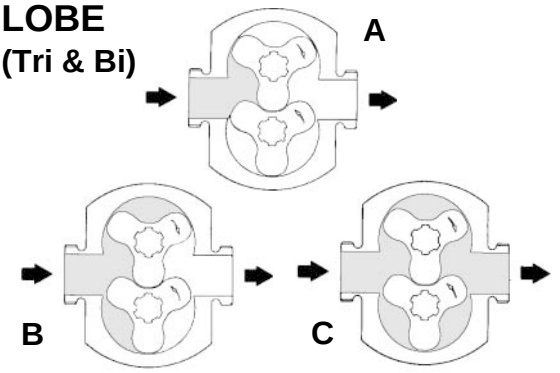
PUMPING PRINCIPLES

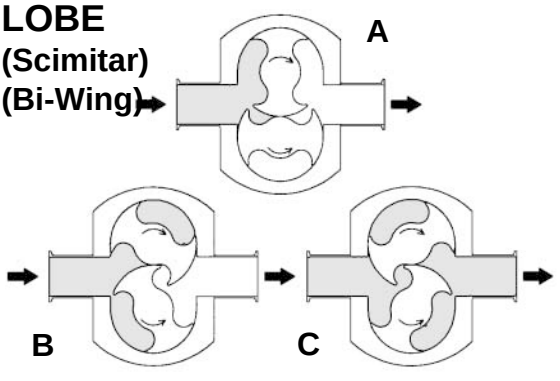
LOBE (Tri & Bi)



HOW IT WORKS:
a.) The motion of the counter rotating lobe elements creates a partial vacuum which draws the liquid smoothly into the pump chamber.
b.) As the lobes revolve, liquid is captured between the lobe cavities and the outer housing.
c.) The liquid is forced out the discharge as the lobes mesh and eliminate the cavities the liquid occupies.

FEATURES:
Versatile: many rotor options are available to enable the handling of most viscosities, temperatures, and solids
Solids Handling: gentle low shear solids and abrasive handling
Wide Viscosity Range: from 1 to 1,000,000 centipoise

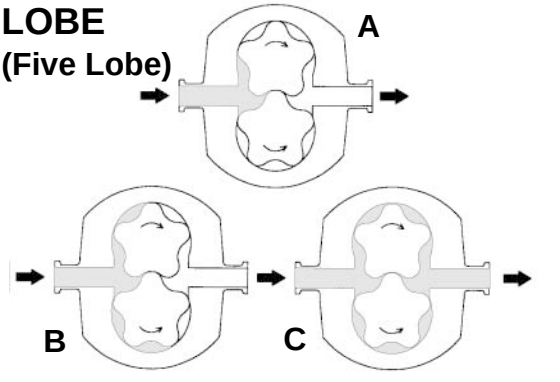
LOBE (Scimitar) (Bi-Wing)



HOW IT WORKS:
a.) The motion of the counter rotating bi-wing rotors create a partial vacuum which draws the liquid smoothly into the pump chamber.
b.) As the rotors revolve, liquid is captured between the rotor cavities and the outer housing.
c.) 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

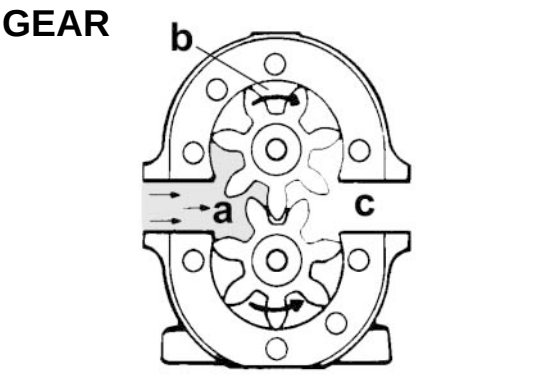
LOBE (Five Lobe)



HOW IT WORKS:
a.) The motions of the counter rotating "five lobe" rotor elements create a partial vacuum which draws the liquid into the pump chamber.
b.) As the rotors revolve, liquid is captured between the rotor cavities and the outer housing.
c.) The liquid is forced out the discharge as the lobes mesh and eliminate the cavities the liquid occupies.

FEATURES:
Bio-pharm Friendly: excellent low shear handling of sensitive cell cultures and broths
Batching: smooth repeatable flow of low to high viscosity liquids
Wide Viscosity Range: from 1 to 1,000,000 centipoise
Lab Top Pump: Low "hold-up" volume and precise flow for pilot projects

GEAR



HOW IT WORKS:
a.) 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.
b.) Once the teeth clear the inlet port the liquid is captured between the gear teeth and the housing.
c.) 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 150 psi can be achieved with low to high viscosity liquids
Clean Liquids: close fitting gears require clean nonabrasive liquids