

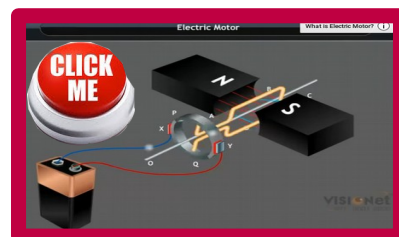
PHYSICS - X-PART-6 CLASS 14



2 Magnetic Effect of Electric Current

Electric Motor

Working principle : *Motor principle*



The parts of an electric motor

- ◆ N,S - Magnetic poles
- ◆ XY - Axis of rotation of the motor
- ◆ ABCD - Armature
- ◆ B 1 , B 2 - Graphite brushes
- ◆ R 1 , R 2 - Split rings

Armature

- ◆ Armature is the metallic coil wound round a soft iron core so that it is free to rotate.
- ◆ It is fixed firmly on the axis XY.
- ◆ In the figure, are the forces acting on sides AB and CD in the same direction?
 - * No
- ◆ Find out on the basis of Fleming's Left Hand Rule and write it down.
 - * AB moves forward and CD moves backwards.

◆ **What are the effects on the armature produced by forces thus developed?**

* Force produced are in the opposite direction. They are experienced on the different positions of same object. So it rotates.

Split ring Commutator

- ◆ If the rotation of the armature is to be sustained the direction of current through the armature should continuously keep on changing.
- ◆ The split rings help to change the direction of current through the coil after every half rotation.
- ◆ It is also called split ring commutator.

* **What is the energy change in Electric Motor?**

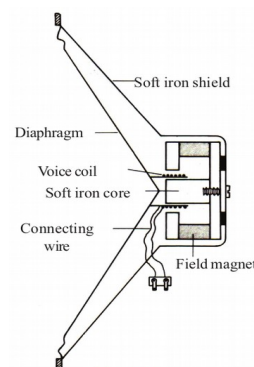
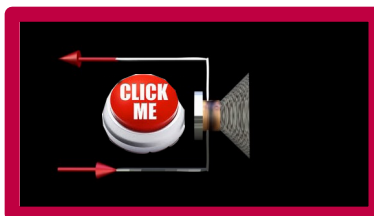
Electrical energy → Mechanical energy

Moving coil loud speaker

Working principle : Motor principle

The parts of a Moving coil loud speaker

- ◆ Voice coil
- ◆ Field magnet
- ◆ Diaphragm
- ◆ Soft iron core
- ◆ Connecting wire
- ◆ Soft iron shield



* **Where is the voice coil situated?**

- In the magnetic field

* **To which part is the diaphragm connected?**

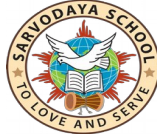
- It is connected with the voice coil.

* **From where does the electric current reach the voice coil?**

- Current reaches from the amplifier.

* **What happens when current is passed through the voice coil?**

- It vibrates.



Working of a Moving coil loud speaker

Strengthened electrical pulses reaches from the amplifier.



Sent through the voice coil of a loudspeaker.



The voice coil, moves to and fro rapidly, in accordance with the electrical pulses



These movements make the diaphragm vibrate,



Thereby reproducing sound.

*** What is the energy change in Moving coil loud speaker?**

Electrical energy —▶ Mechanical energy
