

The Secret to Miking Guitar Amps

Ribbon mics and proper spacing are part of my techniques for good guitar sound

BY STEVE ALBINI

The sound of the guitar is a fundamental part of any rock band sound. Guitar players spend countless hours (and countless dollars) in search of a satisfying sound. In some cases, this sound alone is enough to define the band's aesthetic. Dedication to tone and sound is what leaves many guitar players unimpressed when they hear their playing squeaking back to them out of playback speakers in a recording session.

Given the limitations physics saddles us with, it is still possible to

record electric guitar in a convincing manner, such that the playback is evocative of — if not quite as loud as — the real thing, but it isn't easy. Successful recording requires adapting different methods and equipment to the job at hand, and the perceptive skills to select appropriate mics and methods.

DAMAGE CONTROL

For years, the hack method of getting a foolproof guitar sound on tape has been to stick a dynamic mic (usually a Shure SM57 or a Sennheiser 421) tight in front of a speaker cone (often at an angle, for reasons lost to history but honored through tradition) and pump it to tape. If the engineer was feeling a little racy, he might compress the signal — either with an outboard compressor, or by saturating the tape with level.

All these techniques do damage to the sound.

Dynamic mics are relatively unaffected by the extreme SPLs that exist in front of roaring guitar cabinets, and few studios encourage engineers to experiment with fragile mics of higher

quality if there is any risk of destroying them. Dynamic mic diaphragms are relatively heavy, with a good bit of mechanical impedance, overshoot, and ring, so they are far from ideal in compliance and accuracy.

Compression and saturation tend to overemphasize midrange components of the signal; this often flattens the character of the playing, hiding much of the articulation of the performance. These deficiencies are often compensated for with bright EQ, which introduces phase shifts and further skews the frequency response of the recording.

Out in the world, guitar isn't heard that way. Nobody's ear spends much time hovering over the cone of a Marshall cabinet while the guitarist makes wacka-wacka, and compression and EQ are purely electronic (rather than acoustic) phenomena. Little surprise that these methods don't survive critical listening.

Several good alternatives exist. One is to record the guitar in stereo, so it has something of a three-dimensional quality to it when played back. It makes sense,

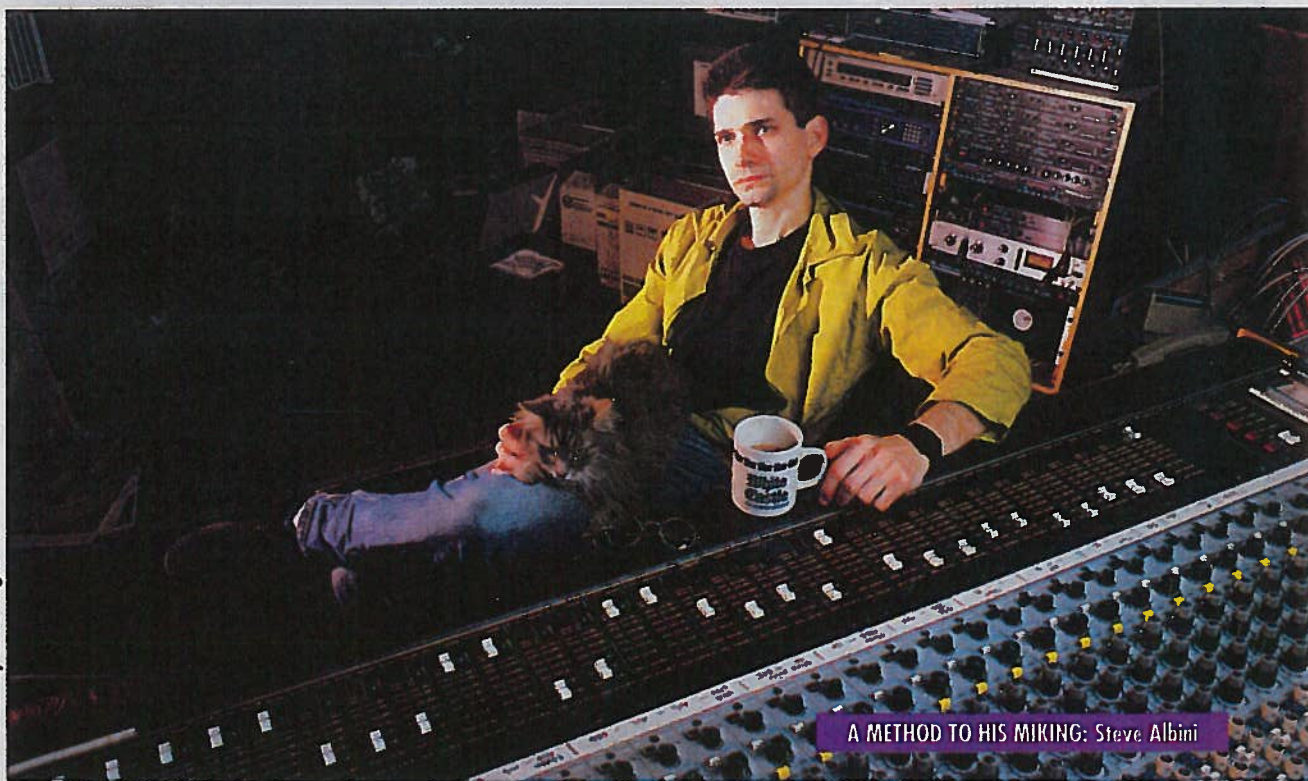


Photo by Steve Kagen

A METHOD TO HIS MIKING: Steve Albini

as well, to record guitars with some ambient component to the sound, to provide more auditory clues that the sound is an acoustic one. These subtleties taken into account, it is common sense to use high-quality mics with good detail, and with frequency responses tailored to the particular guitar, amp, and cabinet at hand.

If the cabinet sound is bright and brash, there is a risk of the sound being tinny or fizzy when translated through Hi-Fi speakers. Using mics

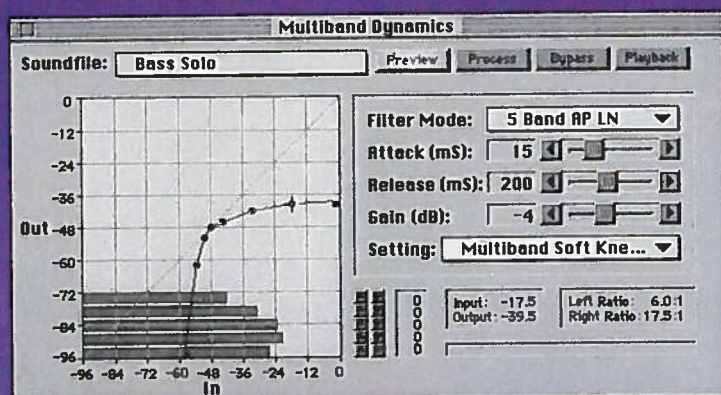
with a smooth, accurate treble character and strong low-end is important. Ribbon mics exhibit both these traits.

The ribbon microphone is one of the oldest, simplest, and most accurate of all microphone designs, and has properties that make it uniquely suited to recording guitar demos. The thin, low-mass metal ribbon is both the mechanical element (it moves with changes in air pressure) and the generating element (the ribbon being suspended in a magnetic gap, its move-

ment generates the current that goes down the wire as music). This arrangement allows the microphone to respond very quickly to transients and subtle modulations in air pressure.

There is very little pitch information coming out of a guitar cabinet at those frequencies, but the cabinet resonance, rhythmic transients, and physical pumping of air can generate a lot of energy down there in the subbasement. Capturing it on tape can make the recording seem more physical, and the careful use of proximity effect allows you to completely tailor the low-end by moving the microphone, sometimes by fractions of an inch.

One caveat about ribbon mics: the ribbons are fragile. Be careful not to swing the mic too quickly through the air or subject it to a blast of wind (say, from the vent hole in a cabinet), or you may tear the ribbon. The ribbons can be replaced, but the cost and nuisance will teach you to take more care. The ribbon can also be damaged by too-great excursion, so audition the mic while the amp is still at full throttle and listen for the unmistakable frying sound of the ribbon bottoming-



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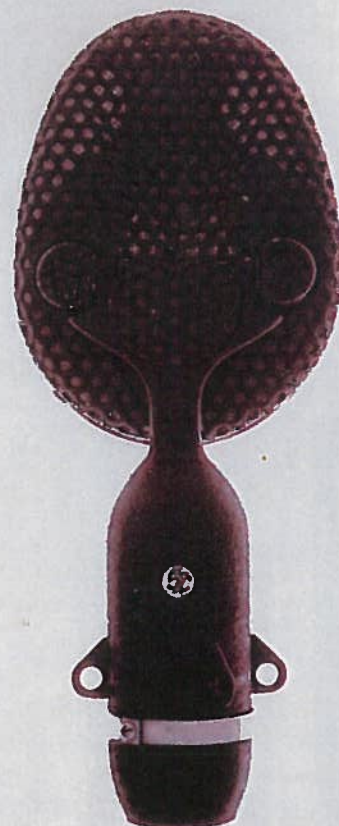
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TECHNIQUES MIKING

out against its internal screening. Try to orient the mic so that the ribbon is stretched vertically while in use, as this allows results in minimum physical distortion of the ribbon.

Many ribbon microphones are available, both as new stock and on the used market, at reasonable prices. They haven't yet been subject to the inflationary trendiness that vacuum-tube condenser mics have. Perhaps the finest microphone ever made of the ribbon type, the British STC 4038 (now made by Coles Electroacoustics) can routinely be had secondhand in the UK for less than \$500. The new version differs slightly in finish, output impedance, and construction from the original BBC-patented design, but none of the changes have degraded the sound quality. Be sure to have any mics you intend to buy tested, since reribboning is an expense whose inconvenience should be taken into consideration.

Other excellent ribbon mics for guitar recording are the RCA 77, 44, 74 "Junior Velocity," and BK5; the Beyer 130, 160, and 500; and the Altec 625a. The Beyer mics are currently being made, but the RCA and Altec mics are archaic, though readily available.

If the cabinet has a smooth-to-dull treble character, it becomes important to make sure none of the existing detail is lost in the recording. In a situation like that, the use of a high-quality condenser microphone should be considered, especially one with an electret design or a metallic diaphragm, since they can be of exceptionally low mass. The low-end won't necessarily bloom the way it might with a ribbon mic and there won't be any pleasing irregularities in the frequency response, but for a dry, bright, crisp recording, condenser mics are a good place to start. The metallic diaphragm mics made by Sanken and Milab and the tiny electret capsules on the Bruel and Kjaer 4000 series both seem to be quite flattering in this application, as do some of the Neumann Gefell KMV 582 series tube microphones if fitted with pads and appropriate capsules.

A new condenser microphone, David Manley's CL3 (being sold under the Langevin moniker), is earning its stripes as an excellent and accurate mic in this capacity, even though its large-diaphragm gold-sputtered capsule seems an odd choice for close-

mic use on an amplifier. Its high sensitivity may be a problem if your console has low headroom, but the mic itself exhibits no discernible distortion even with quite loud amplifiers. Its smooth, flat, and extended treble response is particularly surprising considering the styling that clearly mimics Neumann's 67 and 87.

POSITION POINTS

Mic placement is critical as well. A mic on-center, with its diaphragm parallel to the plane of the speaker voice coil, will give the brightest, most accurate recording of the pistonlike movement of the cone. A mic off-center will be less direct sounding, and will also accentuate the distortion introduced by the ringing, resonating, and buckling (sometimes tearing) of the paper cone. Angling the mic smears and dissipates transients by introducing a phase error over the surface of the diaphragm. This will also cause high-frequency comb-filtering, which will make certain frequencies shrill and others dull.

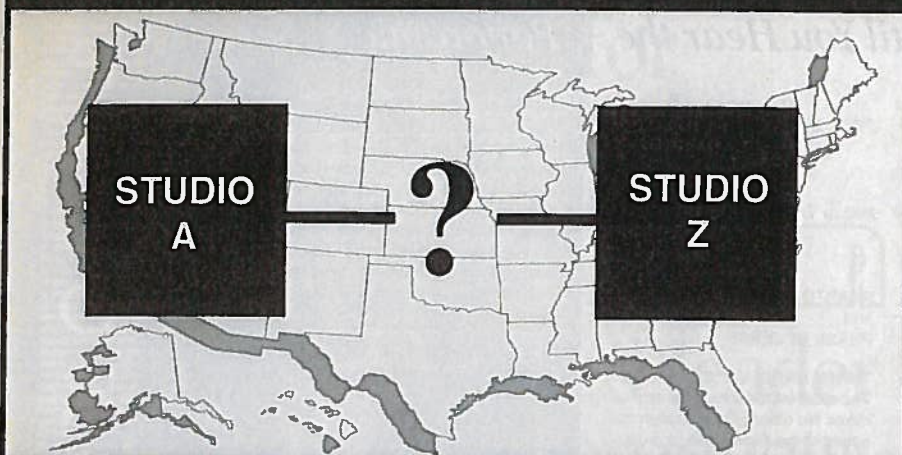
Using a pair of mics on a speaker in different locations can be more convincing than either by itself. By using different mics tailored for each position, it is possible to generate a very complex, dynamic stereo image from a single speaker. When using combinations of mics in stereo, be sure to check the polarity of the mics, since manufacturers have different polarity standards, and a stereo signal with too much antiphase material can actually sound quieter than a mono signal.

Sometimes the sound quality of a single microphone is perfect, but the impression the monaural sound makes is a little lifeless. In a case like that, try using an inappropriate mic in a distinctly bad location as a stereo partner for the "good" sounding microphone. The contrast between the two in stereo can make the overall impression more flattering. I have several horrible microphones I reserve for this use.

Guitar cabinets are usually heard at some distance. It is usually possible to place a mic a few feet away from a cabinet, and by carefully balancing that sound with the direct mic(s), a more realistic impression can be made. For some reason, dynamic mics with limited frequency response often

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MIKING GUITARS

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work well in this application; perhaps because their narrow bandwidth doesn't interfere with the clarity in the treble region or the balls in the bass region.

For an extremely big, ambient sound, use a large, reflective room and distant mics for natural room reverb. The bigger the room, the wider the ambient mics can be spread, and the wider the stereo image that can be recorded. Any good condenser microphone with an extended low-frequency response is usable for this application, but special mention should be made of the Calrec/AMS Soundfield microphone, which was designed expressly for ambient stereo recording. Should your budget afford you the luxury of working with this outstanding microphone, the flexibility of its electronics and its exquisite clarity will leave you wondering how you ever made records without it.

It is often possible to excite the ambient space with a small extension speaker, with the main cabinet in a more controlled environment being closely recorded. This allows you the option of switching between the ambient and dry sounds, without the cheap sound of an electric reverb giving the game away.

Recording a single guitar take in a flattering manner has an added benefit: it will help you resist the temptation to double-track guitars. As a very occasional embellishment, doubling can sound distinctive. Used as a substitute for good technique and tone, it quickly becomes another tiresome cliché, making recordings amateurish and clumsy.

Free your microphones and your ass will follow. **EQ**

Steve Albini is a Chicago-based recording engineer who has recorded albums for Nirvana, PJ Harvey, the Breeders, the Pixies, the Wedding Present, The Jesus Lizard, Superchunk, and about 1000 bands you've never heard of. He has also been a member of the bands Shellac, Rapeman, and Big Black. His other interests include cooking and billiards, and his favorite color is a kind of cold slate grey.

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