

Capturing The Moment

Mic techniques for live recording

By Bruce Bartlett

Perhaps the most exciting type of recording comes in the live realm, whether it be in a club or concert hall or stadium. Many musicians and bands want to record live because they feel that's when they play best. The goal, then, is to capture the performance so it can be brought back alive.

Without a doubt, remote recording is exhilarating. The musicians – excited by the audience – often put on a stellar performance. Usually you only get one chance to get it recorded, and it must be done right. It's on the edge, but by the end of the night, especially if everything has gone as planned – what a great feeling!

Challenges abound. The monitors can feed back and/or leak into the vocal microphones, coloring the sound. The bass sound can leak into the drum mics, and the drums can leak into the piano mics. Then there are other mic-related gremlins – breath pops, lighting buzzes, wireless system glitches, and even electric shocks.

How to get around the potential problems? Let's have a look at some effective mic techniques that work well when recording in the live realm. And note that these are tailored more to “pop” music performances.

- When using directional mics, position them close to the source. Close mic'ing increases the sound level at the mic, so less gain is needed, which in turn cuts background noise and leakage. Unidirectional mics (cardioid, supercardioid, hypercardioid) do the same thing by attenuating off-axis sounds. Also, their proximity effect boosts the bass up close, without boosting the bass of distant sounds.

- Use direct boxes and guitar pickups to eliminate leakage. Or use pickups mixed with mics.

- Consider using headworn noise-canceling mics on vocals. A noise-canceling or differential mic is designed to cancel sounds at a distance, such as instruments on stage or monitor loudspeakers. Such a mic provides out-

standing gain-before-feedback and isolation. The mic must be used with lips touching the foam windscreen; otherwise the voice is cancelled.

- Use wireless mics correctly. If dropouts can be heard, move the wireless receiver (or remote antennas) closer or to a point where a stronger signal can be realized. If distortion occurs with loud yelling, turn down the gain-trim pot in the mic.

- Prevent hum and buzz. Keep mic cables well separated from lighting and power cables. If the cables must cross, do so at right angles to reduce the coupling between them, and separate them vertically. If hum pickup is severe with dynamic microphones, use dynamic microphones with humbucking coils built in. Routinely check the microphone cables to make sure the shield is connected at both ends. For outdoor work, tape over cracks between connectors to keep out dust and rain.

- Prevent electric guitar “shocks.” There may be a ground-potential difference between the electric guitar strings and the sound system mics, causing shocks when both are touched. It helps to power all instrument amps and audio gear from the same AC distribution outlets. That is, run a heavy extension cord from a stage outlet back to the mixing console (or vice versa). Plug all the power cord ground pins into grounded outlets. This prevents shocks and hum at the same time.

Further, try putting a foam windscreen on each vocal mic to insulate the guitarist from shocks. As a bonus, a foam windscreen suppresses breath pops better than a metal grille screen. If you're picking up the electric guitar direct, use a transformer-isolated direct box and set the ground-lift switch to the

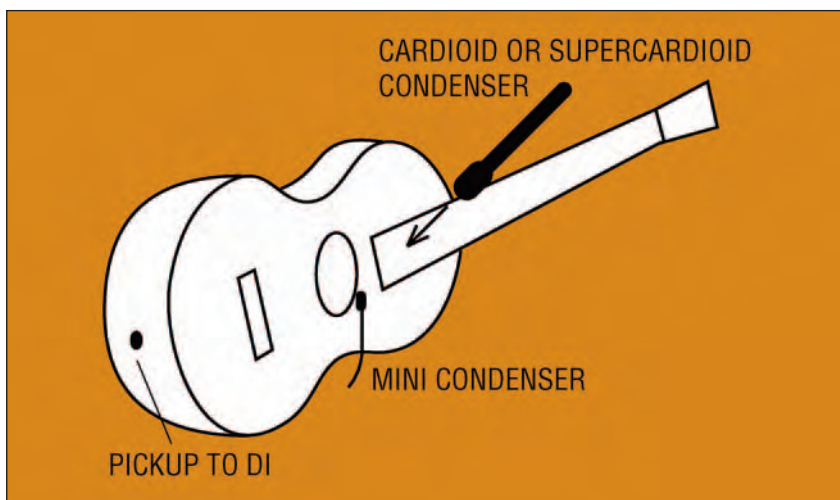


Figure 1: Acoustic-guitar mic techniques.

position with the least hum.

- Try mini mics and clip-on holders. Nearly all microphone manufacturers offer miniature condenser models. These tiny units sometimes offer the sound quality of larger studio mics. If clipped on musical instruments, they reduce clutter on stage by eliminating boom stands. Plus, the performer can move freely around the stage.

And because a miniature clip-on mic is very close to its instrument, it picks up a high sound level. Often, an omni mic can be used without feedback. Note that “omni’s” generally have a wider, smoother response than “uni’s” and pick up less mechanical vibration.

Clutter can also be lessened even when using regular-size mics by mounting them in mic holders that clip on drum rims and mic stands.

SPECIFIC TECHNIQUES

As always, there is no one “right” way to mic an instrument. The suggestions below are techniques that have been proven to work, but never hesitate to use what feels best for your situation.

Vocal. Cardioid dynamic or condenser handheld mic, maybe with a

presence peak around 5 kHz, and always with a foam windscreen to reduce breath pops. Lips should touch the foam for best isolation. Aim the rear of the mic at floor monitors to reduce monitor pickup and feedback. Use a 100 Hz low-cut filter and some low-frequency roll-off to reduce pops and to compensate for proximity effect.

Acoustic guitar. Consider using a cardioid condenser on guitar, between the sound hole and 12th fret, a few inches away. Roll off excess bass. Aim mic downward to pick up less vocal. Other approaches include using a direct box on the guitar pickup and placing a mini mic near the bottom edge of the sound hole. Roll off excess bass. (Figure 1, previous page)

Saxophone. Mount a shock-mounted cardioid on the instrument bell. Or, try a mini omni or cardioid condenser mic clipped to top of bell, picking up both the bell and tone holes a few inches away. (Figure 2)

Electric guitar. To add some guitar-amp distortion, mic the amp about an inch from its speaker cone, slightly off center, with a cardioid dynamic mic. A leakage-free alternative is to use a

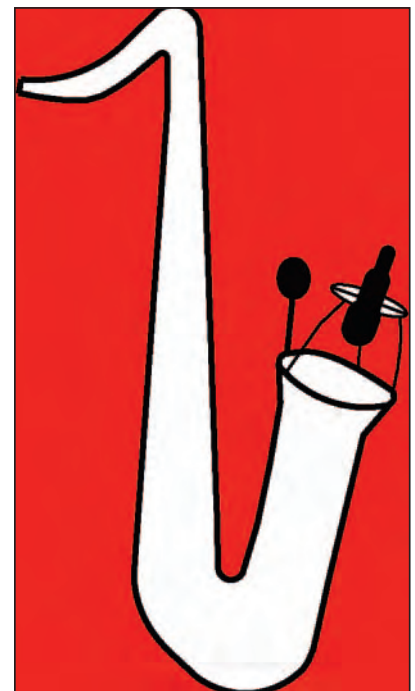


Figure 2: Mobile techniques for saxophone.

direct box and process the signal during mixdown through a guitar-amp modeling processor or plug-in.

Electric bass, synth, drum machine. Go with a direct box.

Leslie organ speaker. Cardioid dynamic mic with a presence peak a

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few inches from the top louvers. Add another mic on the lower bass speaker.

Drum set (toms and snare). Cardioid dynamic mic with a presence peak, or a clip-on cardioid condenser mic, about 1 inch above the head, 1 inch to 2 inches in from the rim, angled down about 45 degrees to the head.

Drum set (cymbals). Using one or two boom stands, place cardioid condenser mics (flat or rising high-frequency response) 2 feet to 3 feet over the cymbals. The mics can be spaced 2 feet to 3 feet apart, or mounted "XY" style for mono-compatible recording. A stereo mic can also be used effectively. **(Figure 3)**

Drum set (kick drum). Remove the front head or go inside the hole cut in the front head. Inside, on the bottom of the shell, place a pillow or blanket pressing against the beater head. This dampens the decay portion of the kick-drum's envelope and tightens the beat. Place a cardioid dynamic mic with a presence peak and a deep low-frequency response inside a few inches from the beater. For extra attack or click, use a wooden beater and/or boost EQ around 3 kHz to 6 kHz. Cut a few dB around 400 Hz to remove the papery sound.

Drum set (simple mic'ing). For jazz or blues, sometimes you can mic the drum set with one or two condensers (or a stereo mic) overhead, and another mic in (or in front of) the kick. Note

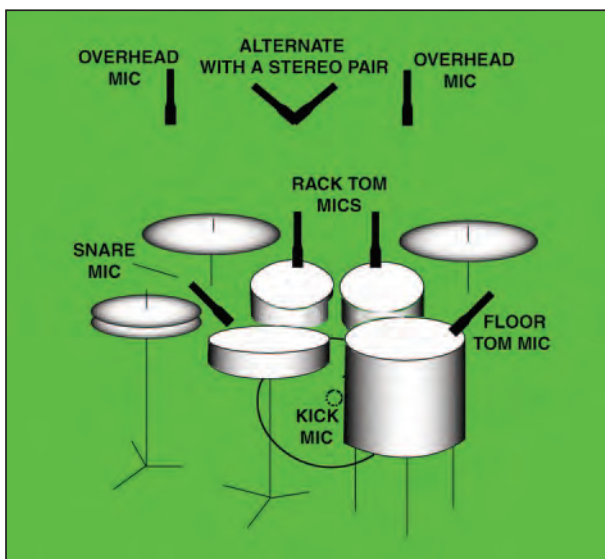


Figure 3: Dual overhead or stereo pair on the drums? Your call.

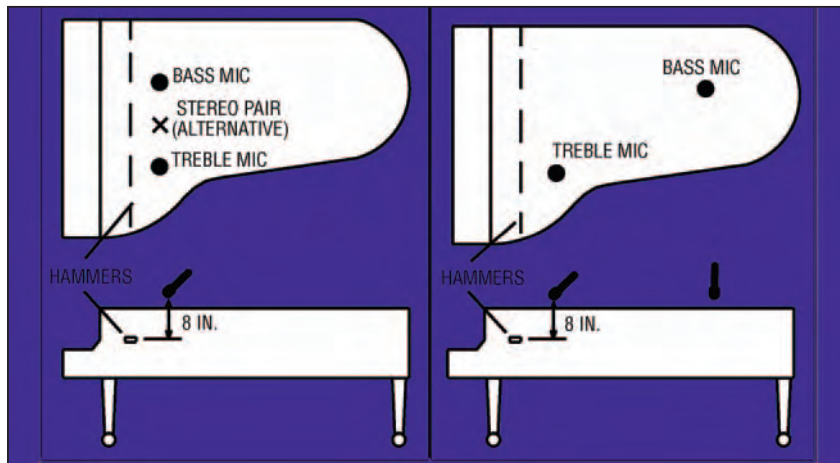


Figure 4: Not one, but two piano-mic'ing methods!

that there may be a need to mix in another mic near the snare drum. As an alternative, clip a mini omni mic to the snare-drum rim, in the center of the set, about 4 inches above the snare drum. With a little bass and treble boost, the sound can be surprisingly good. Put another mic in the kick.

Metal percussion. Use a flat condenser mic about 1 foot away.

Bongos or congas. Place a cardioid dynamic near each drum head.

Grand piano. Tape a mini mic or boundary mic to the underside of the raised lid in the middle. For stereo, use two mics: one over the bass strings and one over the treble strings. And for more isolation, close the lid and tweak EQ to remove the tubby coloration (usually cut around 125 Hz to 300 Hz). Or, raise or remove the lid. Place two flat condenser mics 8 inches over the bass and treble strings, about 8 inches horizontally from the hammers, aiming at them. One other approach is to put the bass mic about 2 feet nearer the tail, aiming at the sound board. **(Figure 4)**

Upright piano. Use two cardioid mics facing the sound board, a few inches away, divid-

ing the piano in thirds.

Xylophone or marimba. Deploy two flat-response condensers 18 inches above the instrument and 2 feet apart.

Banjo. Tape a mini omni mic to the drum head about 2 inches in from the rim, or on the bridge. Or, place a flat-response condenser or dynamic mic 6 inches from the drum head, either centered or near the edge.

Fiddle/violin. Mini omni mic. Put a small foam windscreen on the cable 1.5 inches behind the mic head. Stuff the foam in the tailpiece so the mic head "floats" between the tailpiece and bridge. Another approach is to use a cardioid dynamic or condenser mic about 6 inches over the bridge.

Mandolin, bouzouki, dobro, lap dulcimer. Flat-response cardioid condenser about 6 to 8 inches away from a sound hole is often the best option. **Acoustic bass.** Try a flat-response cardioid a few inches out front, even with the bridge. Or, tape a mini mic near an f-hole and roll off excess bass. Another option: wrap a cardioid dynamic mic in foam and stuff it in the tailpiece aiming up. Cut EQ around 700 Hz for tailpiece mic'ing. **(Figure 5, next page)**

Brass instruments. Place a ribbon or cardioid dynamic about 8 inches from the bell.

Woodwind instruments. Use a flat-response cardioid condenser placed 8 inches from the side – not in the bell.

Flute. Try a cardioid mic near mouthpiece, and using a foam pop filter. Or, use a mini omni clipped on

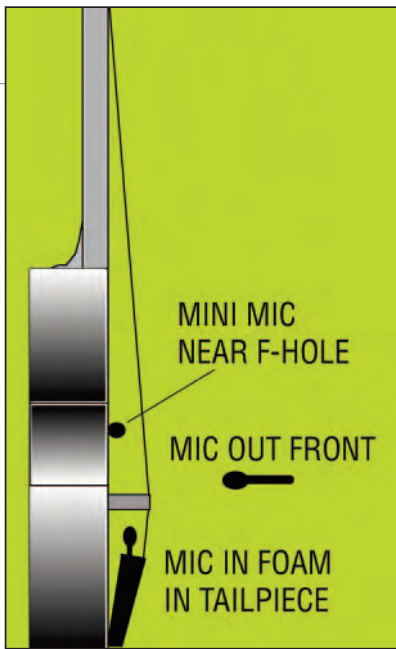


Figure 5: Three ways to handle pesky acoustic bass.

the instrument, resting about 1.5 inches above the zone between mouth-piece and tone holes.

Harmonica. A very closely placed

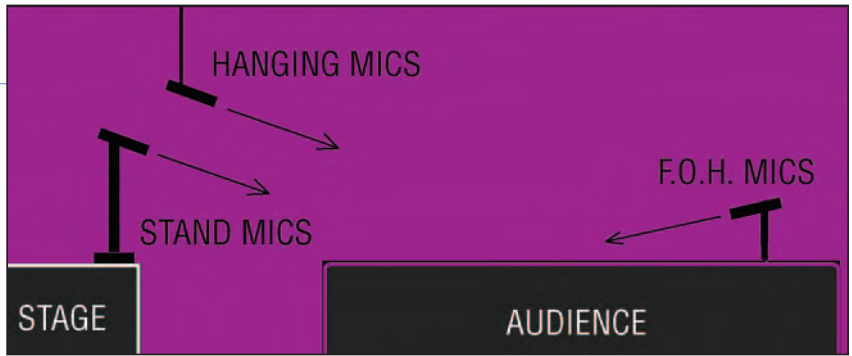


Figure 6: Get the audience into the action!

or handheld cardioid dynamic mic is usually the way to go.

Accordion, concertina. Employ a cardioid about 8 inches from the tone holes on the piano-keyboard side. Mini omni mic taped near tone holes on the opposite side (because it moves).

Audience. This is an interesting one! It can be done with two spaced cardioids on the front edge of the stage aiming at the back row of the audience. Another way is to use two spaced cardioids hanging over the front row of the audience, aiming at the back row. Or, try two mics at front-of-house (FOH). To prevent an

echo between the stage mics and FOH mics, mix the on-stage mics to stereo, then delay that stereo mix relative to the FOH audience mics until their signals align in time. (Figure 6)

Keep in mind that each of these techniques involves some compromises in order to fight background noise and leakage, but with some careful EQ, they can put you well on the way to a quality recording. ■

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