

- Types of Microphones

Dynamic – These microphones do not need a power supply but pick up sound using a diaphragm, a coil and a magnet. The diaphragm is attached to the coil. When the diaphragm vibrates in response to incoming sound waves, the coil moves backwards and forwards past the magnet. This creates a current in the coil, which is channeled from the microphone along wires and into the camera or tape recorder. These are usually sturdy, hand-held mics that can be used to record live music and voices. They have a cardioid (heart-shaped) pick-up pattern.

Condenser – These mics require a power supply, either using batteries or getting power from the camera. A “condenser” is a capacitor that stores electricity; in this type of mic, there are two condensers, one of which acts as a diaphragm that vibrates when struck by sound waves, changing the distance between the two plates. Specifically, when the plates are closer together, capacitance (the storage of electricity) increases and a charged current occurs. When the plates are further apart, capacitance decreases and a discharge current occurs, i.e. the sound is picked up and sent to the recorder/camera.

- Microphone Pick-up Patterns

Omni-directional – The mic picks up sound from a 360° radius, i.e. from everywhere.

Cardioid – The mic picks up more sound from the front than the sides, and it picks up the least amount from the back. The pattern is heart-shaped.

Uni-directional/Super-cardioid – Most of the sound that the mic picks up is directly in front of the mic, where the mic is pointed. The sounds that are at the sides or in back of the mic are greatly reduced.

- Audio Connectors and Cables

Phono, or 1/4", connector – this is also called a Standard connector and is the basic audio connector

Stereo and Mono 1/8" mini connector, like the Phono/Standard, but half the diameter

RCA connector – RCA's are used extensively in home stereo systems, consumer video equipment and VCR's/DVD players. The RCA cable can carry either audio or video.

3-pin XLR, or Canon connector – 3-pin XLR connectors are grounded audio connectors that balance the audio signal. Using a balanced signal reduces the risk of inference from radio waves or electrical signals from crossing wires, nearby appliances etc.

- Microphones and Mic Accessories

Lavalier – very small condenser mic, usually omni-directional, made to be worn by the speaker

Shotgun – an extremely uni-directional mic, also called super- or hyper-cardioid mic that has a very narrow pickup range, picking up sounds almost exclusively from in front of the mic. Shotgun mics are good for recording speaking voices.

Mini-shotgun – a shorter uni-directional mic that has the same pickup pattern as a longer shotgun mic, but has a slightly shorter pickup range.

Wireless – usually a lavalier mic that is worn by the speaker and has a transmitter attached. The receiver is attached to the camera or recorder, or to the belt of the sound recordist. The signal will be strongest from transmitter to receiver if it is traveling in a straight line, i.e. not around corners or through walls.

Hand-held/dynamic – a mic that is a good basic mic for recording voice

Windscreen – a “sock” made of various materials that is placed directly over the mic to reduce noise made by wind hitting the surface of the mic

Boom pole – the mic is mounted onto the boom pole, which is then carried by the sound recordist. Gives the scene, director, and person being recorded a greater degree of mobility.

Mic stand – if your subject is going to be relatively stationary, it’s best to mount the mic on a stand and place it within reasonable recording distance from the subject/scene. A reasonable distance would mean placing the mic as close to the subject as possible without getting it into the frame of the shot.

Shockmount – a mount for the mic that attaches to a boom pole or mic stand and that suspends the microphone so that there is no noise from hand movement

- Recording Conditions

Always have the mic as close to the source of the sound as possible without getting it into the shot.

Headphones - Wear headphones when recording. Headphones are the only way to know the quality of the sound being recorded. Ear buds will not work for serious sound recording because they allow too much ambient sound to enter your ear. Wear over-the-ear headphones instead.

If you are recording a voice-over and do not have access to a recording studio (and don’t need the video part of your recording), you can cut out a lot of unwanted ambient sound by recording in a clothes closet. The clothing is an effective sound buffer and closets are usually not connected to the outer walls of the building, further reducing ambient sound from traffic and people.

Electric interference/hum – All electrical circuitry adds a little more noise to your signal, so the less circuitry there is between source and destination, the better. Keep cables clear of one another – do not overlap mic cables with lighting cables, TV or other appliance cables etc. And use the shortest cables allowable for your recording situation. Noise generally includes hum as well as hiss. So if your system is plagued by hums and buzzes, there's a strong possibility they might be caused by ground loops. Use balanced connections where possible – XLR rather than phono or mini's.

If you hear electrical interference or hum through the headphones, check that all your audio connections are tight and that none of your audio cables are crossing other cables or any wires carrying an electrical signal. Unwanted hum and interference can and will be recorded onto your soundtrack, so it is best to eliminate it before you begin recording. Hum, hissing, and other interference can be reduced in post-production, but not extensively.

Phantom power – some condenser mics are not battery powered, but get their power from the camera or recording deck. Usually there is a switch on the camera/deck to turn on the phantom power.

Wind conditions – It is necessary to use a windscreen, or muff, if you are recording outdoors in windy conditions. If you have no windscreen, use a thick sock instead.

Boom pole – If your sound recordist is using a boom pole, it will be necessary to have someone to wrangle the cables, making sure that no one trips over the cables.

Room tone – Always record at least 60 seconds of room tone, without additional sounds and without any conversation. Use the room tone during the editing process to fill in any moments of footage that have no sound. You can also use room tone to mix with voice-over that is recorded later, or to mix with any over-dubbing. Record room tone for both indoor and outdoor locations.