

Microphones

- Transducers
- Converts one form of energy into another
- Converts acoustic energy (waves) into mechanical energy (diaphragm),
- Converts mechanical energy into electrical energy.
- Could a mike be used as a speaker?

Three Rules of Mic Choice and Placement

- #1 There are no rules, only guidelines
- #2 The overall sound of an audio signal is no better than the weakest link in the signal path
- #3 (Music) Good musician + good instrument + good acoustics + good mike + good placement = good sound
- #4 (Film/Video) Good voice + good acoustics + good mike + good placement = good sound
- What is a good “mike?”

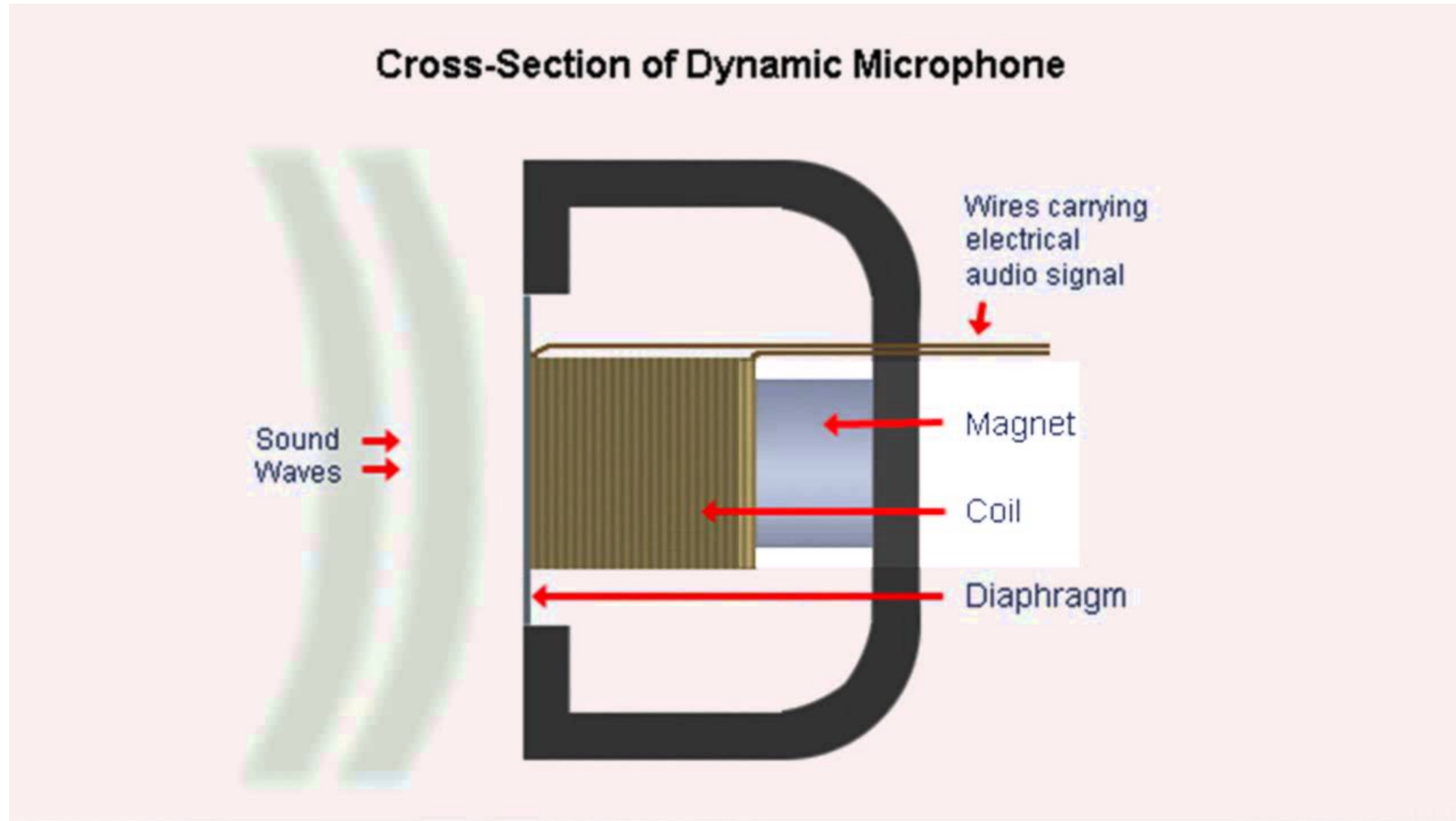
Three Main Types of Microphones Design

- Dynamic
- Ribbon
- Condenser

Dynamic Microphones

- Also call “moving coil” mikes
- Very rugged
- ...both sonically and physically
- Do not need a power supply

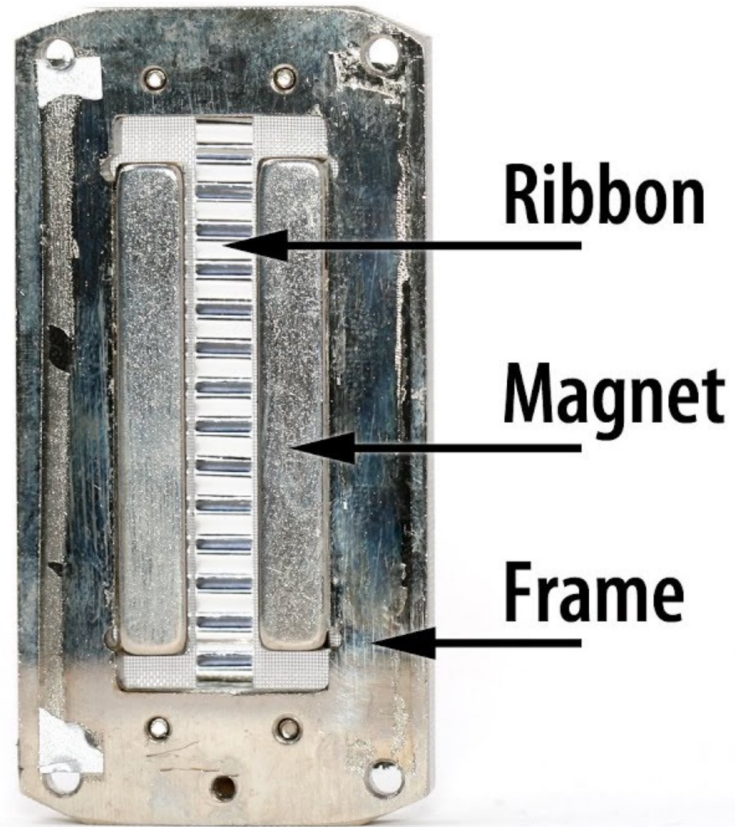
How Dynamic Mikes Work



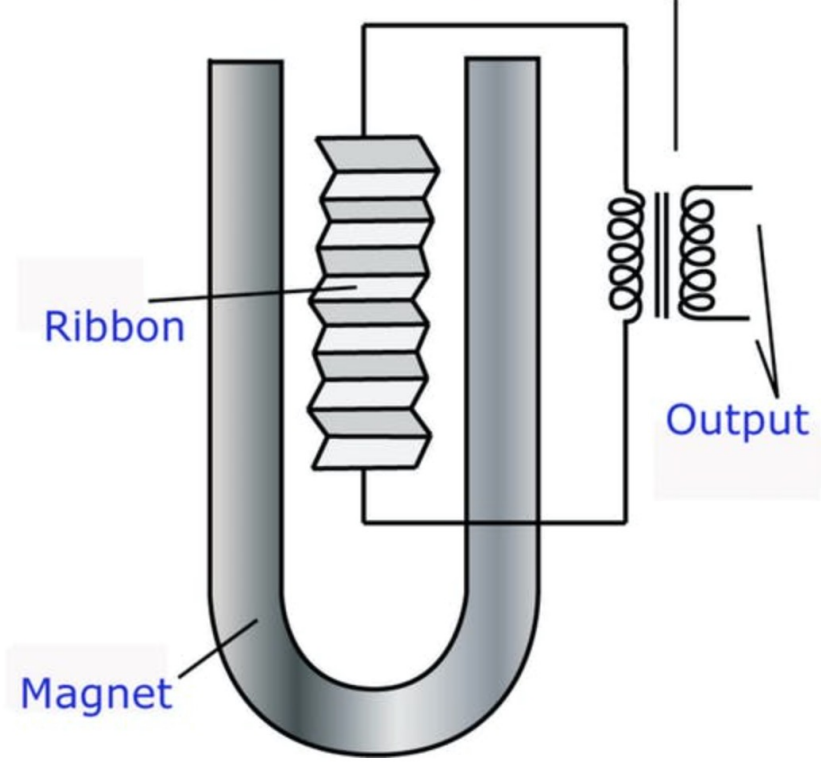
Ribbon Microphones

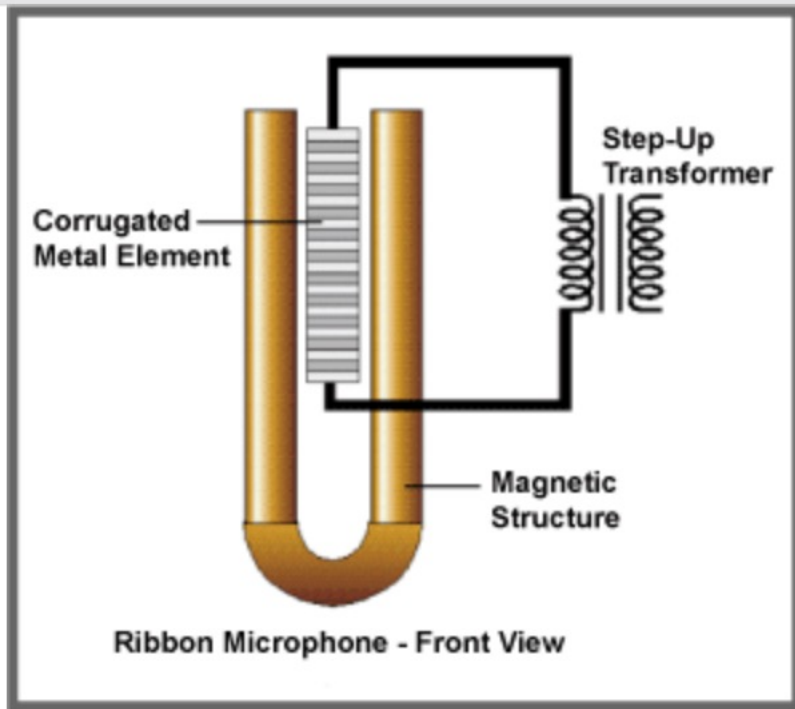
- Very high performance for the human voice (“smooth” sound)
- Older models need a “step-up” transformer
- Very fragile sonically and physically
- Very susceptible to wind noise so are rarely used outside of a controlled studio environment
- Some models need external power supplies, some don't

How Ribbon Mikes Work

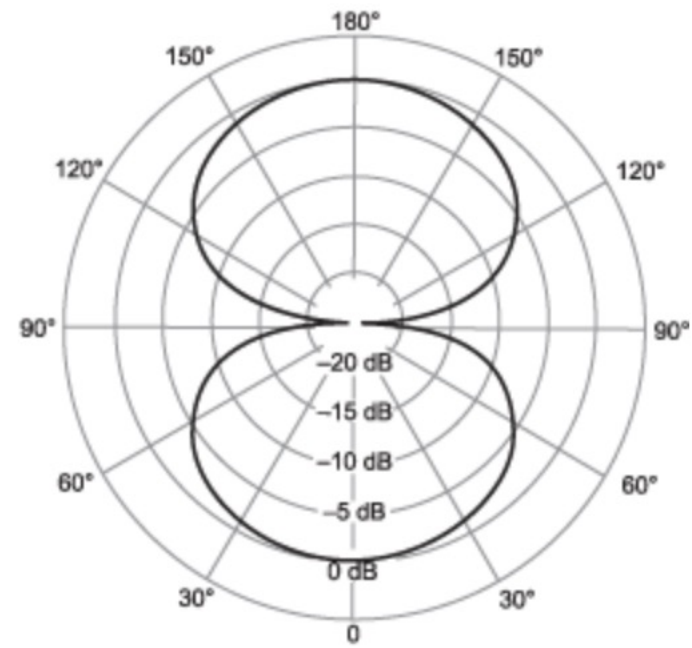


RIBBON MICROPHONE Transformer





How a ribbon microphone works



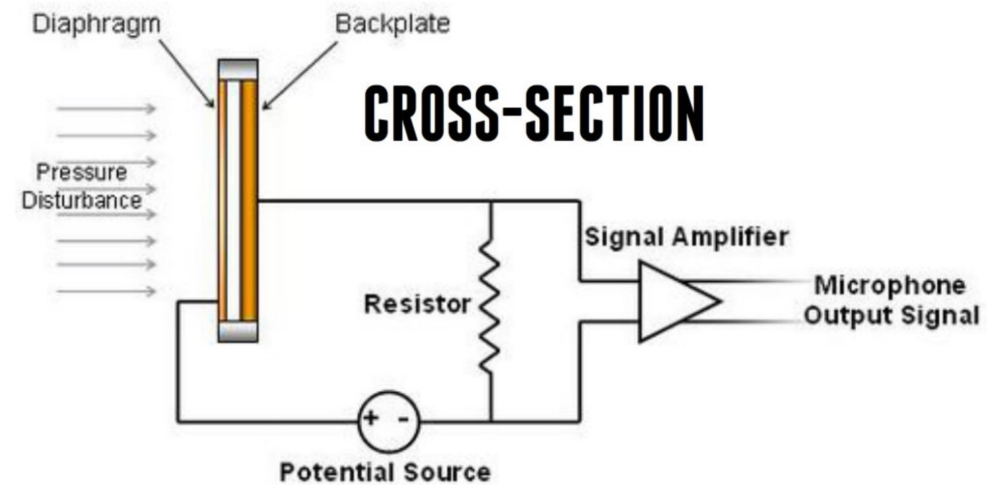
Bi-directional polar or pickup pattern

Condenser Microphones

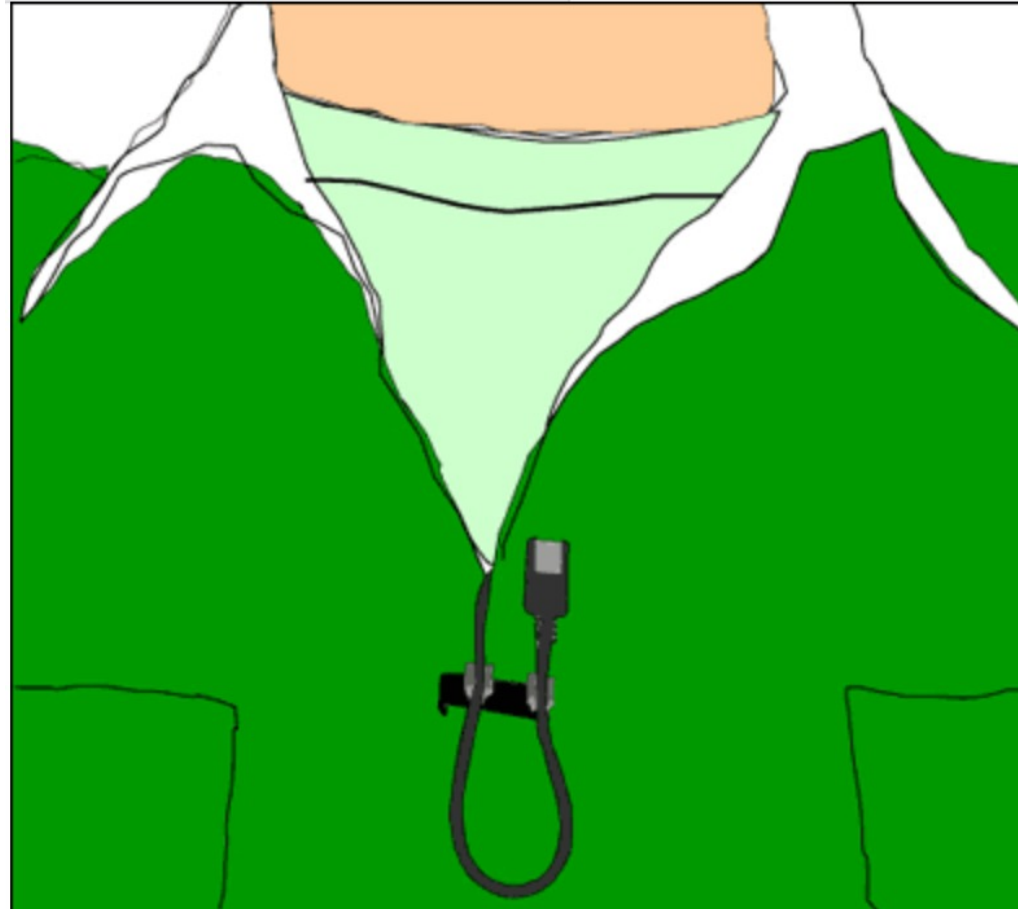
- Sonically very clean
- Not as rugged as a dynamic, but more so than a ribbon mike
- Needs a power supply
- Sometime called a capacitor mike

How a Condenser Mike Works

CONDENSER MICROPHONE



Lav Placement



Lav Placement



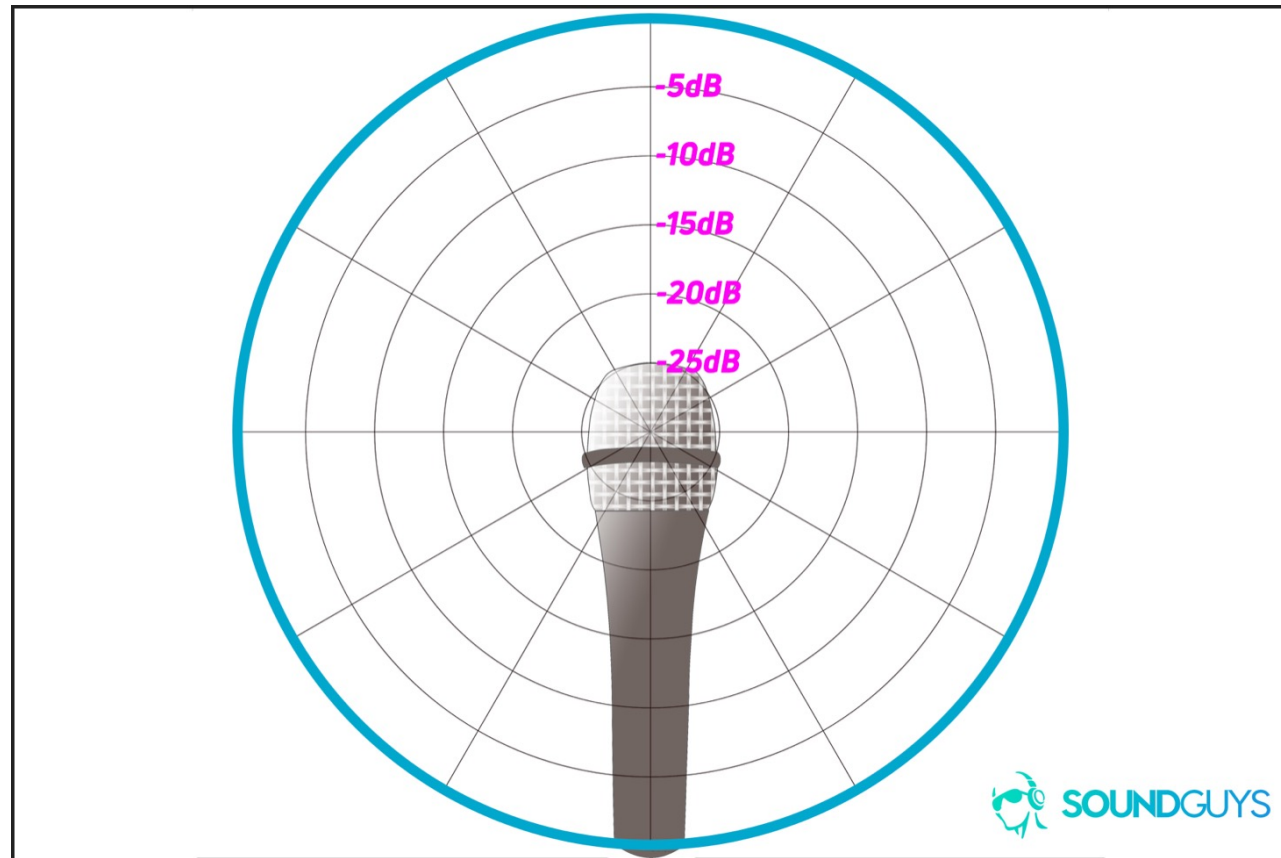
West Side Story (2021)

- An array of lavs. For each actor.
- Studio boom mike as reference.
- “Ambience” mikes.
- Rita Moreno singing in Doc’s store:
- Back of store = wireless (lav) and ambient mike mixed.
- Comes forward = ambient mike mixes under and wireless up.
- Even closer = both ambient & wireless down completely and picked up by boom mike through rest of shot

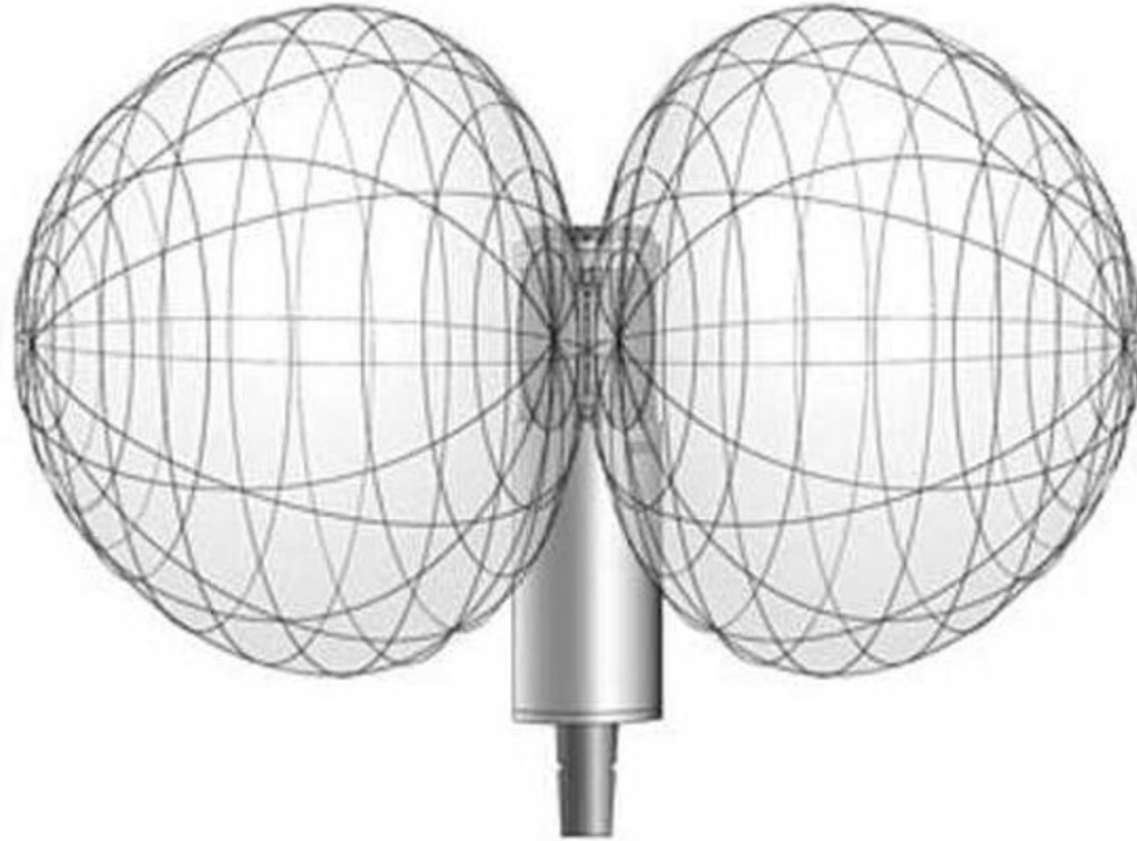
Lav Mounting Solutions

- Pdf at *professorbuss-csus.yolasite.com*

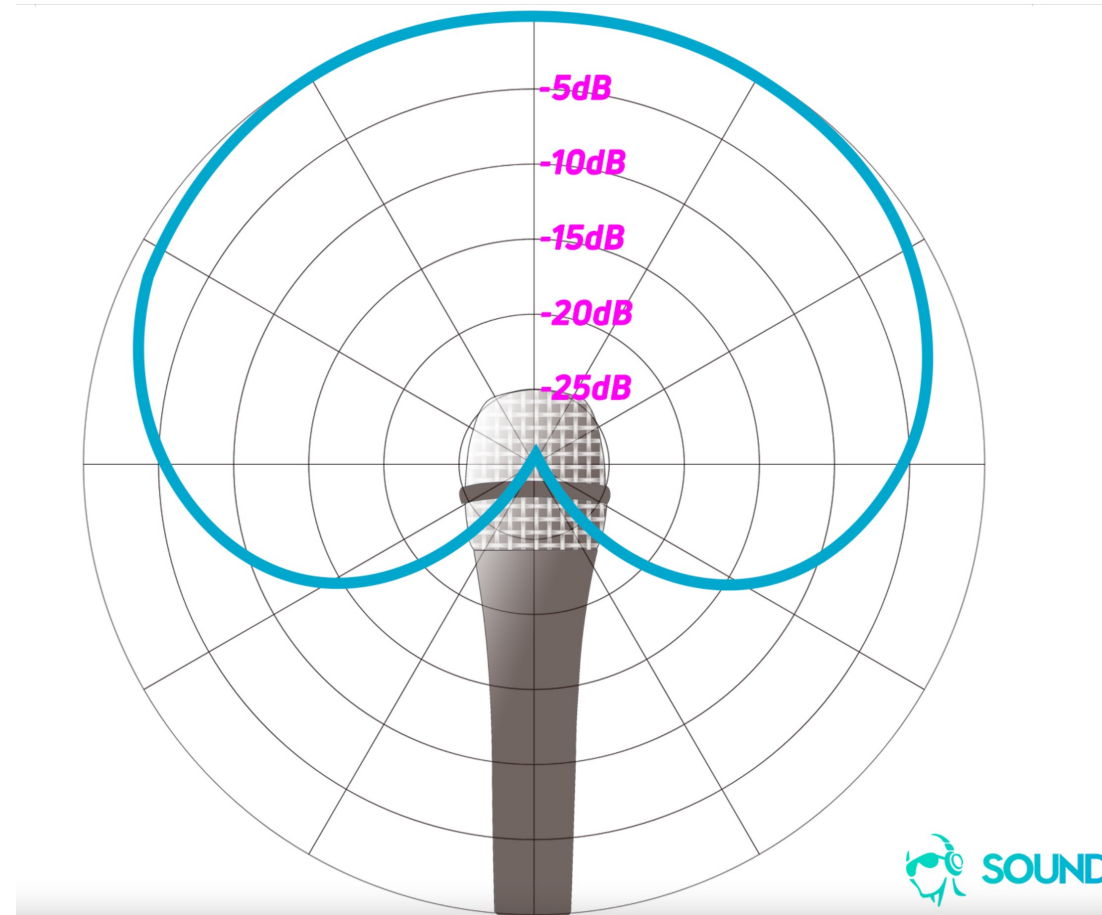
Pick-Up Patterns – Omni-directional



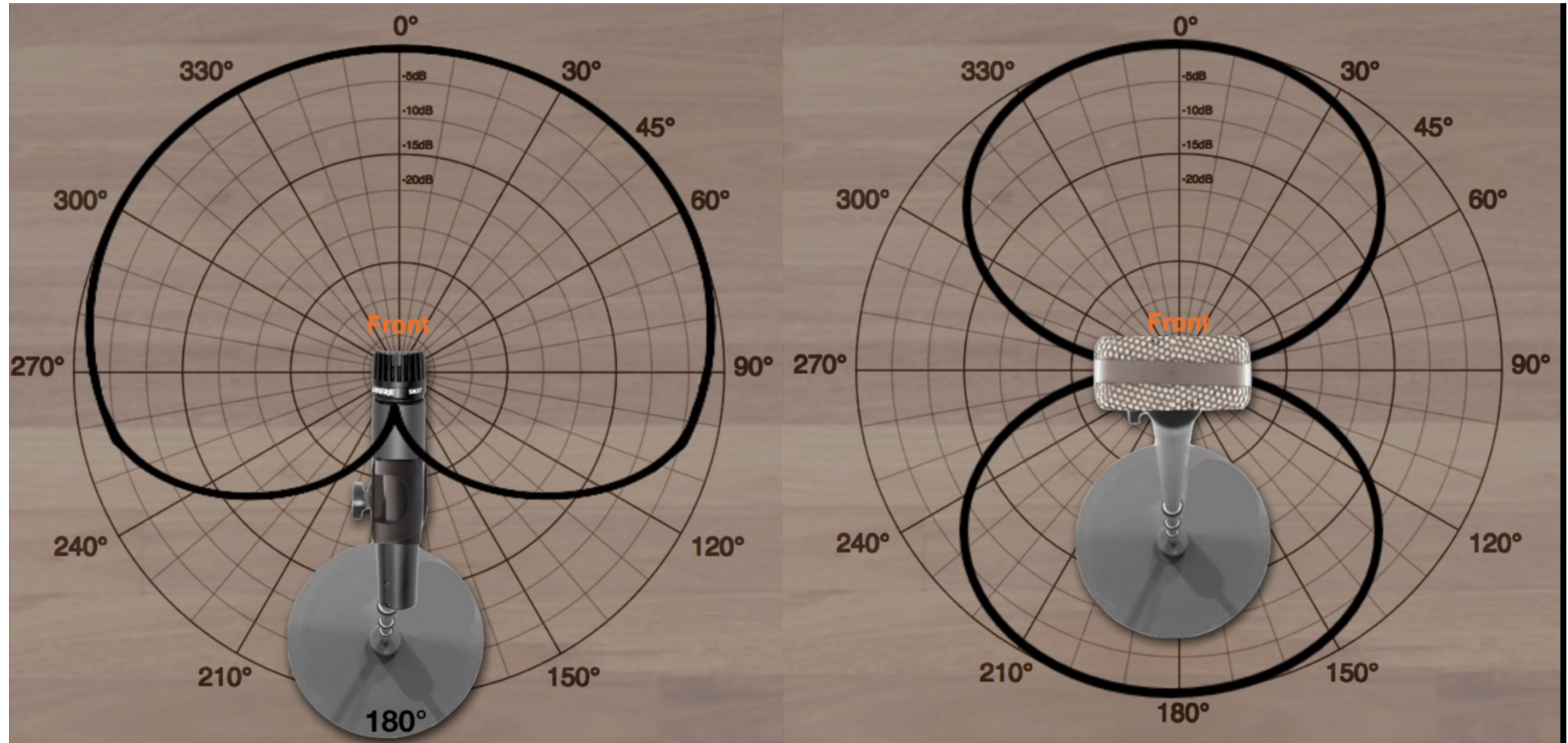
Pick-Up Patterns – Bi-directional



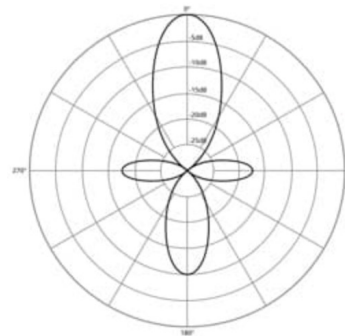
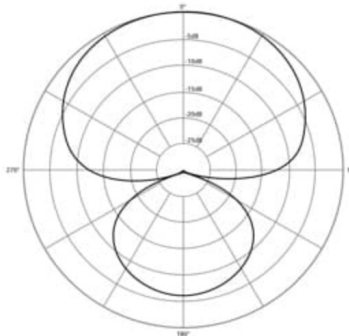
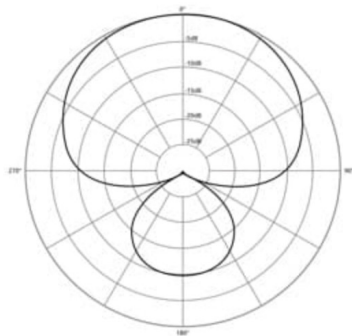
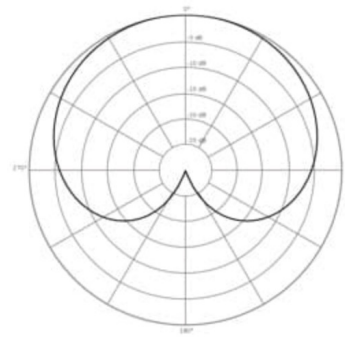
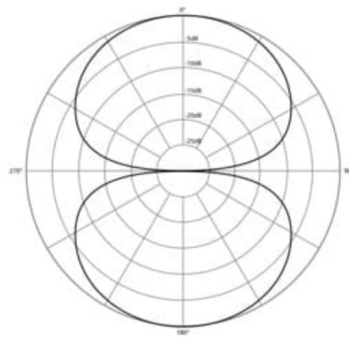
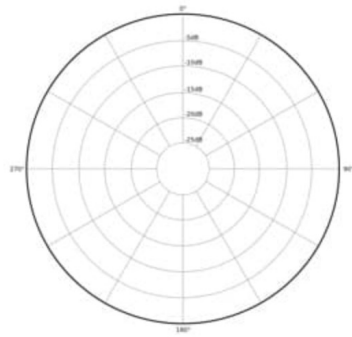
Pick-Up Patterns – Cardioid



Cardioid and Bi-directional



Pick-Up Patterns – Beyond Cardioid



Super-Cardioid

Hyper-Cardioid

Shotgun

Controls on Some Microphones

- An “on” & “off” switch
- EQ setting, including bass-roll-off to help with the *proximity effect*.
- Most very directional mikes are designed to be used a distance from the sound source.
- A good example of such a mike is a shotgun mike.
- If such a mike is used very close to the sound source there is a build up of bass.
- The above is called the *proximity effect*.

Fishpole



Microphone Placement for Filming

- The correct microphone
- As close to your actors as possible, but not in the shot
- Rehearse any camera/mike moves in all directions, including any zooms
- Never call “cut” no matter how poor the audio is
- Right after the take be sure to tell the director if there are any audio problems and on what particular actor on which lines of dialogue
- Always get “room tone” before leaving a location
- Always get “pick-up” lines and/or effects before leaving a location