



MIC'ING TECHNIQUES FOR DRUMS



by Doug Gould, Worship MD

WHEN I TEACH AT WORSHIP CONFERENCES, I typically offer a breakout session on microphones for drums. Inevitably, someone asks, “What are the best microphones and techniques to use for mic’ing drums?” or, “How do I control the level of live drums?”

Drums are often the loudest instruments played on the worship stage. That’s why I always start the conversation by asking a few qualifying questions before offering a suggestion. Because this issue is so common, the solutions seem to be the same, making me think that maybe we aren’t really addressing the elephant(s) in the room. So, let’s break down the following:

WHO: The drummer

WHAT: The drums, including shell sizes, heads, sticks, cymbals and tuning

WHERE: The position on the platform or in the room and any obstacles impeding or reflecting their sound



Drums are the musical foundation — in other words, the backbeat that everyone depends on for timing. If they’re weak, the whole performance falls apart. That’s why it’s essential to identify and resolve drum mic issues.

WHO: THE DRUMMER

Let's address the Who first — no, not the British rock band, but the guy behind the kit on your stage. The problem may not be the instrument. Drums are not loud — drummers are! Achieving a great sound from drums requires a talented drummer. A great-sounding, high-quality instrument will only sound as good as the musician.

I just finished reading the book [Recording and Mixing Drums](#) by Bill Gibson. It features tips and techniques from some of our most celebrated recording engineers: [Al Schmidt](#), [Chuck Ainley](#), [Ed Cherney](#), [Elliot Scheiner](#), [George Massenburg](#), [Niko Bolas](#) and my friend [Frank Filipetti](#).

In the book, these engineering luminaries discuss the choice and placement of microphones, drum kit tuning, the room and EQ effects. While that's practical, informative and critical, they all agreed that what makes drums sound amazing isn't the instruments or their engineering excellence. It's the drummers who play them. Musicians who know how to play with expression, nuance and dynamics will always make a difference.

When beginner drummers — no matter their age — get to play on the platform with the band, they might feel that they can occasionally throw in the solo from “[In-A-Gadda-da-Vida](#)” right in the middle of a worship song like “[Oceans](#),” without any regard for how small or large the room might be.

[Carl Albrecht](#), a drummer from Nashville and a Yamaha Performing Artist featured on many favorite worship songs, collaborated with me on several clinics on the best techniques for mic'ing drums. One piece of advice from Carl that always stuck with me was that musicians should never overplay their space. In other words, don't play like it's Madison Square Garden if you're in a small room.

Something to ask yourself up front is, “Are you a drummer or a musician who plays the drums?” Drums have dynamics. They can be played within a vast range, from soft to thunderous. A drummer's job is to keep time and add musicality when playing with the band. Find your lane and stay in it. You don't need to fill every empty space with a solo run or crashing cymbal.

Many church drummers and most worship band members are volunteers and have never played professionally. Because of this, they often lack the experience of playing with a group. However, the more they practice their instrument, the better they will get. Still, practicing solo versus playing as part of a team is one thing. Sometimes, you'll need to play less, not more, and self-mix. Try to hear yourself in context with the band and the room you're playing in.

What does *your* church do to help inexperienced musicians and sound techs? Do you offer them any training?

WHAT: THE DRUMS

Now that we've addressed this question's human side let's look at the instrument. How many pieces are in the set? What are the shell sizes? Is this a huge set with double 24" kick drums, 16" and 18" toms and a big gong, or is it a smaller, studio-type kit built more for its sonic purity than for projection?



Have all the heads been replaced and tuned properly for the type of shell you're using? The entire set will sound significantly better with new quality heads that are tuned correctly. Here is a great video that teaches how to properly tune a drum set: [How to Tune Drums](#). Has any head ring and rattle been reduced or eliminated? Here's another video that shows how to handle these challenges: [20 Hacks to INSTANTLY Fix Snare Drum Ring](#). The famous adage, "Garbage in, garbage out," or GIGO for short, applies to any instrument or voice. No microphone, no matter the brand or model, will ever make a bad drum sound good. So, get the source — i.e., the instrument — sounding right first.

One question I see on several social media forums is: "What's the best mic to use on a kick drum?" No additional information is given, such as who the drummer is, how big the kick drum is, whether it's tuned or not and where the microphone will be placed. These forums become a space for brand bashing, with people promoting their favorite models or grumbling about brands they don't like. Let's review before we apply our microphones.

1. A drummer who knows how to play is vital.
2. Drums with new, quality, tuned heads are critical.

“The drums are still too loud!” I continually marvel at how churches will spend a lot of money to fix a problem incorrectly. Case in point: I was asked by a worship leader how to reduce the sound of the drums bleeding into the vocal mics. I looked at the stage and saw that the three vocal microphones were about three feet from the front of the drum kit.

ME: Either move the kit to one side of the stage or the singers.

WL: You don’t need me to turn the system on so you can hear it first?

ME: Nope! I can see it.

WL: That won’t look very cool. I think we’ll get a drum shield.

One week later, they installed a \$1,000 shield with the kit and vocal mics in the same place as before. After trying to adjust levels, they realized that the drum shield had minimal effect on reducing the drum bleed getting into the vocal microphones.

WL: Doug, we’re still getting the drums into the vocal mics. What can we do?

ME: Yep. You’re right. You know what else is happening? You’re also getting the floor monitors reflecting off the shield and back into your vocal mics.

WL: Wow, what a mess! What should we do?

Guess what I said?

ME: Move the vocals over there to the right and the drums over there to the left.

Moral of the story: Common sense solves many of our technical issues. How many drum lessons could have been bought for the price of the shield?

Here is an excellent, tongue-in-cheek video examining how to handle drum sound complications without resorting to a screen: [Solving Drum Volume Issues: Without a “Fish Tank.”](#) After all, imagine putting the loudest instrument — once used to announce armies heading into battle — behind a windshield two to three feet in front of the kit. Will the shield stop or reflect all that acoustic energy into every microphone placed on the drum kit? The result is sonic smearing, making it difficult to tell which microphone is which. They all sound the same and are probably out of phase with the direct sound.

Full drum enclosures may be better for the front-of-house (FOH) tech to get a better overall mix, but they don’t allow the drummer to hear the room or the band in context. The drummer is limited to hearing himself through a headphone mix and has no idea how loud or soft he is in relation to the rest of the band. Another great video from Grant Norsworthy discusses this subject in depth: [Solving Drum Volume Issues: Dynamic Control.](#)

As a sound tech, the most challenging part of the kit to properly set up in the house mix is the cymbals. They can often produce a high-mid and high-frequency mush, which also makes its way into the vocal mics. Again, try to get the vocal mics as far away from the cymbals as possible, although this may be harder in smaller churches. Here is a solution I found that works well: [Drum Baffles](#).

Many churches use electronic drum sets to control audio levels. Drummers have been resistant to them because the feel and playability were often nowhere near an acoustic set; they were being forced to play on what were basically rubber pads and rubber cymbals, all attached to aluminum tubes. How things have changed! The latest generation of electronic sets have both the sound and feel of acoustic drums and cymbals. As a result, they're accepted more and more as a real solution to the worship team's and church's needs. They also offer sounds and effects that could never be created with a standard acoustic kit.



Yamaha DTX10K-M

Another solution is to apply [mesh heads](#) to an existing acoustic drum kit. Mesh heads can reduce the overall sound by up to 80%. Another way to reduce drum levels is to [get triggers for your drums](#) and connect them to an electronic drum sound module, preferably one with multiple outputs. This way, you can have a separate channel for each drum as if you were mic'ing them, virtually turning your acoustic into a hybrid electronic set.



WHERE

Find the location on the platform where the drums sound best. Don't underestimate this step; don't be afraid to rearrange instruments or setups when necessary.

Typically, and depending on what you're trying to do sonically, less is more when it comes to mics. One mic could cover the entire kit if your sound system is mono. A good quality condenser mic like the [EVND 66](#) or a directional ribbon mic like the [AEA KU5A](#) over the center of the kit can effectively cover the whole drum set. When using

two overheads, you can cover more area and pan the kit in stereo. However, this can introduce [phase interactions](#) that negatively affect the sound if you don't pay close attention.

MIC'ING TECHNIQUES

There isn't a one-size-fits-all approach to mic'ing, as the best techniques depend on the style of music, room acoustics, drum kit setup and the desired sound. Here are some common and effective microphone techniques:



1. CLOSE MIC'ING: This involves placing individual microphones close to each drum and cymbal to capture their specific sound. This technique offers isolation and control over each element of the drum kit. Common microphones used for close mic'ing include dynamic and condenser mics.

- Kick Drum: Use a large diaphragm dynamic or condenser mic inside the kick drum, positioned a few inches away from the beater. This captures the low-end punch and attack.
- Snare Drum: Place a dynamic mic on top of the snare, slightly off-center, to capture the snare's crack and body.
- Toms: Position dynamic or condenser mics above each tom drum, pointing them toward the center of the drumhead.
- Hi-Hats and Cymbals: Use small diaphragm condenser mics to capture the high frequencies of the cymbals.



2. OVERHEAD MIC'ING: Overhead microphones capture the overall sound of the drum kit and give a sense of space. These can be positioned above the kit in a few different configurations:

- Spaced Pair: Place two matched condenser microphones equidistant from the center of the kit. This captures a stereo image of the drums and cymbals.
- XY Configuration: Position two cardioid microphones at a 90-degree angle, aiming toward the center of the kit. This creates a focused stereo image.
- ORTF Configuration: This setup is like XY but with a wider angle (110 degrees) between microphones. This supplies a more spacious stereo image.

3. ROOM MIC'ING: This technique captures the natural reverb and ambiance of the room, which can add depth and character to the drum sound.

- Ambient Pair: Place two omnidirectional or cardioid mics a distance from the drum kit to capture the room's sound.
- Glyn Johns Technique: Use three mics: one overhead and two placed equidistant from the center of the kit at an angle. This technique aims to capture a balanced and natural drum sound.

4. SUBGROUP MIC'ING: Instead of mic'ing each drum individually, you can use a few microphones to capture groups of drums, such as the toms or overheads, to simplify the recording process.

Use your EQ to bandpass the different drums and cymbals. High-pass (low-cut) can smear the sound and negatively affect your mix.

A NEW WAY TO MIC ACOUSTIC DRUMS

The Yamaha [EAD10](#) is a stand-alone acoustic drum module system enabling drummers to easily capture the sounds of an acoustic drum set with a single microphone/trigger component attached to a powerful digital processor.

Ideal for recording, rehearsal and performance, the EAD10 addresses persistent challenges facing drummers and sound engineers who want high-quality drum performances and affordability without using large, expensive drum mic packages. The [EAD10](#) is an excellent solution for Houses of Worship looking to keep their costs down without sacrificing sound quality, thanks to its central module and combination microphone/trigger sensor that easily mounts onto the bass drum. The microphone effectively captures and reproduces the natural, dynamic sound of the entire kit, while the module adds any number of effects, including flange, phase and several varieties of reverb.

For a hybrid drum expansion, the central module features a snare trigger input and two 3-zone trigger inputs compatible with the [Yamaha DT50S](#) snare trigger and [DTX Series Pads](#). This connectivity provides endless creative possibilities with nearly 800 stored sounds and effects, an onboard sampler and 50 preset combinations, with room to program 200 more.

The [EAD10's free Rec 'N' Share iOS app](#) enables drummers to record their drum track on top of their favorite music while simultaneously capturing a performance video.

The [EAD10](#) is quickly and easily connected to a PA system, with all drums and effects routed through the sound system. The [EAD10](#) helps integrate a live band's sound into a more coherent whole.



There is not enough time or space to go deeper in this article about microphone choices, polar (pick-up) patterns, equalization, dynamic processing (compression/gating) and monitoring to make them sound even better. Although, if you start here,

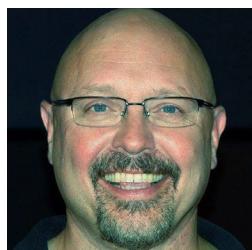
you will hear a difference. Remember, with microphones, fewer typically sound better than more.

FINAL TIPS

Record your rehearsals and services. You don't need a multitrack off the mixing console — a small, hand-held recorder with two mics built-in or connected will give you a reference for how things sound in the sanctuary. Listen to the recordings with the worship leader and the band. Use this as a baseline and strive to get better.

Remember that experimentation is key. Different drummers, drum kits and rooms will require adjustments to these techniques. Additionally, consider combining close, overhead and room mics to achieve a well-rounded and dynamic drum sound. Always listen critically and adjust based on the sound you're trying to achieve.

Don't underestimate the importance of team relationships, communicating your needs to each other and building trust. This will help achieve the best sound, much more than any technical tweak ever could. Blessings.



ABOUT THE AUTHOR

Doug Gould is the CEO and Founder of Worship MD and has been a Pro Audio and Music Technology industry veteran for nearly 30 years, serving in management roles at Shure, Tascam and E-Mu Systems. Doug has served as a worship leader, musician and sound tech at various churches throughout his career.

Over the last 18 years, Doug has been a very effective presenter at hundreds of worship conferences throughout North America and beyond, focusing his experience on consulting and teaching.

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