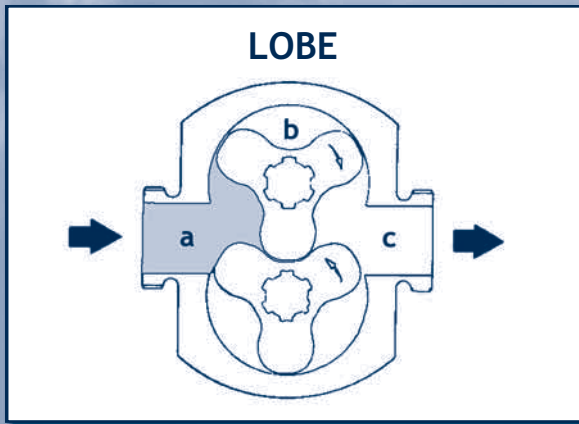


# PUMPING PRINCIPLES



## HOW IT WORKS:

- The motion of the counter rotating rotors create a partial vacuum which draws the liquid smoothly into the pump chamber.
- As the rotors revolve, liquid is captured between the rotor cavities and the outer housing.
- The liquid is forced out the discharge as the rotors mesh and eliminate the cavities the liquid occupies.

## FEATURES:

**Efficient:** Improved efficiency and sterilizability over the traditional lobe pump design. Longer sealing surfaces ensure high volumetric efficiencies with thin liquids.  
**Solids Handling:** gentle low shear solids and abrasive handling  
**Wide Viscosity Range:** from 1 to 1,000,000 centipoise

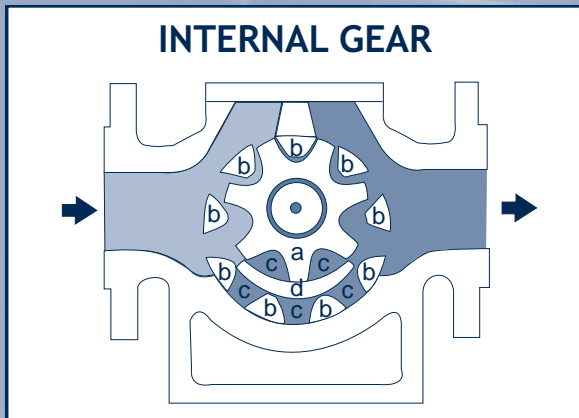


## HOW IT WORKS:

- As the gears separate on the inlet side of the pump, cavities are created between the gear teeth which create a vacuum that draws in the liquid.
- Once the teeth clear the inlet port, the liquid is captured between the gear teeth and the housing.
- As the teeth mesh, the liquid is squeezed out of the cavity and forced out the discharge port.

## FEATURES:

**Metering:** thin to viscous liquids can be dispensed in a smooth repeatable flow  
**High Pressure:** up to 500 psi can be achieved with low to high viscosity liquids  
**Clean Liquids:** close fitting gears require clean non-abrasive liquids

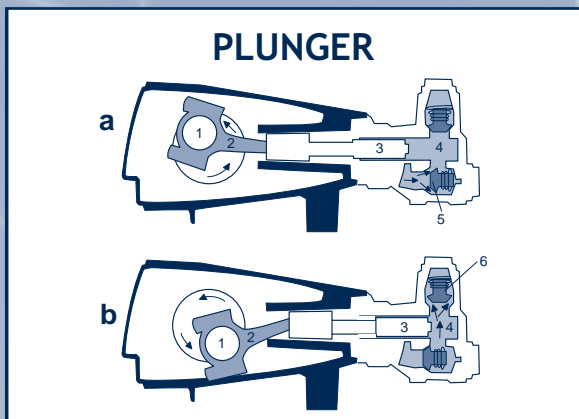


## HOW IT WORKS:

- The inner gear (a) rotates in unison with the outer gear (b) opening gaps between their teeth on the suction side drawing in liquid.
- Liquid is trapped in the gaps (c) between the teeth and the stationary crescent (d) as the gears travel toward the discharge side.
- As the inner (a) and outer (b) gears mesh together liquid is forced out the discharge side.

## FEATURES:

**High Viscosities at Standard Motor Speeds:** internal gear pump models that drive the inner gear are capable of pumping viscosities of up to 10,000 ssu at the standard motor speed of 1800 rpm's  
**High Pressure:** up to 650 psi can be achieved with low to high viscosity liquids  
**Clean Liquids:** close fitting gears require clean non-abrasive liquids



## HOW IT WORKS:

- As the crankshaft (1) rotates, the connecting rod (2) pulls back the plunger (3) from the liquid chamber (4) within the manifold which increases the chamber's size. This creates a vacuum that draws in liquid through the inlet valve (5).
- As the crankshaft's rotation continues, the connecting rod (2) pushes the plunger (3) toward the liquid chamber (4) reducing the chamber's size. This forces the liquid out the discharge valve (6).

## FEATURES:

**High Pressure:** pressures of up to 15,000 psi can be achieved  
**Clean Liquids:** closed fitting components require clean non-abrasive liquids  
**Durable:** ceramic plungers and an oil filled crankcase ensures a long operating life

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