

Centrifugal Pumps – A Short Practical Guide

1. How Centrifugal Pumps Work

Centrifugal pumps operate by converting rotational energy from a motor into kinetic energy in the fluid. The liquid enters the pump through the suction nozzle and flows into the impeller. As the impeller rotates, it accelerates the liquid outward using centrifugal force. The casing then converts this velocity into pressure, allowing the fluid to be discharged at a higher pressure.

2. Main Types of Centrifugal Pumps

- End Suction Pumps – Common, simple design for water and general industrial use.
- Multistage Pumps – Multiple impellers for high-pressure applications.
- Split Case Pumps – High efficiency and easy maintenance for large flow rates.
- Vertical Centrifugal Pumps – Used where space is limited or for deep sump applications.
- Self-Priming Pumps – Designed to handle air and liquid mixtures.

3. Applications of Centrifugal Pumps

Centrifugal pumps are widely used across industries including water supply, wastewater treatment, HVAC systems, chemical processing, oil and gas, agriculture, food processing, and fire protection systems. They are ideal for handling clean or slightly contaminated liquids at steady flow rates.

4. How to Select the Right Centrifugal Pump

When selecting a centrifugal pump, consider the required flow rate, total dynamic head, fluid properties, operating temperature, efficiency requirements, and installation conditions. Proper sizing ensures reliable performance, energy efficiency, and long service life.

This guide provides a basic overview to help engineers and buyers understand centrifugal pump fundamentals and make informed selection decisions.