



Pump Engineer is pleased to be able to bring you sample data from the HI's e-learning program. This issue continues with Module 2.

HI's e-Learning Program
Centrifugal Pumps: Fundamentals, Design and Applications

Course I: Pump basics: applications, types & construction

- Module 1: Typical applications of centrifugal pumps
- **Module 2: Types of pumps**
- Module 3: Centrifugal pump construction

Course II: Pump fundamentals: fluid mechanics, performance and selection

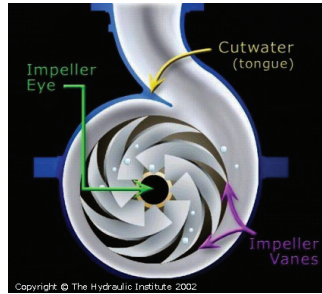
- Module 4: Fundamentals of fluid mechanics
- Module 5: Centrifugal/vertical pump performance characteristics
- Module 6: Pump selection and application

Further details

For further details, please visit www.pumplearning.org to try a free demonstration course of "How To Learn" on-line.

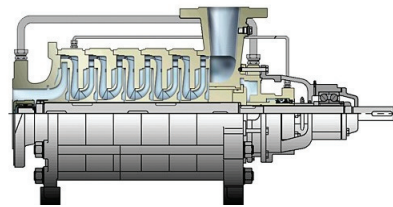
Module 2: Types of Pumps

CENTRIFUGAL PUMPS: DESCRIPTION AND OPERATION



Pumps add energy to the liquid by either of two methods, centrifugal force or positive displacement. Centrifugal pumps use a rotating impeller with multiple vanes as shown here. The liquid enters the impeller axially at the smaller diameter, called the impeller eye, and progresses radially between the vanes until it exits at the outside diameter.

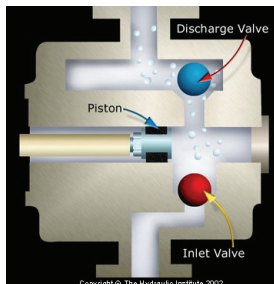
CENTRIFUGAL PUMPS: DESCRIPTION AND OPERATION



The multiple diffuser design is primarily used in multistage pumps since the circular collector is then used to direct the flow to the inlet of the next impeller. This sectional drawing shows a six stage pump where the discharge from each impeller is directed to the eye of the next stage impeller.

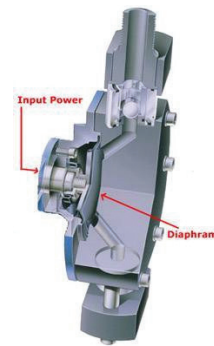
RECIPROCATING PUMPS: DESCRIPTION AND OPERATION

The second type of pump is a reciprocating pump.



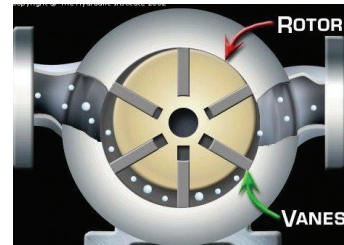
Positive displacement pumps impart energy by applying mechanical force directly to the liquid. One design uses a reciprocating piston to force the liquid out of a closed cylinder.

RECIPROCATING PUMPS: DESCRIPTION AND OPERATION



Diaphragms can be used in place of pistons to impart the pumping energy. Diaphragm pumps have the advantage of allowing zero leakage around the piston.

ROTARY PUMPS: DESCRIPTION AND OPERATION



Positive displacement of liquid can also be accomplished by rotary devices such as a vane type rotary pump. Liquid enters the space between the rotor and stator from the inlet on the right. Vanes in the rotor then apply mechanical force directly to the liquid and force it to move in a confined space as the rotor turns.

ROTARY PUMPS: DESCRIPTION AND OPERATION

Intermeshing screws also provide positive pumping action. Screw pumps can also have a single screw or three screws.

