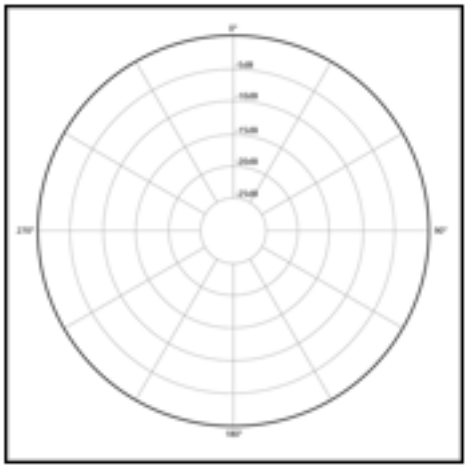
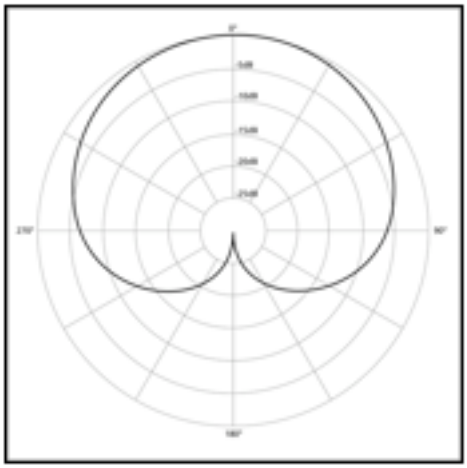
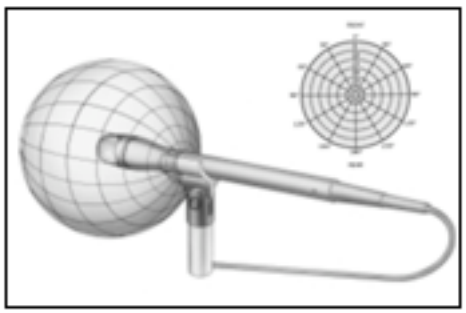
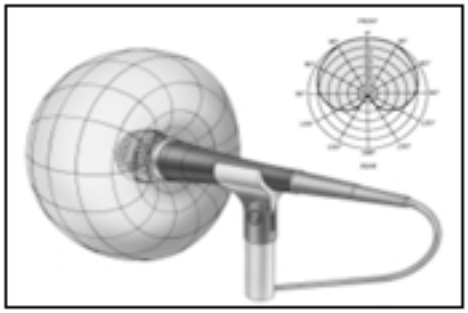
Microphones

Think of your microphone as a flashlight. Some microphones have a very directional field (like a spotlight) and some pick up sound from all around them (like a floodlight)

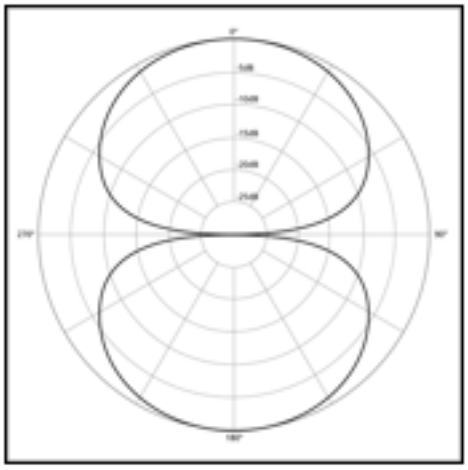


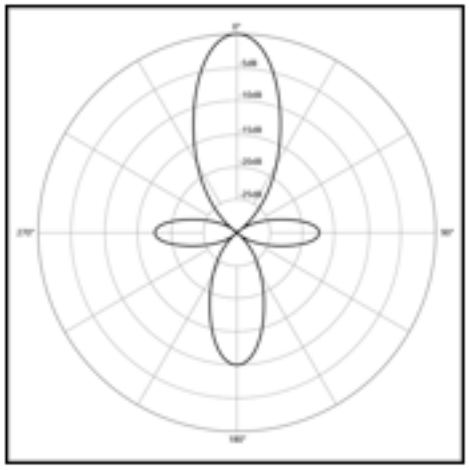






omni-directional cardioid





bi-directional shotgun

Pattern images by user Galak76, WikiCommons
Pattern images with microphone by Tóth Péter, WikiCommons

Condenser Microphones

- The condenser microphone has a diaphragm that acts as one plate of a capacitor, and the vibrations produce changes in the distance between the plates.

- An example of a condenser microphone is the U87 which is often found in production studios as a vocal or instrument microphone.

- Condenser microphones have to be powered. Sometimes they have a separate power supply and other times your recorder or mixer sends a DC voltage into the microphone called Phantom Power +48V, which flows along the same cable as the sound.

- If you're not getting any signal from your condenser microphone check that you have got the Phantom Power turned on.

Image of U87 by flickr user Tanki, WikiCommons

Dynamic Microphones

- Dynamic microphones use the same principle as a loudspeaker, only reversed. Sound waves move the microphone diaphragm. When the diaphragm vibrates, the coil moves in the magnetic field producing a varying current in the coil through electromagnetic induction.

- An example of a dynamic microphone is the SM58 which is often used for close vocal work live-on-stage.

Image of SM58 by Iain Fergusson, WikiCommons

Image of reporter by user Saeima, WikiCommons (possibly dynamic, cardioid)

Image of press conference by Sebastian Zwez, WikiCommons (possibly dynamic, cardioid and shotgun)

Image of presenters by Rico Shen, WikiCommons (dynamic, cardioid)

Image of presenters by RTL4, WikiCommons
(dynamic, lapel, omni-directional)

Image of radio presenter by Infrogmation of New Orleans, WikiCommons (possibly condenser, cardioid)

Image of studio performer by user Onyofan, WikiCommons (condenser, cardioid)

Distance

- In an interview situation try placing the microphone at upper chest level pointing on a 45degree angle towards the interviewee. If the microphone is too close the interviewee may feel threatened. You may also find that you get popping or start hearing the proximity affect.

- For voice recording (scripts etc):

    - Condenser microphones: you mouth should be at least a hand-span away from the microphone, aiming at the mouth. You could try positioning the microphone off to the side so you don't get popping.

    - Also note that when you get close to a microphone there is a bass increase. This is called the proximity affect. Many microphones have internal equalisation to help minimize this.

    - Dynamic microphones: start by having your mouth about a hand-span away from the microphone. For some microphones – like the SM58 - you may need to get closer to achieve a more rounded sound.

For more information:
http://en.wikipedia.org/wiki/Microphone