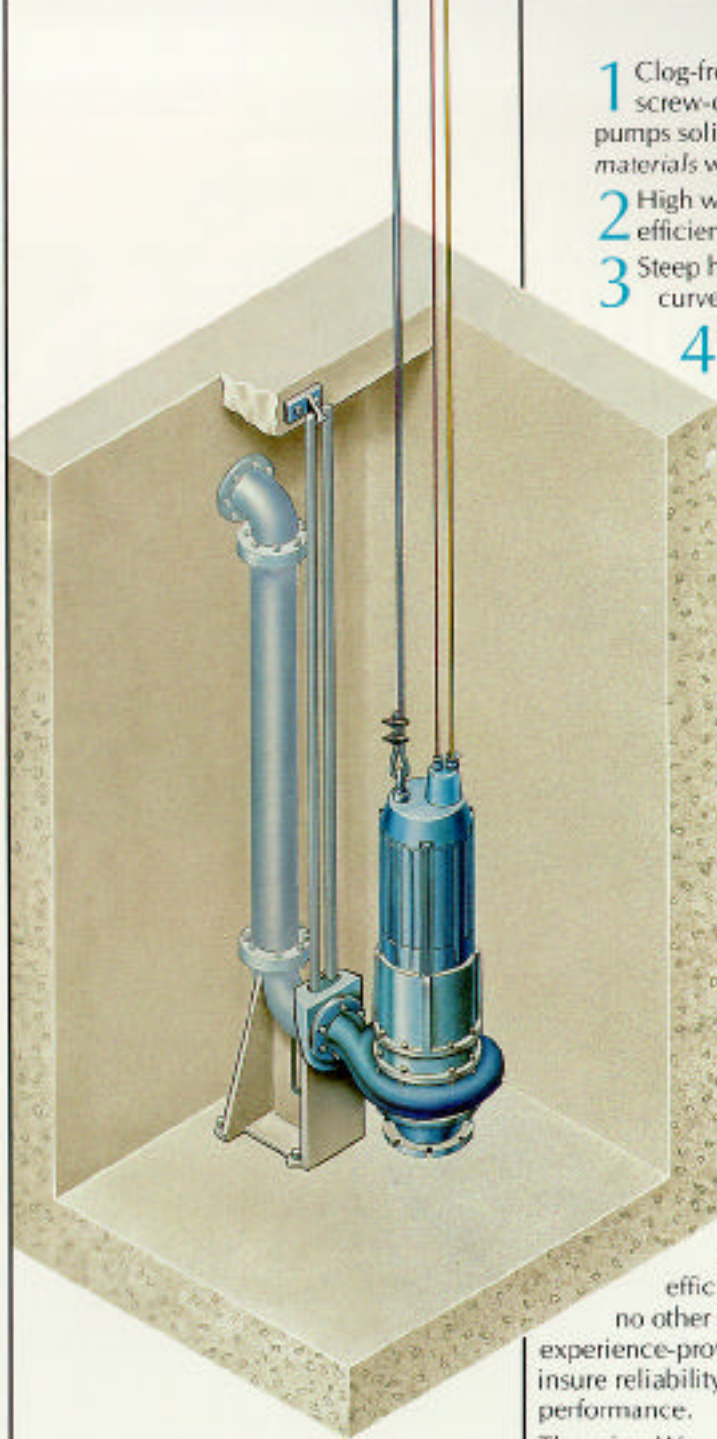


WEMCO® —  
HIDROSTAL®  
IMMERSIBLE  
PUMPS

# WEMCO HIDROSTAL IMMERSIBLE PUMPS

ONLY WEMCO  
HIDROSTAL  
IMMERSIBLE  
PUMPS OFFER  
ALL THESE  
FEATURES:



**1** Clog-free pumping with unique screw-centrifugal impeller easily pumps solids and stringy, fibrous materials without plugging.

**2** High wire-to-water efficiencies.

**3** Steep head/capacity curve.

**4** Non-overloading motors in most selections.

**5** Two-speed motors available.

**6** Exclusive top and bottom sealing systems.

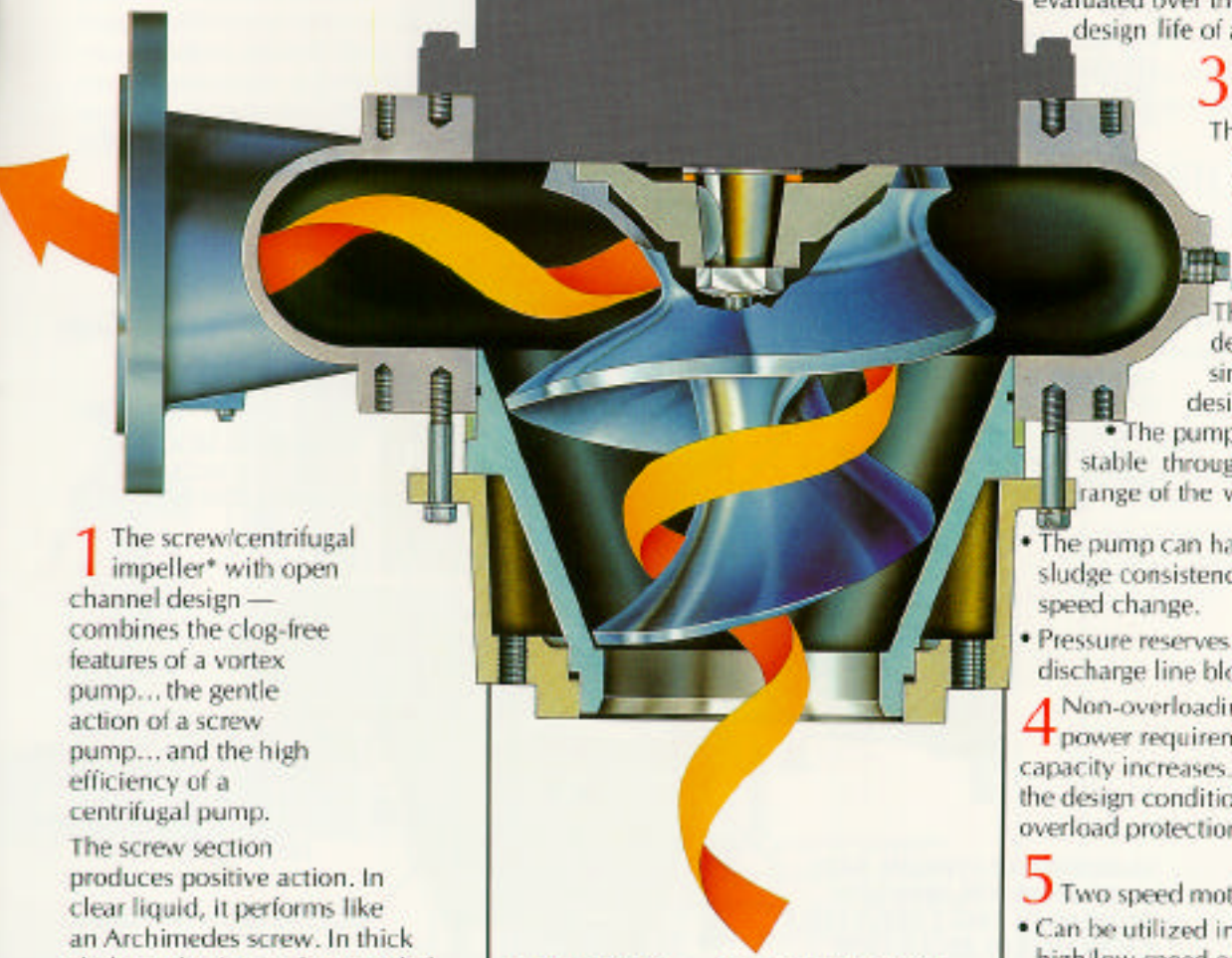
**7** IMMERSIBLE pumps will run continuously either in or out of the water.

**8** Explosion-proof motor design with all the features (moisture probes, etc.) normally found only in non-explosion-proof design.

Hidrostal Immersible pumps are in trouble-free service in thousands of installations around the world. No other pumps offer the ability to handle long, stringy, fibrous materials and solids without clogging, and operate with hydraulic efficiencies over 80%. In fact, no other pump offers more quality, or experience-proven features than Hidrostal to insure reliability and unsurpassed performance.

There is a Wemco-Hidrostal Immersible pump available for virtually every application. One of our experienced representatives will welcome the opportunity to assist you in selecting a pump for your application. Call (916) 929-9363 for the name, address, and phone number of the Wemco representative nearest you.

# CLOG-FREE PUMPING WITH THE UNIQUE SCREW-CENTRIFUGAL IMPELLER



**1** The screw/centrifugal impeller\* with open channel design — combines the clog-free features of a vortex pump... the gentle action of a screw pump... and the high efficiency of a centrifugal pump. The screw section produces positive action. In clear liquid, it performs like an Archimedes screw. In thick sludges, slurries, and suspended solids, it burrows like a corkscrew to start material moving and keep it moving. The centrifugal section produces the high hydraulic efficiencies. Combined, the screw/centrifugal action provides high hydraulic efficiencies and clog-free pumping. The large, continuous open channel — from suction to discharge — offers these advantages:

- Pump will handle large solids with clog-free action.
- Hydraulic efficiencies over 80%.

- Gentle Action — prevents damage to delicate solids and biological flocs.
- Low NPSH requirements help to keep thick sludges and large solids moving as available suction head decreases. This, in conjunction with immersible motors that can operate dry, also allows lower wetwell pump down which reduces construction costs.
- Positive Suction Flow — enables pump to handle thick sludges.

**2** High wire-to-water efficiencies. The cost of running any pump is measured by the amount of power it consumes, which is a function of the combined (wire-to-water) efficiencies of the pump and the motor. The unique combination of the Wemco-Hidrostal screw-centrifugal impeller and immersible motor routinely produces wire-to-water efficiencies that are among the highest, and in many instances, the highest in the industry.

Since connected horsepower may now cost as much as \$1,000 year/HP, the cost savings from this pump are substantial when evaluated over the normal 10-20 year design life of a station.

**3** Steep head/capacity curves.

The screw-centrifugal impeller produces head/capacity curves that are very "steep", i.e. the head drops very quickly in relation to increased flow. This type of curve gives designers and users flexibility simply not found with other designs.

- The pump capacity stays relatively stable throughout the normal operating range of the wet-well.

- The pump can handle a wide variation in sludge consistency without the need of a speed change.
- Pressure reserves can dislodge temporary discharge line blockage.

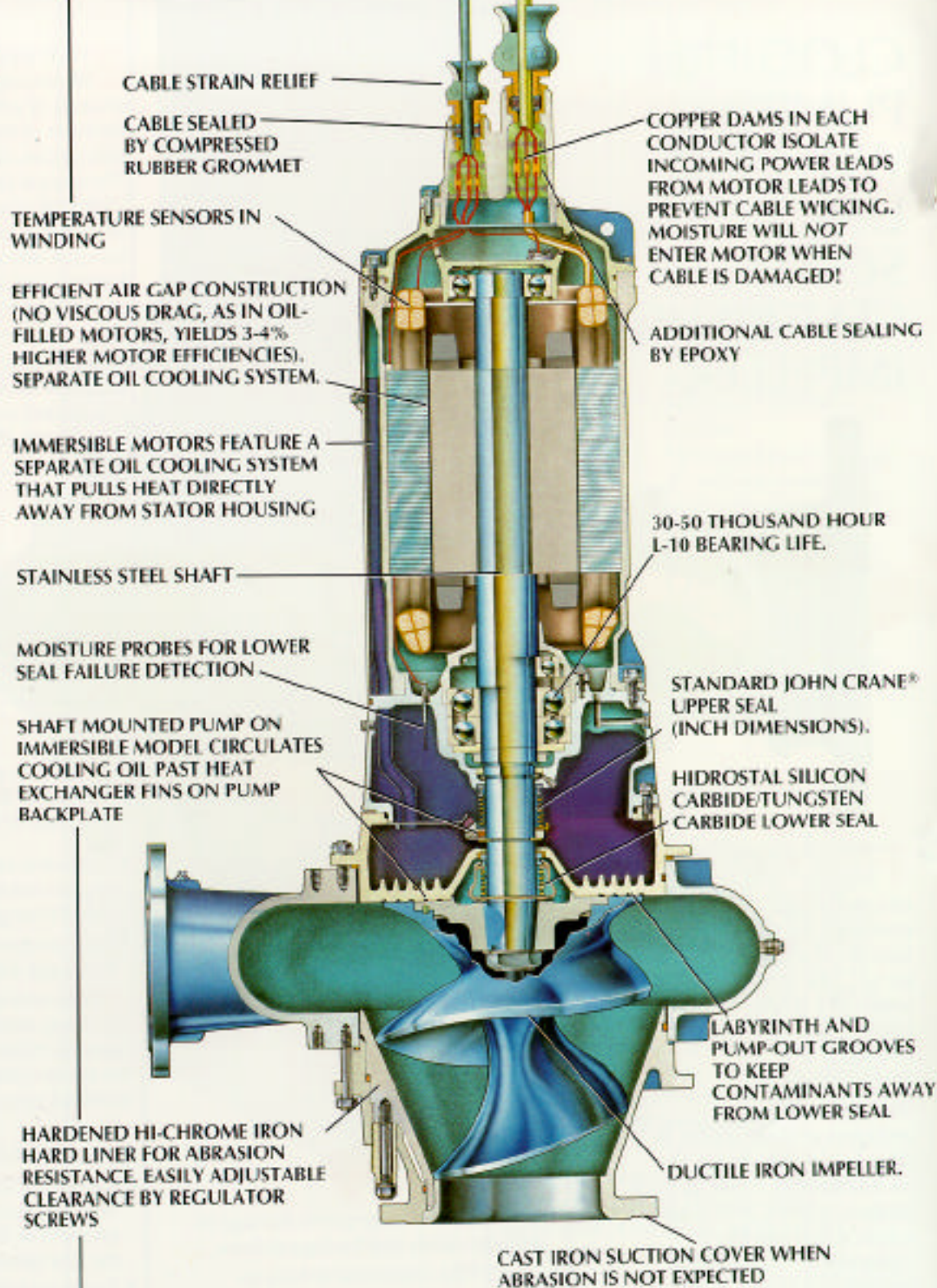
**4** Non-overloading. For many models, power requirements do not rise as capacity increases. Thus, motors sized for the design conditions also provide complete overload protection for run-out conditions.

**5** Two speed motors.

- Can be utilized in parallel operation at high/low speed operation, without the problem of the high speed pump forcing the low speed pump to shut off.
- Two speed operation allows pump to closely match station inflow rate, thus reducing wet-well size, buffer volume, and station construction costs.
- Allow automatic matching of inflow rates to the station when used with the Prerostal Pumping System (see back page).
- Offer automatic soft-starting which reduces energy consumption.

\*Hidrostal screw-type centrifugal impeller as referenced in original U.S. Patent #3,156,190 issued to Martin Staehle.

# IMMERSIBLE MOTOR DESIGN FEATURES



# EXCEPTIONAL SEALING & RELIABILITY SYSTEMS

Submerged motors are most vulnerable in the two areas where liquid is sealed from the motor: the cable entry on top of the motor, and the shaft sealing at the bottom of the motor. The Wemco-Hidrostal motor is the most modern, reliable design to insure no leakage at these points and incorporates the following features:

## CABLE ENTRY — EXCLUSIVE 5-POINTS COVERAGE

**1** Strain relief clamp grips cable above sealing components to isolate the electrical components from any mechanical strain.

**2** Cable sheath is sealed by an elastomer grommet compressed by a threaded follower gland.

**3** Each individual cable wire is isolated from the motor cable by a solid copper isolation dam which prevents wicking of moisture through cable strands in event of cable damage.

**4** Poured epoxy totally encapsulates cable-end insulation and solid copper dams, and offers redundant sealing for both the cable outside diameter and any internal leakage.

**5** Motors are shipped with waterproof cap over panel-end of cable to keep the cable dry during storage, shipping, and installation. [Not shown]

## MECHANICAL SEALS

**1** The lower seal has a solid tungsten-carbide face rotating against a solid silicon-carbide stationary seat. Both seal faces are harder than any grit particles encountered, and the combination of two different faces insures that no molecular welding can occur as can happen when two identical seal faces are used. Springs are completely encased in a rubber boot or in a stainless steel bellows to avoid fouling by stringy materials. For repairs, this seal is dimensionally interchangeable with standard John Crane type 21 seals.

**2** The upper seal is a standard domestic John Crane type 21 carbon-ceramic face seal.

**3** Both seals run in a clean oil bath, lubricating springs and seal faces, which permits the pump to run dry without seal damage.

## MOISTURE PROBES

Two probes constantly monitor conductivity of the cooling oil. If significant water leaks past the lower seal, an alarm circuit in the panel advises the operator to replace the seal. However, the pump can continue to run for some time, as the motor is still protected by the upper seal. NOTE: Also available in explosion-proof motors!

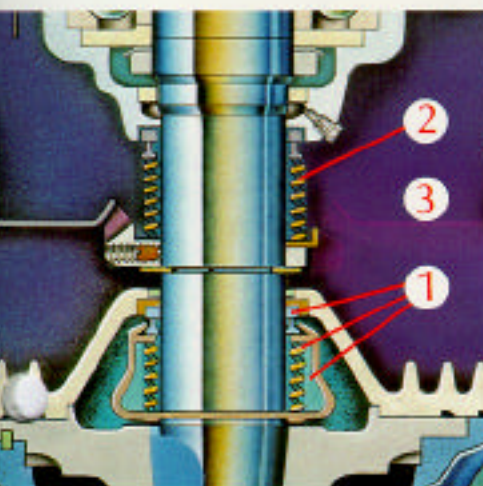
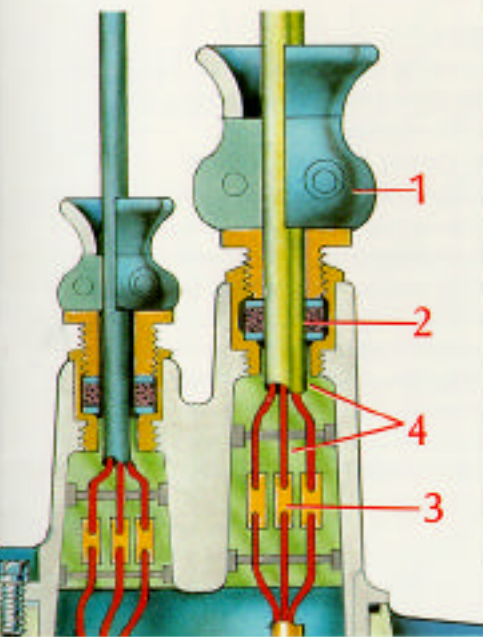
## TEMPERATURE SENSORS

Backup bi-metallic thermal sensors embedded in the stator windings protect motor from overheating due to any reason.

## EXPLOSION-PROOF MOTORS

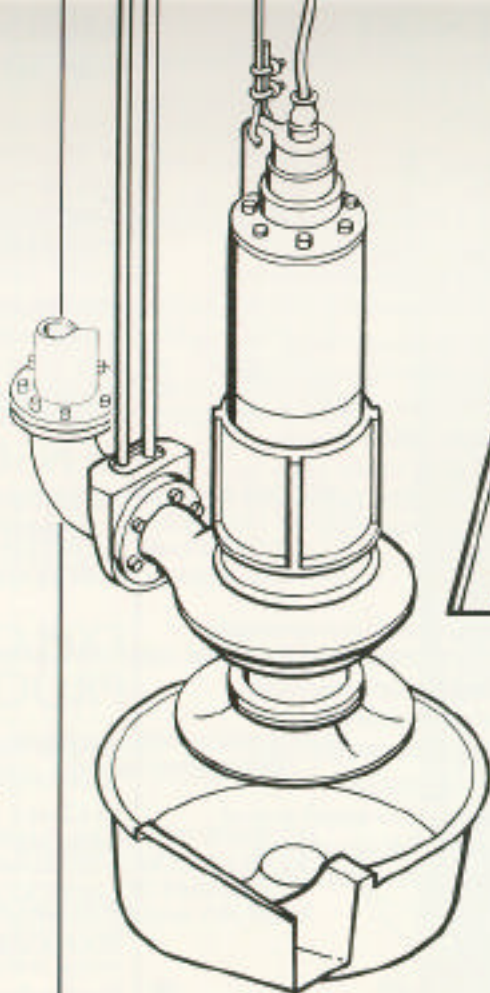
Motors are Explosion-proof design, approved by Factory Mutual for uses in Class 1 groups C & D "hazardous locations."

Although other motors incorporate one or two of these features, the Wemco-Hidrostal motor is the only one that incorporates *all* of these redundant features. The result is the most positive and reliable design for excluding liquid.



# FOUR SYSTEMS AVAILABLE

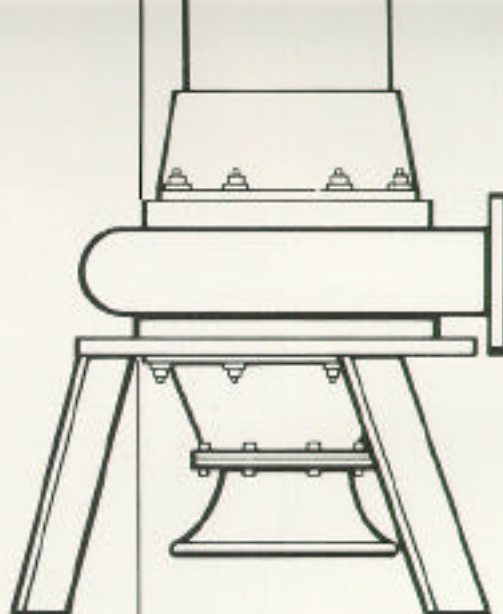
**1 IMMERSIBLE — WET PIT**  
Motor need not be submerged for cooling, allows shallower wetwell — less construction costs. A special “fastout” fixture is available which permits quick hoisting of the pump from the wetwell; no need to enter the pit or unbolt pipe flanges. The cast iron fastout fixture, incorporating an elbow, cantilevers the entire pump from the volute discharge. Guide rails insure easy liftout and accurate alignment.



## **2 IMMERSIBLE — DRY PIT**

Use a Wemco-Hidrostal

Immersible pump to eliminate the complexity and costs of long, extended shafts. Also, when replacing existing dry pit close-coupled pumps, use Wemco-Hidrostal Immersible pumps to make the installation flood proof. (Note: the pump's excellent NPSH characteristics may allow greater flows through existing suction piping.)



## **3 PORTABLE**

Immersible pump fitted with 3-leg stand with ring base. Handy for cleaning out sludge-pits, digesters.

## **4 PREROSTAL PREROTATION**

Automatically adjusts pumping volume to varying inflow rates with the use of Wemco-Hidrostal constant speed immersible pumps. A patented basin under the pump suction, in conjunction with weirs in the wetwell, induces the incoming liquid to prerotate in a controlled manner and achieve pump discharge flow rate to meet a varying inflow rate. For more information ask for Wemco Bulletin P25-B4. [See back page]

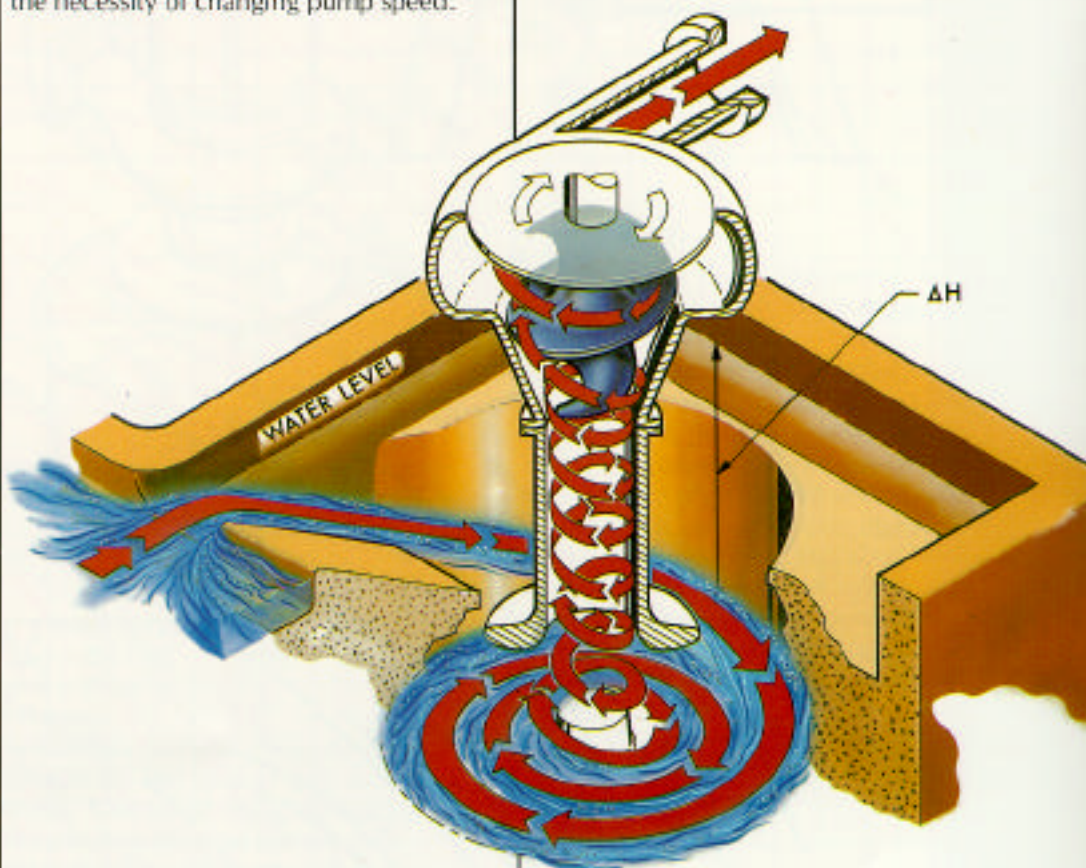


## NEW, PATENTED PUMP SYSTEM — ECONOMICAL SOLUTION TO VARYING INFLOW RATES

The Prerostal® prerotation system is a unique, economical, uncomplicated method of automatically adjusting pumping volume to varying inflow rates using a **CONSTANT SPEED MOTOR/PUMP**. It combines the screw centrifugal impeller characteristics of the Hidrostal pump with a specially configured vortex inducing chamber around the suction pipe of the pump. The chamber utilizes gravity to impart a fluid spin in the same direction of rotation as the pump impeller, and this spin produces a flow reduction without the necessity of changing pump speed.


## BENEFITS INCLUDE

1. Lower overall energy use than variable speed installations.
  2. Less capital investment than other systems.
  3. Less maintenance.
  4. No sophisticated controls to service.
- Your WEMCO representative will be happy to show you how this system can be of benefit to your specific application.



 **WEMCO PUMP**  
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Printed in U.S.A. / Cal Central Press

Bulletin P25-B5 REV (9/92 5M)