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Bayou Pumps & Products, Inc

Pumps - Parts - Motors - Packing - Seals - Fittings - Cleaning Supplies

“Not Just Products, Solutions”

Pumps & Parts



TECH-MAG

If you are looking for a brand and do not see it on this line, please call 870-863-0454.

Some product lines are outsourced.



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Seals

Motors



Packing/Sealing System

Bushings



Couplings

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Power Washers & Wash Bay Equipment

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Tesla Disk Pump™ - How It Works

The following describes boundary layer and viscous drag phenomena, which are two properties of fluids the "TESLA DISK PUMP™" uses to transfer energy from the motor to the fluid being pumped. Fluid is confined between the twin rotating shrouds and rotates with the shrouds. Because that layer of fluid immediately adjacent to the shroud remains "fixed" relative to that shroud face and subsequent layers of fluid resist separation from the adjacent layer, the entire fluid mass begins to rotate. As the fluid gains energy, it moves outward on the "Tesla Disk" gaining additional energy and continues on. The actual path of the fluid through the pump becomes a spiral path. The "TESLA DISK PUMP™" displays similar (but not identical) diameter, RPM and pressure relationships to that of conventional impeller pumps. The reason for any departure is that fluid velocity is not fixed by the local Disk velocity but is rather a function of Disk spacing, fluid viscosity and density, radial velocity, and Disk velocity. The flow in the rotating disks falls somewhere between forced vortex and free vortex circulation. The three most noteworthy performance features of the Tesla Disk Rotor are:

- a) Low NPSH requirement
- b) Ability to handle viscous fluids greater than a centrifugal at higher efficiencies.
- c) Resistance to wear from abrasive liquids.

These characteristics are a result of the nature of viscous drag momentum transfer.





Operational Benefits

Pulsation-Free Smooth Laminar Flow

Pulsation-free flow enhances gentle processing of fragile products and eliminating costly damage along with greatly reducing wear in pump and related piping and instrumentation.

No Tight Internal Tolerances

This allows the disk rotor pump to pass large and irregular hard solids, as well as variable solids stream without plugging.

Low NPSH Requirement

The disk rotor's low NPSH ranges from approx. 1/3 to 1/2 that of conventional centrifugal pump in the same service, also attributed to the smooth laminar flow generated by this design.

Dry-Run Capability

The disk rotor pump design is capable of being operated indefinitely with zero process fluid.

NOTE: The mechanical seal must be flushed during dry-running.

Dead-Heading Discharge/Starving the Suction

It is possible to deadhead the discharge and/or starve the suction for extended periods of time at normal operating speeds with minimal damage to the pump.

Minimal Radial and Axial Loads

Exceptional low radial and axial loads generated by the disk rotor result in extended seal, bearing and shaft life.

Exceptionally Versatile Design

Capability of handling a wide range of conditions without requiring internal modifications, even with large variations in process viscosity, temperature, solids type or concentration without process interruption.

Long Life for Pump Components

Few, if any, spare parts are required for the disk rotor pump over its life. The oversized shaft along with minimal axial or radial loads greatly extend and maximize bearing and seal life.

Low Maintenance/Spare Parts Requirements

*Disk rotor pumps are subject to minimal wear even in the most abrasive services due to minimal fluid to pump service contact and laminar flow characteristic. With this pump, **you won't need parts.***

Maximum Run Time and Reliability

Tesla Disk pumps are simply the most reliable pumps on the market for hard-to-pump applications. Disk rotor has no close tolerances to enhance the minimal fluid contacting action. This factor contributes to maximum run time by preventing clogging.

Higher Production Yields and Improved Product Quality

*When pumping delicate, shear sensitive, or otherwise sensitive products, the disk rotor increases productivity by reducing product losses due to the minimal contact pumping mechanism and laminar flow. Savings can be phenomenal with some pumps **paying for themselves in a matter of weeks.***