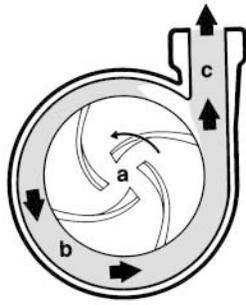


**CENTRIFUGAL**



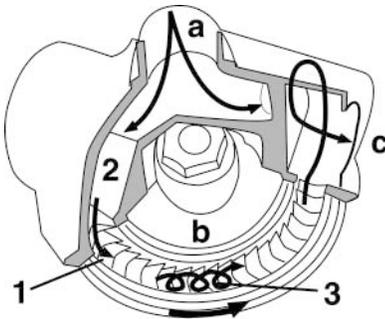
**HOW IT WORKS:**

- a.) Liquid enters the inlet port of the pump through gravity or priming and is directed towards the center of the impeller.
- b.) The rotating impeller uses centrifugal force to add velocity to the liquid as it is slung off the edges of the blades into the volute casing.
- c.) The volute configuration converts the velocity energy into static pressure or available pump head as the liquid leaves the discharge port.

**FEATURES:**

- High Volume Flow:** centrifugal pumps deliver a high volume of flow with smooth, non-pulsating delivery
- Low Maintenance:** wear due to operation is minimal, they are easily disassembled and have few moving parts
- Low Power Consumption:** most efficient pump for moving large volumes of liquid

**TURBINE**



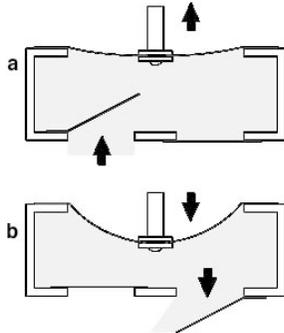
**HOW IT WORKS:**

- a.) As the liquid is removed by the impeller (1) from the inlet raceway (2), additional liquid is drawn in.
- b.) The blades of the impeller (1) capture liquid from the inlet raceway (2) adding energy to the liquid (3) as the liquid is propelled toward the outlet.
- c.) Liquid is forced out through the outlet port as additional liquid is deposited by the impeller.

**FEATURES:**

- High Pressure:** turbine pumps will deliver non-abrasive, low viscosity liquids in applications requiring high pressure and low flow
- Low Maintenance:** with its seal being the only contacting part, little maintenance is required, even in continuous duty applications
- Self-priming Option:** configurations are available that include a liquid chamber that enables self-priming

**DIAPHRAGM**



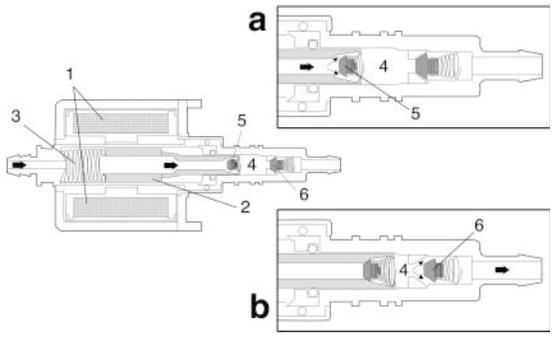
**HOW IT WORKS:**

- a.) As the piston diaphragm is pulled away from the housing, the cavity increases in size. This creates a vacuum that draws in the liquid through the one way inlet valve.
- b.) As the diaphragm is pushed toward the housing, the cavity decreases in size which forces the liquid out through the one way outlet valve.

**FEATURES:**

- Dry Running:** can run dry indefinitely without damage
- Self-priming:** can lift up to 15 feet under ideal conditions
- Self-adjusting:** "air operated" diaphragm pumps automatically adjust their speed as viscosity fluctuates

**OSCILLATING**



**HOW IT WORKS:**

- a.) The AC input power is rectified by a single diode connected to the solenoid coil (1). When the positive half wave of current passes through the diode to energize the coil, an electromagnetic field pulls the piston (2) and compresses the piston spring (3). The piston's movement enlarges the inlet chamber (4) creating a vacuum and drawing liquid in through the inlet valve (5).
- b.) The diode blocks the negative half wave of the input current causing the electromagnetic field to die. The piston spring (3) then pushes the piston (2) toward the inlet chamber (4) forcing the liquid through the outlet valve (6).

**FEATURES:**

- Low Flow:** oscillating pumps deliver low flow at low to high pressures
- Self-priming:** some models can lift up to 22 feet
- Motorless:** this design does not require a rotating motor which reduces cost and required maintenance