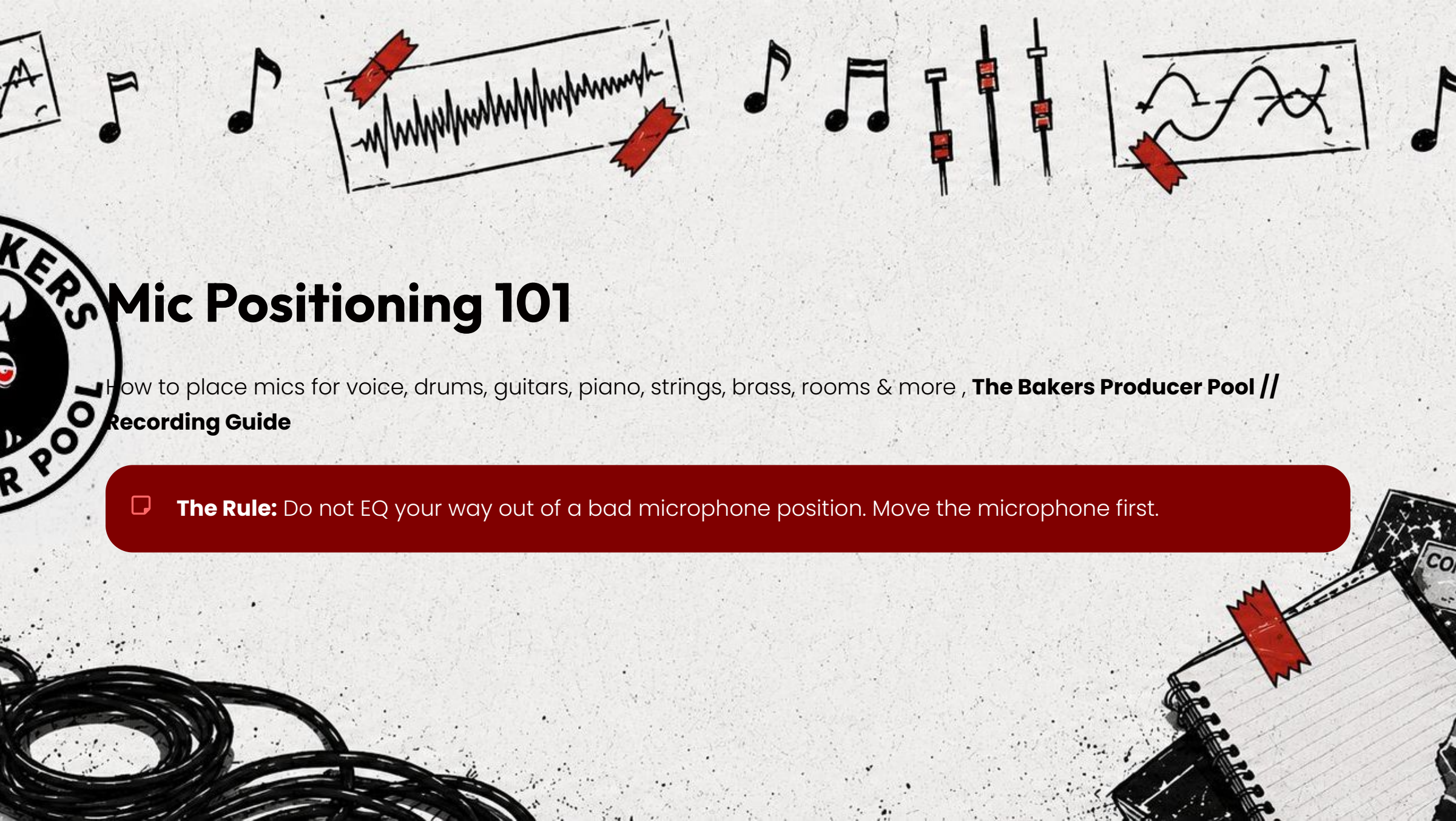




22. MIC POSITIONING 101



Mic Positioning 101

How to place mics for voice, drums, guitars, piano, strings, brass, rooms & more , **The Bakers Producer Pool //**
Recording Guide

❏ **The Rule:** Do not EQ your way out of a bad microphone position. Move the microphone first.

Part 1: What Mic Positioning Actually Changes

A microphone does not hear a source the way your ears do. The physical relationship between capsule and instrument is a set of decisions that affect tone, room, bleed, and phase simultaneously, all before you reach for a single plugin. Understanding what positioning actually controls lets you make deliberate choices instead of hoping EQ will bail you out later.

Tone

Center vs. edge, front vs. side, distance, and angle all change the balance of lows, mids, highs, attack, body, and air. The EQ is already baked in before you press record.

Room

Close mics hear more direct sound. Distant mics hear more reflections and the actual space around the instrument. The room is always in the recording, the question is how much.

Bleed

Pattern and angle decide how much of the rest of the room, drum kit, band, or monitor enters the recording. Good positioning uses rejection as a tool.

Phase

Two mics hearing the same event at different times can reinforce or cancel frequencies when combined. Timing is tone when you go multi-mic.

The first EQ is the distance. The second EQ is the angle. The third EQ is where you point the microphone.

Closer

More direct sound, more detail, stronger transient, less room. Directional mics may gain extra low end from proximity effect. Very close positions can exaggerate one tiny part of a large instrument.

Farther

More complete instrument, more room, smoother transients, more natural interaction between components. The room must sound good enough to deserve being recorded.

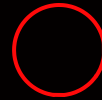
Part 2: Know the Main Microphone Types

The best mic is the one that survives the source and gives you the tone you need. Every type has a physics-driven character that shapes how you should position it. Knowing what each mic is built to do helps you choose position with intention rather than defaulting to whatever is closest on the shelf.



Dynamic

Rugged, high SPL capable, often less sensitive to room detail. Great for drums, guitar cabs, stage vocals, brass, and aggressive sources.



Large-Diaphragm Condenser

Sensitive, detailed, full. Common for vocals, room mics, acoustic guitar, piano, and many studio instruments.



Small-Diaphragm Condenser

Fast transient response and consistent off-axis pickup. Excellent for acoustic guitar, overheads, piano, strings, cymbals, and stereo pairs.



Ribbon

Smooth top end and natural transient character. Great on amps, brass, strings, rooms, and overheads. Protect the ribbon from strong air blasts.



Shotgun

Highly directional interference-tube design. Useful outdoors, dialogue, film, effects, and distant pickup. Indoors, reflections can make some shotguns sound strange.



Boundary / PZM

Sits directly on a surface, reducing certain reflection problems. Useful on room boundaries, conference tables, inside piano lids, theater, and unusual drum placement.



Phantom Power Note: Condenser mics often need 48V. Many modern balanced ribbons tolerate phantom power, but some vintage, passive, damaged, or incorrectly wired ribbon setups can be at risk. Check the manufacturer's instructions before switching phantom power on.

Part 3: Polar Patterns , What Direction Does the Mic Hear?

Position the rejection of the microphone as carefully as the front. Every polar pattern is a description of where the mic is deaf as much as where it listens. Treating the null and rejection zones as active positioning tools , not just byproducts , is what separates thoughtful mic placement from guesswork.



Cardioid

Front focused, rear rejection. Great general-purpose pattern. Use the rear to reject monitors, cymbals, amps, HVAC, or other instruments.



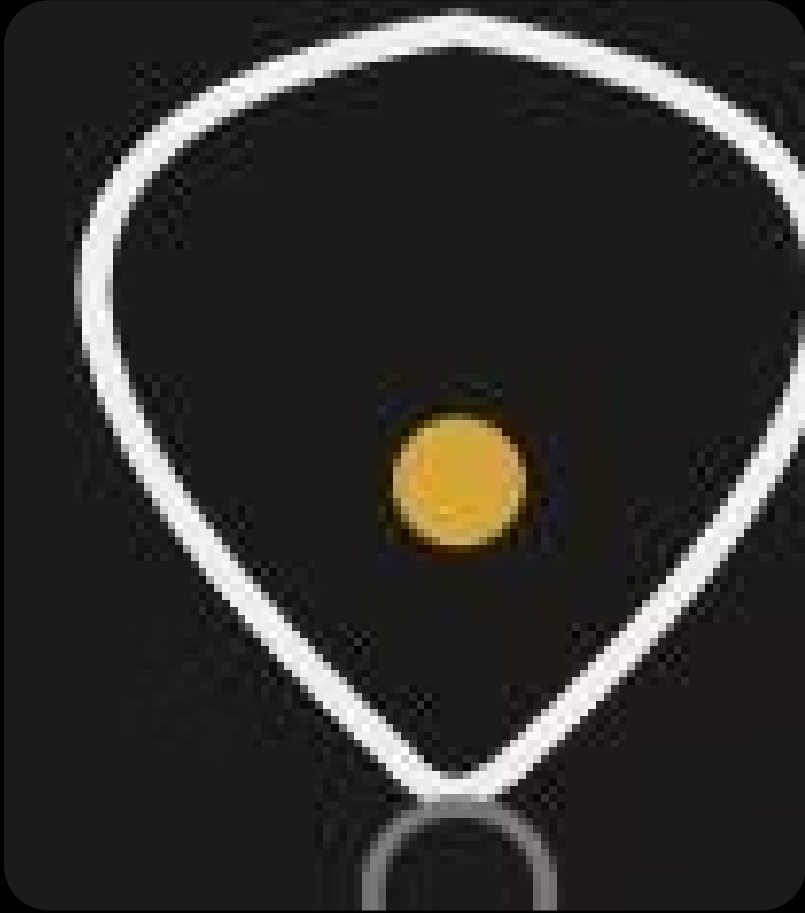
Omni

Hears all directions. Natural low end, no proximity effect, excellent room pickup. The room becomes part of the recording.



Figure-8

Front and rear pickup with strong side rejection. Common on ribbons, mid-side recording, Blumlein stereo, and isolation between side sources.



Super / Hypercardioid

Tighter front pickup but usually a small rear lobe. Do not assume the exact rear is the quietest point , learn the pattern before you trust it.

Position the Null: If a snare mic is cardioid, aim its rear toward the hi-hat when practical. If a figure-8 ribbon is on a guitar cab, rotate the side null toward the loudest unwanted source. Rejection is a positioning tool.

Part 4: Distance, Angle & Proximity Effect

Three physical controls exist before you open an EQ. Distance, angle, and aim point each change a different dimension of the sound. The discipline is developing the habit of reaching for these physical controls before clicking on a plugin. A single inch of movement can accomplish what a 3 dB shelf cannot.

1

Distance

Closer increases direct sound and detail. Farther captures more of the whole instrument and more room. **Move 1,2 inches at a time** and listen before committing.

2

Angle

Turning off-axis can soften harshness, reduce air blasts, reject bleed, and alter transient brightness without EQ. **Try 20,45 degrees** before reaching for a high shelf.

3

Aim Point

Large sources do not radiate equally everywhere. Speaker center, cone edge, bridge, sound hole, drum center, bell, keys, and body all sound different. **Point with purpose.**

4

Height

Above, below, or level with the source changes reflection paths and how much floor, ceiling, body, cymbal, or room enters the mic. **Vertical moves matter.**

Proximity Effect

Directional pressure-gradient microphones become bassier as you move very close. Cardioid and figure-8 patterns can show it strongly. Omni mics do not have the same proximity effect. Use it deliberately, or avoid it deliberately.

Off-Axis Tone

A mic may become darker or less accurate when sound arrives from the side. That can be useful. Instead of cutting 4 kHz, try rotating the microphone slightly away from the source. The off-axis coloration becomes your EQ.

- 📌 **The 9-Position Grid:** Record the same source at three distances and three angles. Keep gain matched. Label every take. Listen blind and write what changed before you look at the position. 15 minutes of this exercise is worth hours of plugin browsing.

Part 5,6: The Room , Phase in Multi-Mic Recording

A great mic in a bad position inside a bad room still records the room. And the moment two microphones hear the same source, timing becomes part of the tone. These two realities, room acoustics and phase relationships, are inseparable from positioning decisions the moment you go beyond a single mic.

Working With the Room

- 1

Walk the Room

Have the instrument play while you physically move around. Where your ears hear the best balance is a strong first mic position.
- 2

Avoid Exact Center

The exact center of a small rectangular room can exaggerate or cancel room modes. Start off-center and listen.
- 3

Control the Nearest Surface

A blanket, absorber, mattress, curtain, or gobos can reduce a nasty nearby reflection. Position first, treatment second.

Multi-Mic Phase Management

- ### Phase / Arrival Time

Two mics at different distances receive the transient at slightly different times. When summed, some frequencies reinforce and others cancel.
- ### Polarity Check

The polarity switch flips the waveform electrically. It does not fix every timing problem, but it can dramatically improve a top/bottom snare pair. Always compare by ear.
- ### 3:1 Rule

Keep each mic roughly three times farther from the other source than from its intended source. This reduces phase interaction and bleed between two separate sources.

Fix obvious phase problems; do not erase all acoustic timing automatically. The natural depth you loved may live in that timing relationship.

XY Stereo

Two directional capsules almost coincident, ~90°. Strong mono compatibility, focused center. Good for overheads, acoustic instruments, rooms, and ensembles.

ORTF

Two cardioids ~17 cm apart at ~110°. Natural, wider image combining timing and level differences. Great for rooms, ensembles, and overheads.

Mid-Side

One forward-facing mid mic plus one figure-8 side mic. Width is adjustable after recording. Excellent mono control. A powerful technique for broadcast and mastering.

Blumlein

Two coincident figure-8 mics at 90°. Beautiful natural room and front/back depth. It hears a lot behind the array, placement in the room matters enormously.

Part 8,9: Voice, Singing, Rap , Acoustic Guitar

Voice is one of the most placement-sensitive sources in recording. Small changes in distance and angle affect proximity effect, sibilance, plosives, and room tone dramatically. Acoustic guitar is similarly nuanced , the common instinct to point directly at the sound hole is almost always wrong. Both instruments reward systematic experimentation over habit.

Source	Starting Distance	Key Positioning Notes
Lead Vocal	6,10 in / 15,25 cm	Pop filter between singer and mic. Start on-axis, rotate 10,30° if sibilance or edge is excessive.
Intimate Vocal	3,6 in / 8,15 cm	More proximity, detail, mouth sound, and low end. Watch plosives and performance movement.
Big / Natural Vocal	10,24 in / 25,60 cm	More body interaction and room. Useful for powerful singers when the room sounds good.
Podcast / Speech	3,8 in / 8,20 cm	Dynamic broadcast mics often work close. Aim slightly past the mouth to reduce plosives.
Acoustic Guitar (12th Fret)	8,14 in from 12th fret	Balances string articulation and body without excessive boom. Best all-purpose start.
Acoustic Guitar (Sound Hole)	Angled approach only	Direct on-axis creates too much low-mid boom. Approach from an angle, not straight in.
Mandolin / Banjo / Ukulele	8,18 in	Aim where neck definition meets body resonance. Banjo can get aggressive , slight off-axis smooths attack.

Plosive Control

Use a pop filter, distance, and slight off-axis angle. Do not solve every P and B with a high-pass filter after the fact. Plosives are a positioning problem, not a plugin problem.

Consistency

Mark the singer's standing position. Head movement changes proximity effect and level continuously. Coaching mic technique is part of mic positioning , they are the same discipline.

Part 10–12: Electric Guitar, Bass & Drums

The electric guitar speaker cone is an EQ map, brightness lives at the center, warmth lives at the edge, and everything in between is a blend you dial in physically. Drums demand even more spatial thinking: every close mic is a compromise between isolation and bleed, and the overheads define whether the kit sounds like a real instrument or a collection of separate channels.



Electric Guitar Amp

Center / Dust Cap: Brighter, sharper attack, more bite and fizz. **Cone Edge:** Darker, rounder, less aggressive top end. Angle the mic 20–45° to soften top end further. A dynamic + ribbon is a classic two-mic combination, keep capsules at equal distance from the speaker.



Bass Cabinet + DI

The DI provides clean low-end timing and definition. The cab adds speaker color and midrange. Check polarity and time relationship before blending. A kick-style dynamic handles loud bass cabs well, distance of 0.5–2 inches is tight and direct, 6–24 inches adds cabinet integration and room.



Drum Kit Close Mics

Kick inside: 2–6 in from beater area. **Snare top:** 1–3 in above rim, 30–60°. **Toms:** 1–3 in above rim toward center for attack, edge for tone. Use mic rejection to reduce hi-hat bleed on every close mic. Check snare bottom polarity against the top mic every single time.

XY Overheads

Capsules close together above the kit. Focused stereo, easy mono compatibility. Great when the room is small or the kit needs a controlled image.

Glyn Johns Style

One mic above the kit, one to the drummer's side, both kept roughly equal distance from the snare. A natural-rock starting concept that captures a convincing whole-kit picture.

Room Mics

Start 6–20 ft away depending on room size. Corners add low-end pressure. Hallways and doorways create dramatic compression and reflections worth capturing.

One Mic Setup

Try 3–5 ft in front or over the drummer's shoulder near ear height. The best one-mic drum position is where the kit already sounds balanced acoustically, your ears will find it before the stand does.

⚠ Safety, Air Blasts: Kick ports and moving cymbals create strong air pressure. Use microphones designed for the SPL and airflow. Do not place a fragile ribbon directly in a kick port or in a strong blast path.

Part 13,16: Piano, Strings, Brass, Woodwinds & Percussion

These instruments share a common challenge: they are physically large, acoustically complex, and radiate sound from multiple points simultaneously. The instinct to mic only the most obvious feature, the piano's strings, the trumpet's bell, the violin's bridge, nearly always produces a partial picture of the instrument. Distance and placement across the full radiating surface creates the complete, natural sound that mixing can never fully reconstruct from close, isolated signals.

Piano

- **Grand , Close Pair:** Two condensers 6,12 inches above strings, one toward low strings, one toward highs. Check spacing and phase.
- **Grand , Natural:** Move 2,4 ft out from the open lid for a more complete instrument. Adjust height and lid position before EQing.
- **Upright , Back:** Place one or two mics 6,18 inches behind the soundboard and move across the back to balance bass and treble sections.
- **Leslie / Rotary:** Mic upper horn and lower rotor separately or use stereo on the horn. Watch phase when combining top and bottom.

Strings

- **Violin / Viola:** Start 1,3 ft above and slightly in front, aimed between bridge and fingerboard. Too close becomes scratchy and bow-heavy.
- **Cello:** Start 1,3 ft out, around bridge/f-hole height. Move toward bridge for articulation, body for warmth.
- **Double Bass:** Start 1,3 ft in front between bridge and upper body. Avoid chasing only the deepest f-hole resonance.
- **String Section:** Use a stereo pair several feet away and above the group so the ensemble blends acoustically first.

Brass & Woodwinds

- **Trumpet / Trombone:** Start 1,3 ft away and slightly off-axis from the bell. Direct on-axis can be extremely bright and forceful, more distance lets the instrument bloom.
- **Saxophone:** Start 1,2 ft aimed between the bell and key/body area. The bell alone sounds too honky because much of the instrument radiates through open tone holes.
- **Flute:** Start 1,2 ft above or slightly in front of the embouchure and keys, not directly in the air stream.
- **Ribbons on Horns:** Ribbons naturally soften aggressive high frequencies. Keep the ribbon out of direct wind blasts.

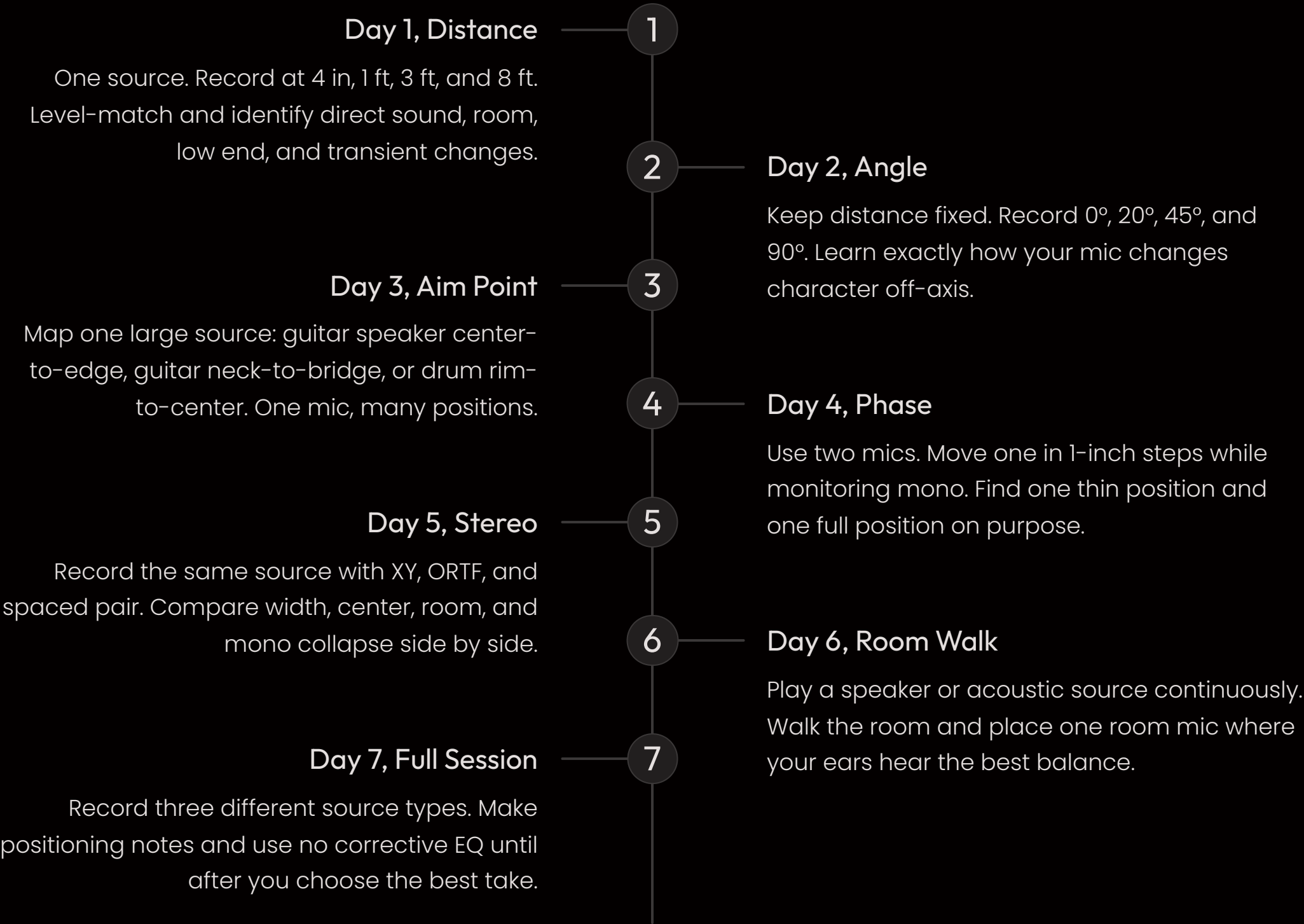
Percussion

- **Congas / Bongos:** Start 8,18 inches above the head, slightly toward the rim. Closer gives attack; farther captures multiple drums naturally.
- **Tambourine / Shaker:** Start 1,3 ft away. Too close sounds painfully sharp. Off-axis placement softens transients without EQ.
- **Marimba / Vibes:** A stereo pair 2,5 ft above captures range and width. Too close makes individual bars jump in level.
- **Cajon:** One mic 6,18 inches in front for slap/body; optional rear mic near the sound hole for low end. Check polarity.

Air is part of the source. Flute, brass, and some woodwinds push strong air blasts. Angle the microphone and give it space, a direct blast into a capsule is not the same thing as useful sound pressure.

Final Practice: 7-Day Mic Positioning Bootcamp

Train movement, not plugin habits. The fastest way to internalize mic positioning is deliberate, repeated physical experimentation with one variable at a time. This seven-day structure isolates each positioning dimension so you develop genuine ears for what each change actually does, before you are under session pressure and reaching for a compressor instead of a mic stand.



Final Challenge: Move Before EQ

Record a source you normally EQ heavily. Give yourself **five microphone moves** before you are allowed to open an EQ. The goal is to get 80–90% of the tone physically. This single constraint will change how you approach every session.

Session Notes: Document the Winner

Write mic model, pattern, distance, angle, height, aim point, room position, preamp gain, and what you liked. Great positioning becomes repeatable only when you document it. The best mic position you forget is the same as not finding it.

The microphone position is part of the sound design. Everything else is a reaction to that first physical decision. Make it count.