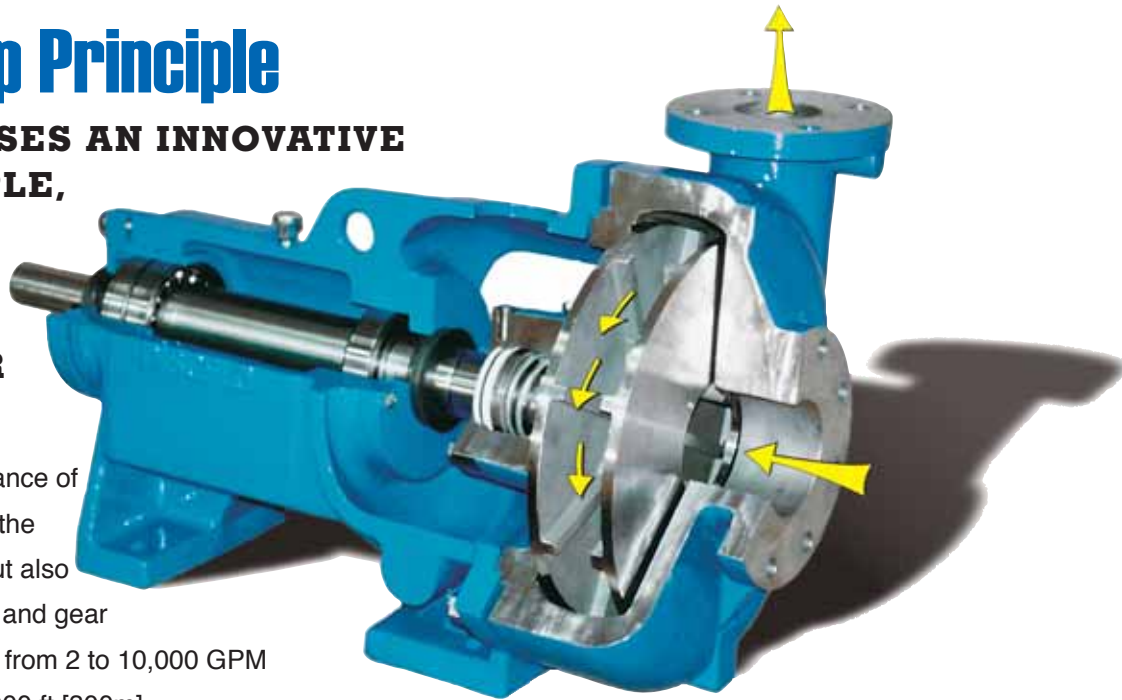


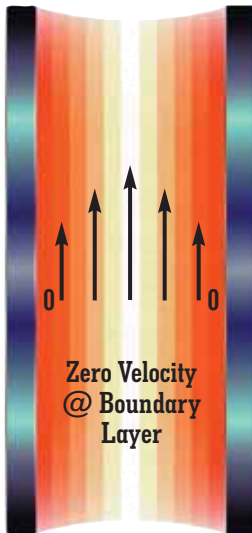
The Disc Pump Principle

THE DISC PUMP USES AN INNOVATIVE PUMPING PRINCIPLE, WITH UNIQUE TECHNICAL BENEFITS FOR THE WASTEWATER INDUSTRY.

The disc pump has the appearance of a centrifugal unit, but performs the work not only of centrifugals, but also progressive cavity pumps, lobe and gear pumps. It can handle flow rates from 2 to 10,000 GPM [2250 m³/h] and heads up to 1000 ft [300m].



- Disc pumps operate on the principles of **Boundary Layer** and **Viscous Drag**. The application of these principles is new in the world of pumps but widely used in other areas of fluid engineering, such as causing friction loss through a piping system. Under laminar flow conditions, streams of liquid travel at different velocities through a pipe, with the layer closest to the pipe being stationary – known as the **Boundary Layer** – and successive fluid layers flowing faster towards the center of the pipe.



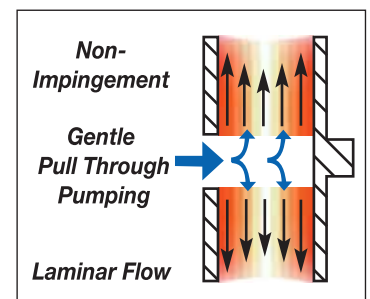
Discflo disc pumps employ the principles of Boundary Layer and Viscous Drag, to produce pulsation-free, laminar flow. Typical pipe flow showing Boundary Layer and Viscous Drag Hydraulic Principles.

- Similarly, when a fluid enters the disc pump, a boundary layer is formed on the surfaces of the Discpac, a series of parallel discs which form the pumping mechanism. As the discs rotate, energy is transferred to successive layers of molecules in the fluid between the discs via the **Viscous Drag Principle**, generating velocity and pressure gradients across the width of the Discpac. This combination of boundary layer and viscous drag results in a powerful force that “pulls” the product through the pump in a smooth, pulsation-free flow.

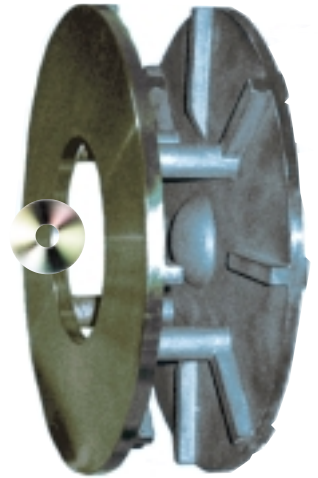
- The fluid being pumped moves parallel to the Discpac, so it does not impinge on the moving parts of the pump. It is this **Non-Impingement** and **gentle Pull-Through** pumping action which distinguishes the Discflo pump from other pump systems on the market, all of which use some kind of impingement device to “push” product through the pump.

- By minimizing contact between the pump and the material being pumped, wear on the disc pump components is greatly reduced, pump downtime is rare and, in the case of shear sensitive materials, damage to the product by the pump is eliminated. The disc pump’s problem-solving ability in hard-to-pump applications is unparalleled in the world of pumps... making the Discflo truly the future of pump technology.

Boundary Layer / Viscous Drag
Unique Pumping Principle



DISCFLO *and* *the* DISC PUMP



DISCFLO'S DISC PUMP IS A REAL BREAKTHROUGH IN PUMP TECHNOLOGY.

Using a totally unique operating system that differs from other pump designs on the market, it allows you to achieve an unheard-of level of productivity, versatility and exceptionally low Life Cycle Costs in all hard-to-pump applications in the pulp and paper manufacturing process.



- The disc pump has solved some of the toughest problems in the industry. It is able to handle paper stock up to 18%+ density, abrasive and viscous slurries from the chemical recovery process, shear sensitive chemicals such as paper coating slurries, sludge with a high solids content and slurries with high levels of entrained air or gas. The disc pump's superior performance is confirmed by comments by users in pulp and paper mills worldwide, all of whom have reaped significant benefits—both in higher product quality and in reduced wear, maintenance, operating and downtime problems—by moving over to the Discflo pumping system.

● The disc pump technology was developed in the late 1970s. The pumps are manufactured exclusively by Discflo Corporation, founded in 1982, at its international headquarters in southern California, USA.

DISCFLO'S MISSION

*is to become the number one
manufacturer of pumps for
the hard-to-pump
marketplace worldwide.*

*We plan to achieve this through
continuous innovation in pump
design and technology, attention
to quality in our manufacturing
process and dedication to
excellent customer service.*

*In reaching our goal, we can help
you reach yours—to solve your pump
operating and maintenance problems
and produce a superior end-product.*

**The Discflo pump allows
you to achieve an unheard-of
level of productivity, versatility
and exceptionally low
Life Cycle Costs.**

FLUIDS PUMPED

• Highly Viscous Fluids

Because the disc pump uses friction, the higher the viscosity, the *more* efficiently it pumps. Fluids—including black liquors, high density stock, and effluent—up to several 100,000 cPs can be pumped.

• Slurries with a High Solids Content

Handles slurries containing up to 80%+ solids without clogging, wearing excessively or coming to a standstill. Examples include pumping clarifier sludge, various types of effluent and pigment slurries.

• Severely Abrasive Fluids

Pumps the most severely abrasive fluids with no problems and minimal wear, including green liquor dregs, lime slurries, titanium dioxide, and fly ash.

• Fluids with High Volumes of Entrained Air/Gas

Handles fluids with very high levels of air/gas entrainment without vapor-locking or causing pump cavitation, including DAF sludge, and paper stock.

• Fluids Containing Large and/or Stringy Solids

Discs in the Discflo pump can be spaced as far as 20 inches apart to handle large solids, including effluent, knotter rejects and lime sludge, because solids entering the pump move to the area of highest velocity—the midway point between the discs—and pass through the pump without clogging.

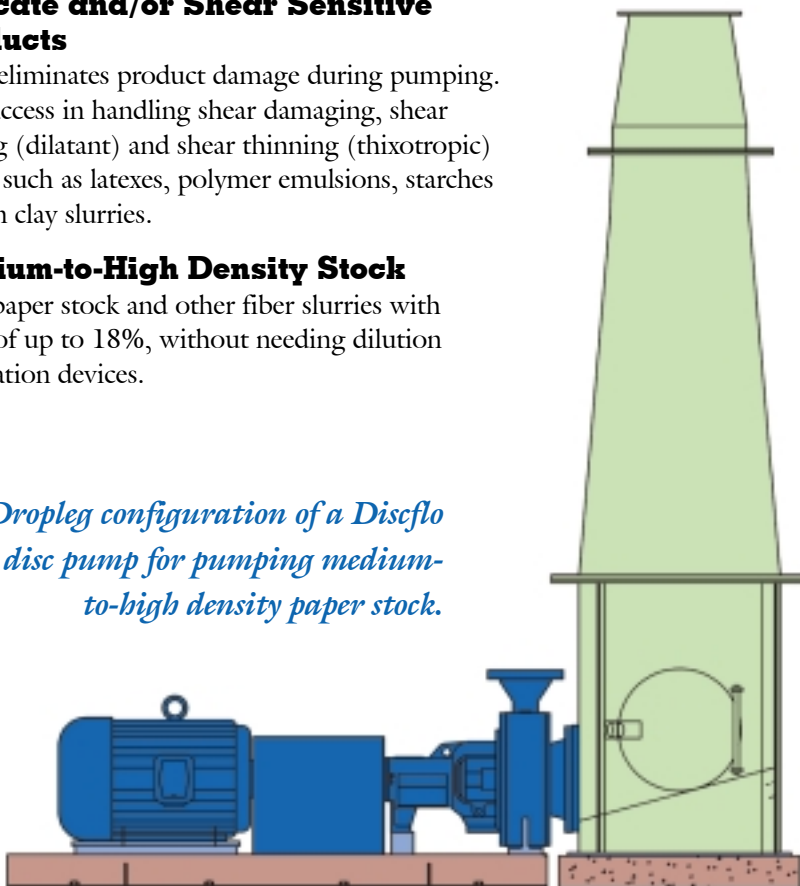
• Delicate and/or Shear Sensitive Products

Virtually eliminates product damage during pumping. Proven success in handling shear damaging, shear thickening (dilatant) and shear thinning (thixotropic) products, such as latexes, polymer emulsions, starches and kaolin clay slurries.

• Medium-to-High Density Stock

Handles paper stock and other fiber slurries with densities of up to 18%, without needing dilution or fluidization devices.

Dropleg configuration of a Discflo disc pump for pumping medium-to-high density paper stock.



PUMP CONFIGURATIONS & OPERATING RANGE

Discflo's disc pumps are an engineered product, configured to meet the user's needs by varying the number, size and spacing of discs in the Discpac. The table below lists the standard pump configurations. Disc pumps are available in direct-coupled, frame-mounted, close-coupled, submersible, vertical sump, dry pit and cantilever models, with Discpac diameters from 8-inch [203mm] to 20-inch [508mm] and containing from two to twenty discs.

Models	Metric Sizes (mm)	Models	Metric Sizes (mm)
2015-8	50 × 40 × 203	603-17	150 × 80 × 432
302-10	80 × 50 × 254	604-17	150 × 100 × 432
402-12	100 × 50 × 305	804-17	200 × 100 × 432
403-12	100 × 80 × 305	806-17	200 × 150 × 432
604-12	150 × 100 × 305	1008-17	250 × 200 × 432
402-14	100 × 50 × 305	603-20	150 × 80 × 508
403-14	100 × 80 × 305	804-20	200 × 100 × 508
604-14	150 × 100 × 305	806-20	200 × 150 × 508
806-14	200 × 100 × 432	1006-20	250 × 150 × 508
403-17	100 × 80 × 432	1208-20	300 × 200 × 508

The operating service range for standard disc pump models:

- **Hydraulic flow capacities:** 2–10,000 GPM [0.5–2250 m³/h]
- **Discharge pressures:** up to 1000 + ft TDH [300+ m]
- **Suction pressures:** low NPSHr
- **Working pressures:** up to 1400 psi [95 atm].
- **Operating temperatures:** to 1000°F [523°C]
- **Viscosities:** up to 300,000 cPs
- **Pump speeds:** up to 3600 rpm
- **Solids size (max):** 10 inches [250 mm]
- **Drivers:** electric, diesel, hydraulic, air
- **Metallurgies:** stainless steel, ductile iron, CD4, hastalloy, maxalloy, carbon steel, titanium, various non-metallic materials

DISC PUMPS...

The Future of Pump Technology

Disc pumps are available both from Discflo Corporation direct and through your local disc pump distributors. For information about your nearest distributor or the use of this innovative pump technology in the pulp and paper industry, contact Discflo Corporation direct at the address below, or visit our web-site www.discflo.com.



Disc pump have been successfully installed in a wide range of industries, including the following:

- Chemical and petrochemical industries
- Oil refining and drilling operations
- Metal, mining and mine de-watering industries
- Municipal wastewater and utility plants
- Food, beverage and agricultural industries
- Pharmaceutical and bio-medical processing

Disc pumps and the Discpac technology are covered by United States and foreign patents.

Find out what Discflo can do for you today!

DISCFL

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