

SOUND TRANSDUCER

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- A microphone is a transducer which converts sound pressure variations into electrical variations.
- While we are talking, our vocal code is vibrating. That vibration of vocal code creates a pressure variations (or vibrations) in the air nearby mouth.
- When a microphone is placed near to mouth, the diaphragm of the microphone is vibrating in accordance with the vibration (or pressure variation) of the air.
- The associated circuitry in the microphone converts the vibration of the diaphragm into corresponding electrical signals. Such electrical signals are known as audio signals.

Characteristics of Microphone

Sensitivity

Signal to Noise Ratio

Frequency response

Distortion

Directivity

Output impedance

Sensitivity: It is defined as output in milli volts for the sound pressure of 1 micro-bar at 1000Hz.

Signal to Noise Ratio: it is the ratio of output voltage of the microphone in the presence of sound to the output voltage in the absence of sound.

Frequency of Operation: The range of frequency that a microphone produces its maximum output is known as frequency of operation.

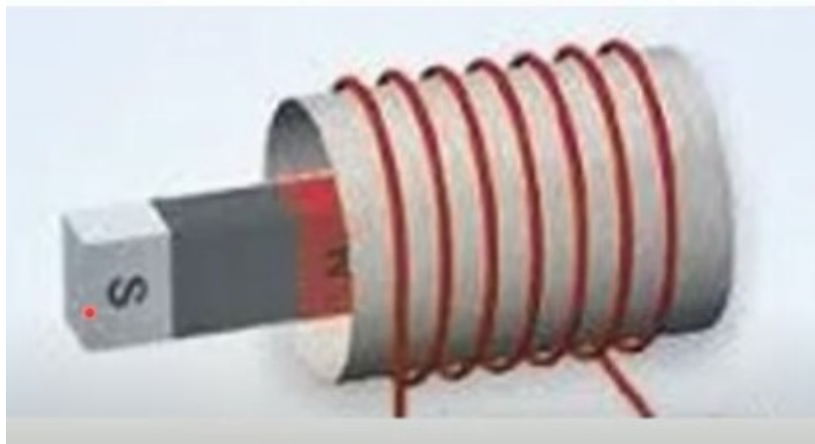
Distortion: A distortion is a change, variation, or exaggeration that a microphone produces its output than the real one.

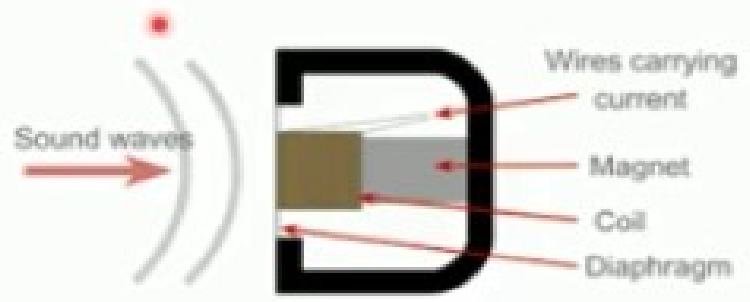
Directivity: Directivity indicates the maximum response direction of a microphone.

Output impedance: It is the impedance (Resistance) in between the two output terminals of the microphone.

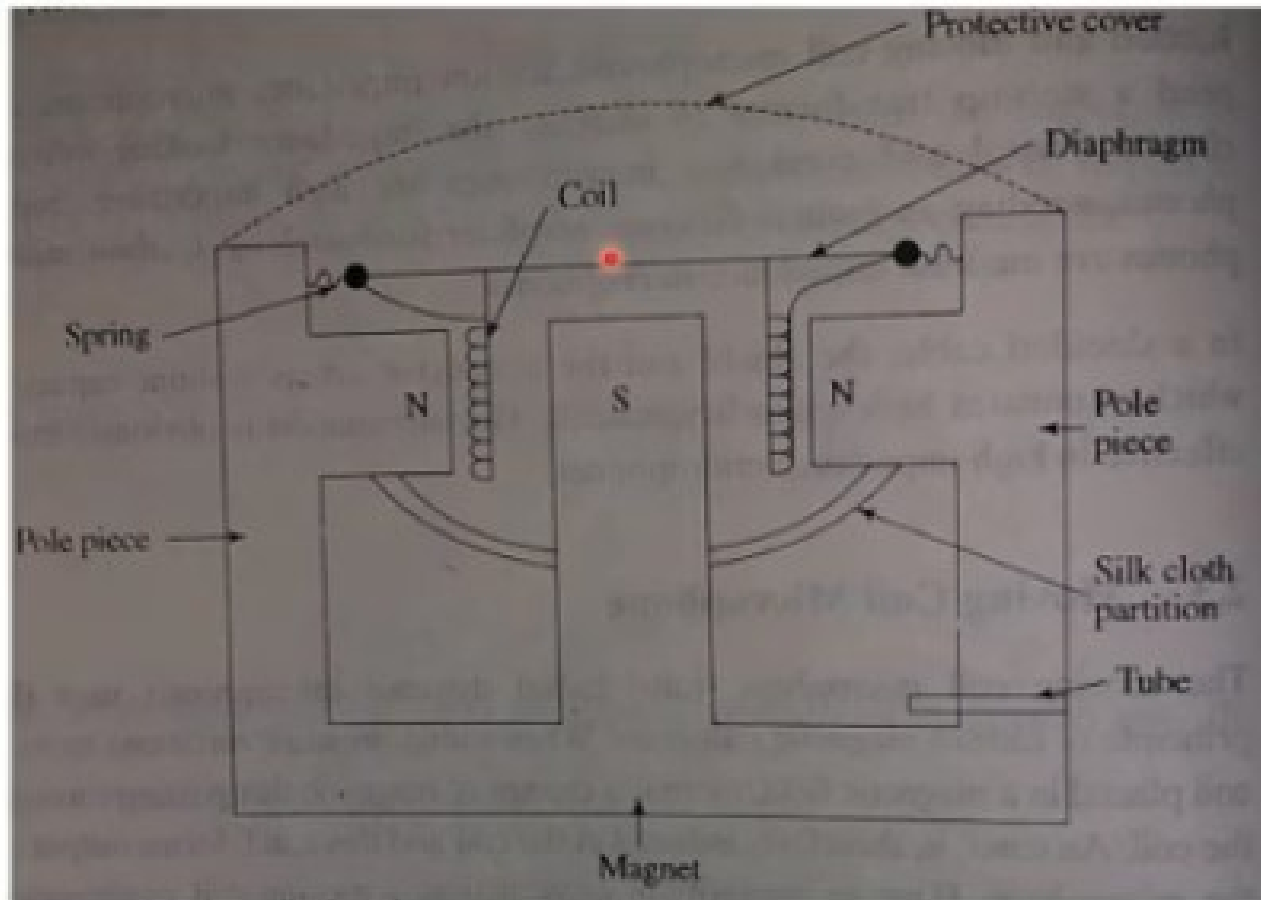
Moving Coil Microphone

- It uses electromagnetic induction principle.
- Electromagnetic induction states that an electrical voltage is induced in a coil when the flux link with it changes with time.





Construction



The main components of the moving coil microphone are magnet, diaphragm and coil. The magnet is a permanent magnet of POT type. The diaphragm is made up of non magnetic materials and light in weight. It is fixed to the body of the magnet with the help of springs. The springs allow the magnet to vibrate when the sound waves strike on it.

A coil is wound on a cylinder shape cardboard and is attached to the diaphragm. A protective cover is used to save the diaphragm and coil assembly to protect it from physical damage. A silk cloth is used to partition the chamber (inside area of microphone). There is a small tube (hole) to give access to the free atmosphere.

Features

- Robust
- Does not require external power supply.
- Low cost.

Application

- It is suitable for public addressing system and Broadcast studios.

Characteristics of Moving Coil Microphone

Sensitivity: 30 micro volt.

Signal to Noise Ratio: 30 dB.

Frequency Response: 60 HZ to 8000HZ.

Distortion: less than 5%.

Directivity: Omni directional.

Output Impedance: 25 ohms.