

Prerostal®

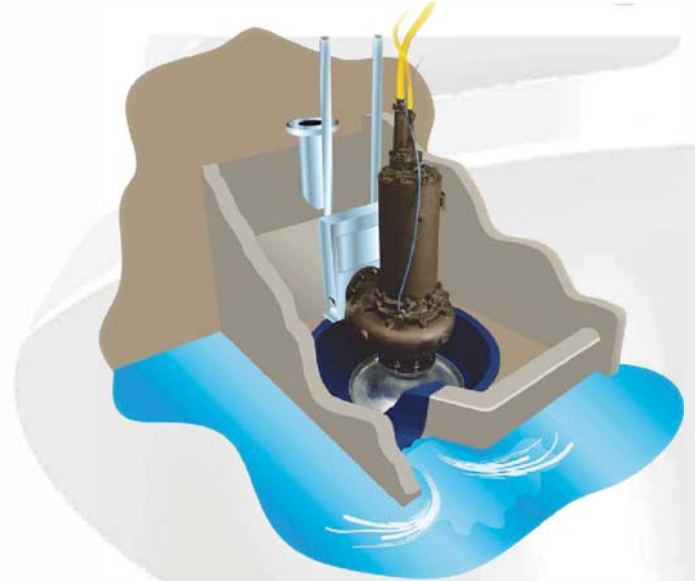


SELF CLEANING WET-WELL SYSTEM



TYPICAL APPLICATIONS FOR PREROSTAL® SYSTEM

- Sewage Inlet and storm pumping stations
- Activated sludge pump stations
- Oily water pump stations
- Wash down systems
- Pump stations with a high fat and grease content
- Pump stations with floating materials
- Where a shallow construction is a benefit



WHAT IS PREROSTAL®?

Prerostal is a unique system developed by Hidrostral® that provides the pump user with:

1. A method of matching pump outflow to pump station inflow without the need for additional flow control or additional electrical equipment such as inverter drives.
2. A highly effective sump cleaning system without the need for any additional mechanical or electrical items, such as grinders, bar screens or mixers.



KEY BENEFITS & FEATURES OF PREROSTAL®

- Matches Station outflow to inflow using fixed-speed motors
- No special technology is required [i.e. Variable Frequency Drives]
- Automatically removes floating and settled solids
- Shallower Pump Stations [compared to submersibles with On-Off controls]
- Alternative to Archimedes Screw Pumps
- Station Flows 30 gpm to 40,000 gpm
- Heads 7 ft. to 240 ft.

Each system is designed specifically to meet your requirements by Hidrostral's Engineering team. They will work with you to ensure that the system solves your pumping problems and operates efficiently.



WITHOUT PREROSTAL



WITH PREROSTAL



HOW DOES PREROSTAL® WORK?

The Prerostal system consists of a Hidrostal guide rail mounted screw centrifugal pump fitted with a specially profiled suction bell located centrally in a molded prerotation basin. The basin is constructed with a partial weir in front to direct flow to the integral entrance channel. It is the geometry of the sump formed by the basin and suction bell working in conjunction with the open ended weir which causes the flow entering the basin to rotate in the same direction as the pump.

The rotation speed of the prerotating flow in the basin varies according to sump level and reaches a maximum at the lower levels. It is the variable rotational speed of the flow entering the pump which ensures the output varies to match sump inflow. As the level in the sump rises, due to increased flow, then the speed of prerotation decreases and the pump progressively regains its maximum output.

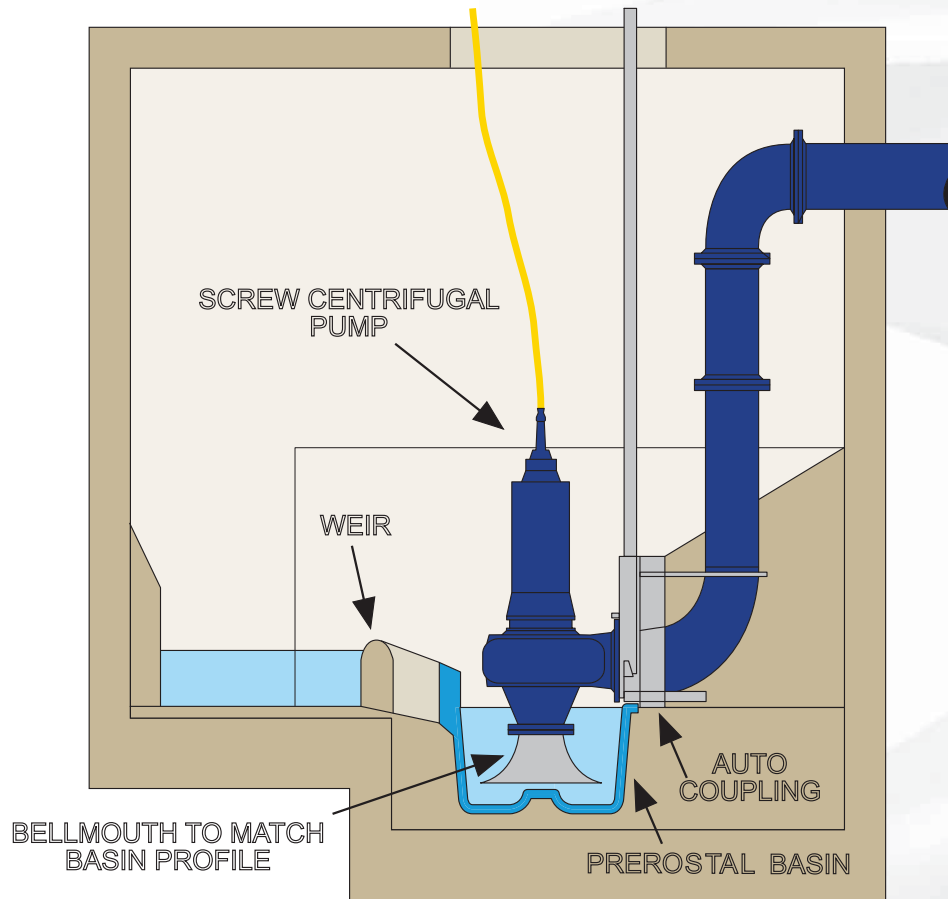
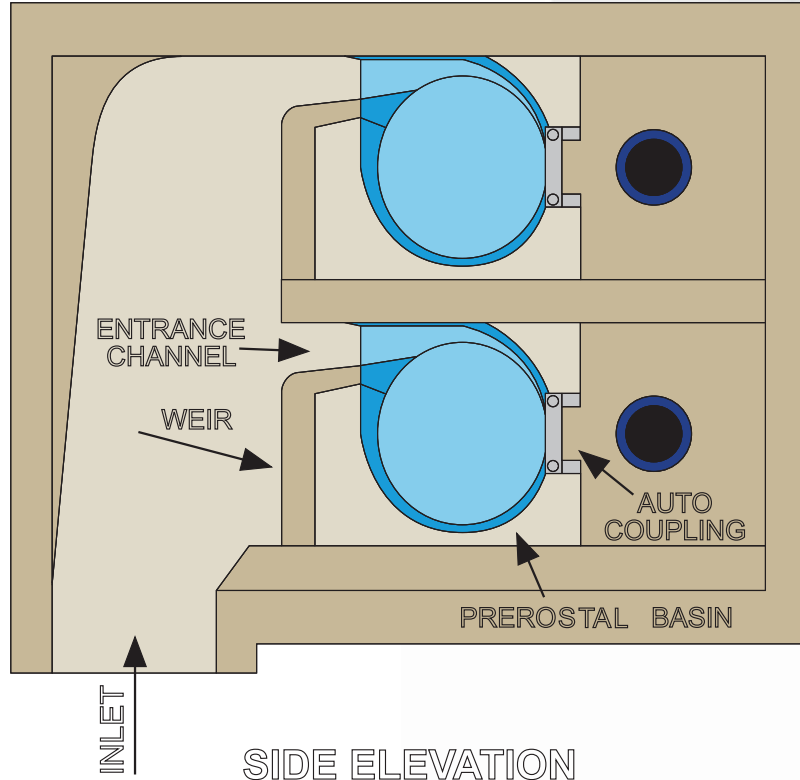
With the proper design of weir height, entrance channel width, basin and suction bell geometry; automatic matching of discharge flow rate to the influent flow rate can be established while keeping the pump speed constant.

The sump geometry has been designed to work in conjunction with Hidrostal's screw centrifugal pumps. It's smooth contours and large free passages permits the pumping of liquids containing bulky solids, rags, wipers and fibrous materials reliably and with minimum energy consumption.

Prerostal is a precast fiberglass basin with minimum thickness of 1/4" that is prepped and ready to be cast in place using commonly available concrete form techniques.

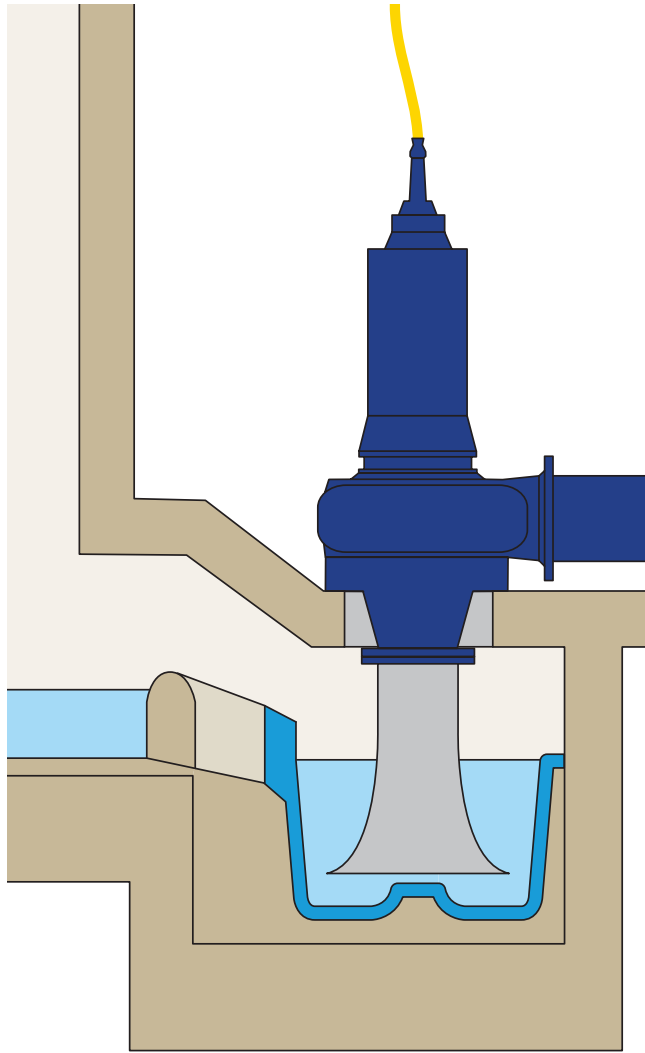
WET PIT VERSION

PLAN BELOW COVER SLAB

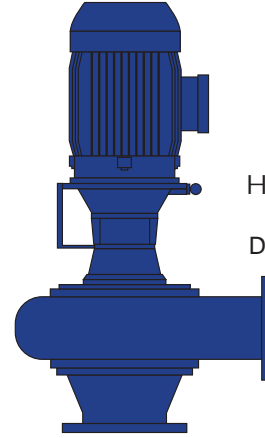


DRY PIT VERSION

DRY INSTALLED
IMMERSIBLE PUMP

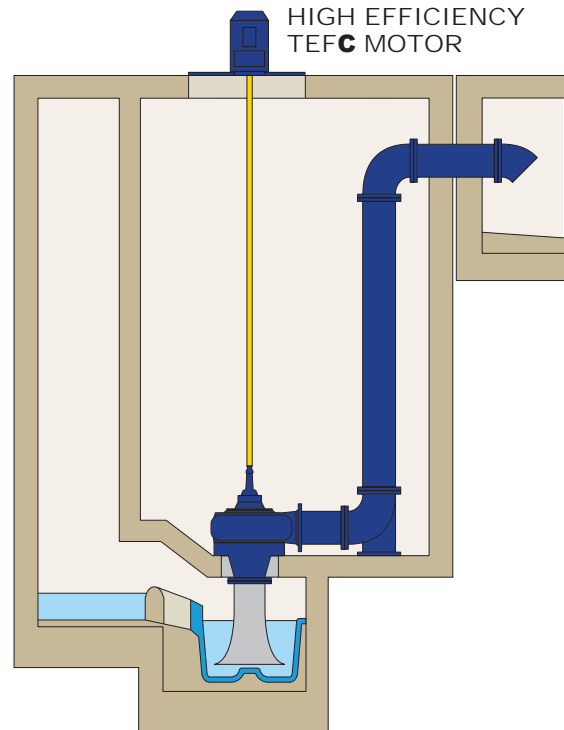


ALTERNATIVE DRIVE
ARRANGEMENT



HIGH EFFICIENCY
TEFC MOTOR
DIRECT MOUNTED ON
PUMP

LINE SHAFT



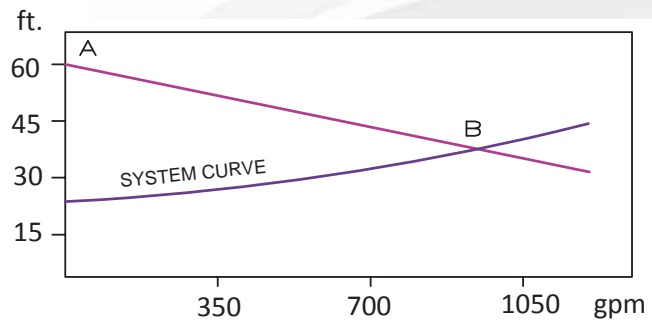
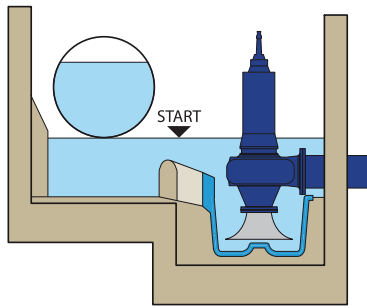
HIGH EFFICIENCY
TEFC MOTOR

Traditional layout with cardan shaft drive
and pipe discharge

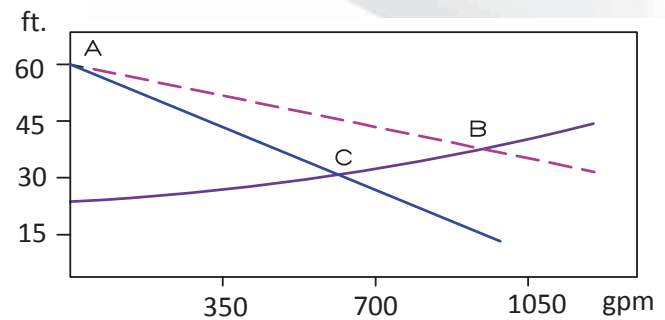
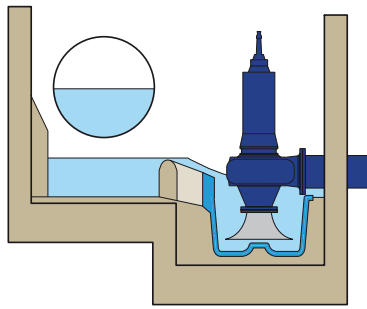
HOW FLOW MATCHING IS ACHIEVED

Generally, pumping stations consist of two or more pumps, however, to show how the PREROSTAL system is able to automatically achieve self-regulation by matching the out-flow to the in-flow a single pump has been used in the description below.

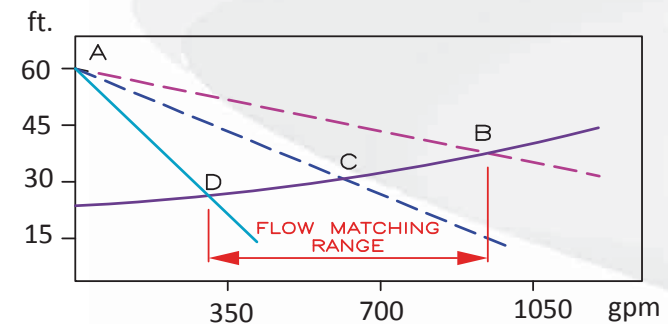
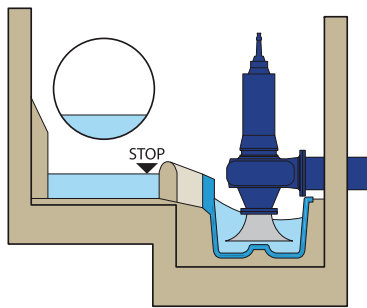
1] At this level inflow matches standard pump curve AB



2] Inflow rate less than pump capacity. Small amount of prerotation in basin gives new curve A-C so pump output matches inflow.



3] Inflow continues to fall. High degree of prerotation to give curve A-D so pump matches inflow.



The principles are the same for both wet and dry pit versions.

EFFECT ON PUMP PERFORMANCE

Hidrostal engineers each installation to give optimum performance. When operating with prerotation control, stable performance of the pump is achieved by using the Hidrostal Screw Centrifugal impeller and the correct proportion of the inlet weir and entrance channel.

Hidrostal can offer a wide range of pumps from 2" to 28" discharge size with prerotation control. With multiple pump PREROSTAL systems flow rates from 30 gpm to well in excess of 40,000 gpm can be achieved. The pumping head depends to a certain extent on the size of pump selected. Generally PREROSTAL systems can be offered for heads as low as 7 ft. Typical schemes fall in the range of 10 - 30 ft., the maximum heads being in the region of 65 ft. which is well in excess of the upper limits of Archimedes screw pumps.

ADVANTAGES & BENEFITS OF PREROSTAL

REMOVAL OF FLOATING MATERIALS

A primary benefit of the PREROSTAL system is its effectiveness as a skimming device. Every time the system goes into its prerotation mode, floatables such as oil, hydrocarbons, floating sludges, grease, fats and bulky light solids are automatically drawn into the basin, where they are pumped into the downstream process and can be recovered if required to do so.

REDUCED CAPITAL & CONSTRUCTION COSTS

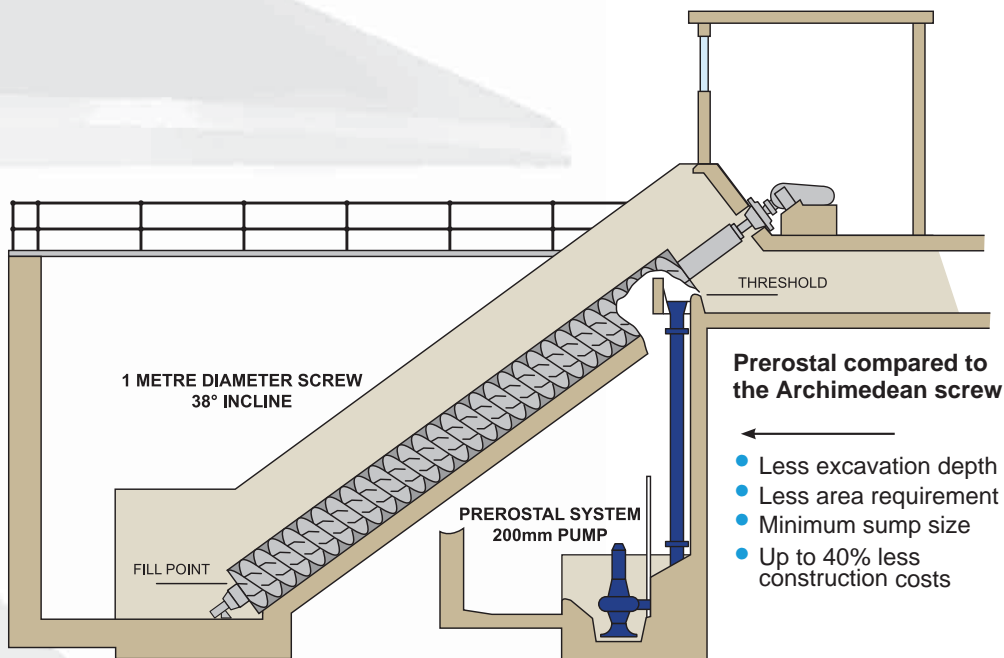
Compared to pumps with screw or variable speed drive installations, the PREROSTAL systems can offer savings of up to 40% on construction costs. The excavation depth and area requirement is much less than with the Archimedes screw and on-off systems as the PREROSTAL system requires minimum sump size. Variable speed pumping systems have high initial capital as well as high maintenance costs.

SIMPLE & RELIABLE

The self-regulating feature and simplicity of the PREROSTAL system keeps operation and maintenance costs low. The whole system uses standard pump starters and level controls which can easily be maintained; unlike the alternative method of flow control that uses variable frequency drives which are complex and expensive to maintain as they require servicing by specialist engineers.

INSTALLATION / DESIGN APPLICATIONS

PREROSTAL systems are in use worldwide in a variety of applications, in industries as diverse as municipal sewage treatment plants to petrochemical complexes.



USER BENEFITS

Simple System - Automatic flow matching uses gravity and unique prerotation wet well to control output (flow) of pump. No complicated variable speed controls which are subject to failure.

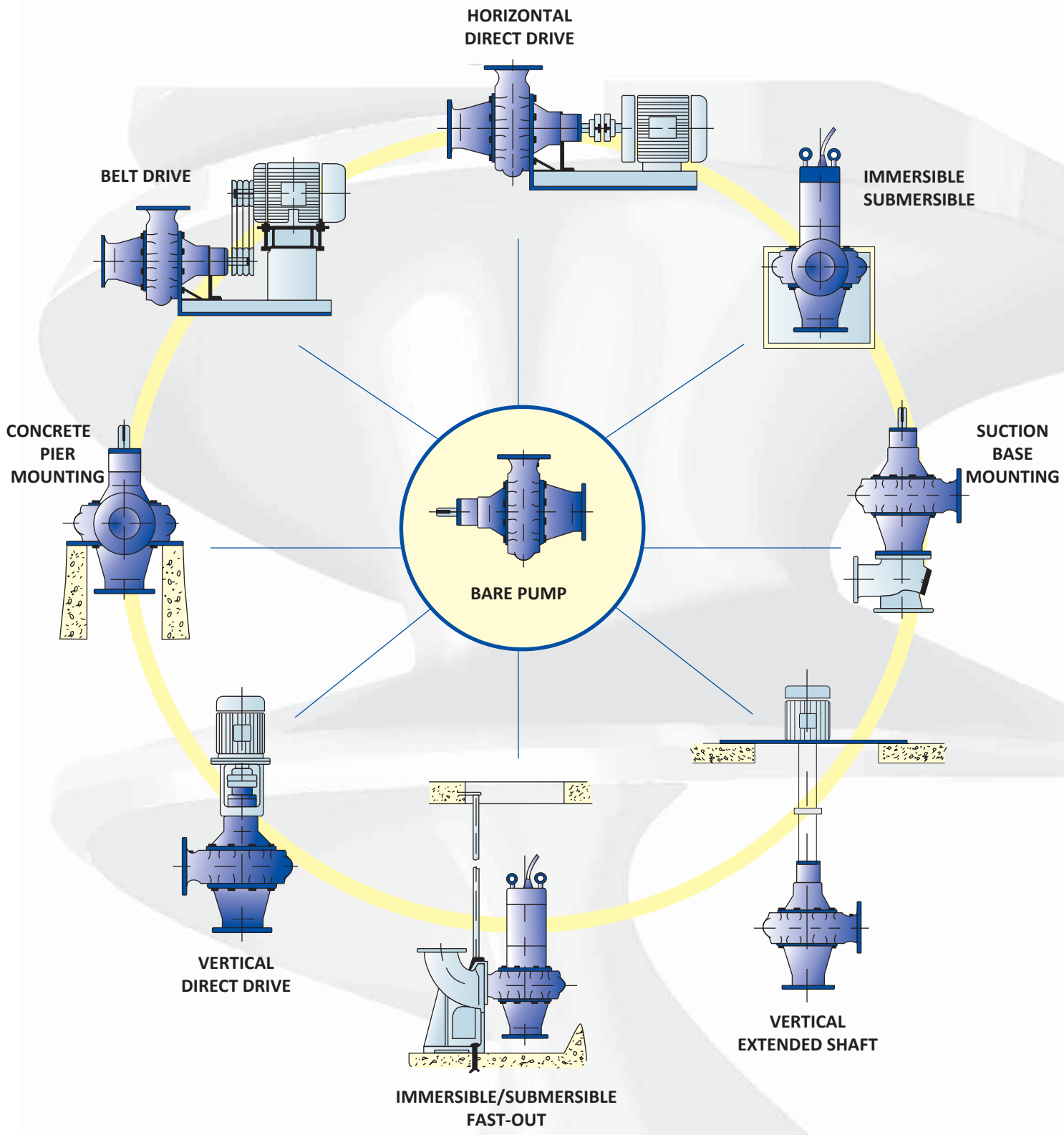
Self Cleaning - This system cleans wet wells by automatically removing floating materials each time the pump goes through its operating cycle.

Reduced Air Pollution - Reduces odor and eliminates the need for frequent cleaning.

Maximum Efficiency - The Prerostal system can be fine tuned to provide maximum efficiency to the operating conditions.

Highest Reliability - Clog-free performance that is reliable and simple.

Flow Matched Supply - Improved supply not on/off batch sequences.



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Horizontal/Vertical End Suction Pumps BRO-PS



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