

Difference between Machine and Mechanism

The difference between machine and mechanism is that machines transform energy into work, whereas mechanisms do not always do so. Machines and mechanisms are important concepts of the [GATE ME syllabus](#) and are generally referred to as machinery.

Key Differences between Machine and Mechanism

Machine	Mechanism
The machine transmits or alters available energy to perform the necessary work. Simply put, a machine alters mechanical work.	All that a mechanism does is transmit or change motion.
The machine is built on the skeleton of the mechanism, taking into account the strength requirements for the desired use.	A mechanism is a skeleton for any machine that is designed to provide the necessary motion.
The dimensions and shape of the links are critical parameters for providing stiffness and strength to the machine.	When analyzing a kinematic chain as a mechanism, the dimension of the link is not a critical parameter.
Examples include a steam engine, a reciprocating pump, a lathe, and so on.	examples include the slider crank, pump, four-bar chain, and quick return mechanisms.

What is a Machine?

A machine is a mechanical construction that employs power to apply forces and control movement to accomplish a certain task. Machines can be as simple as a lever or pulley or as complicated as computers and sensors that monitor performance and plan movement, referred to as a mechanical system. Machines are frequently motorized and are typically powered by chemical, thermal, or electrical sources.

All machines are mechanisms, but not all mechanisms are machines. A machine serves two purposes: it transmits specific relative motion and force. To transmit forces, these functions require strength and stiffness.

Important Points About Machine

Mechanisms in a machine are typically designed to provide significant forces and transmit significant power. Machines include shaping machines, lather machines, screw jacks, etc. Let us explore some important points regarding machines:

- When a system is employed to change mechanical energy, it is referred to as a machine.
- Because mechanical effort is related to motion, every machine must transmit motion and employ mechanisms.
- A machine may employ one or more mechanisms to achieve the specified purpose.
- Machines are designed to do useful tasks.
- A machine may comprise several mechanisms and other components.

What is a Mechanism?

A mechanism is the heart of a machine. It is the mechanical component of a machine that transfers motion and forces from a power source to an output. Mechanisms are stiff components (links) joined by joints, often known as mechanical linkage or linkage.

Mechanisms are typically made up of moving parts, such as

- Gears and gear trains
- Belt and chain drive
- Cam and followers
- Linkage
- Friction devices such as brakes and clutches
- Frame, fasteners, bearings, springs, and lubricants are examples of structural components.
- Splines, pins, and keys are examples of machine elements.

Important Points about Mechanism

A mechanism is a device that transforms motion into the desired pattern while typically developing very low forces and transmitting very little power. Mechanisms include the oscillating cylinder mechanism and the scotch yoke mechanism. Let us see some important points about the mechanism:

- A mechanism is a machine used to transfer or transform motion without considering the forces involved.
- The mechanism is only concerned with motion transfer.
- A mechanism is a unified system for transferring or transforming motion.
- The mechanism's primary role is to transmit or change motion.
- A mechanism is made up of multiple interconnected linkages.

Similarities between Machine and Mechanism

The similarities between machines and mechanisms are as follows:

- Both are rigid body combinations.
- The relative motion of the rigid bodies is defined.