

# Microphone Techniques for High-Energy Praise and Worship Services

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It's a new day. Many houses of worship have gone beyond the usual "minister and choir" setup, now incorporating a rock band to produce a service with all the energy of a rock concert.

Getting the sound right for such a service is a challenge. In addition to miking the worship leader and choir, you may need to close-mike each instrument in the band and each vocalist in the praise team. The goal in miking all these elements is to create a clear, natural sound without feedback. Here we'll suggest some mic techniques to help you do just that.

## MICROPHONE TYPES

The types of microphones you choose – and their placement – have a major effect on the sound quality. Microphones (or "mics" for short) are available in many types:

- Miniature clip-on mics (lavalier mics), which you clip onto the worship leader's robe or onto musical instruments.
- Lectern mics, which you mount on the pulpit or lectern.
- Surface-mounted mics (boundary mics) which you place on surfaces (floor, altar table, piano lid).
- Miniature choir mics which you hang over the choir.
- Handheld or stand-mounted mics for vocalists and instruments.
- Headworn mics for vocalists.

## HOW TO REDUCE FEEDBACK

First, here are some general tips on microphone usage to reduce the likelihood of feedback.

- Use as few microphones as possible.
- Keep PA loudspeakers as far as is practical from microphones.
- Use a minimum number of floor monitors, and place them behind the microphones.
- Turn down or mute microphones that are not in use.
- Keep microphones close to their sound sources – as close as possible, but no closer than necessary to achieve adequate volume before feedback occurs.
- Use directional microphones. A microphone is directional if its polar pattern is cardioid, supercardioid, or hypercardioid (check the microphone data sheet).
- Use pickups on acoustic guitars.

## SPECIFIC MIC TECHNIQUES

There are no rules with mic choice or placement – use whatever works for you. Here are some common methods that have worked well.

### Worship leader

The type of mic you will use on the worship leader depends on whether the leader stays at the pulpit or moves about. If the leader stays at the pulpit, install a lectern mic on the pulpit (Fig.1). Another purpose for a lectern mic is to pick up anyone who walks up to the lectern to make an announcement or read a passage.



Fig. 1. Crown LM-201, an example of a lectern microphone

Current models of lectern mics are slim and elegant. Some have a shock mount to reduce thumps on the pulpit.

One microphone at the pulpit gives a more consistent tone quality than two, so install only one. Be sure to add the provided foam pop filter (windscreen) to prevent explosive breath sounds (pops). Another way to reduce pops is to speak about 8 inches from the microphone and over the microphone rather than into it.

If the worship leader moves about, use a clip-on lavalier microphone, either with a mic cable or with a wireless transmitter worn on the belt. The transmitter comes with a receiver,

which you plug into a mic or line input in your mixer. Attach the mic at chest height. Use the belt clip that came with the microphone, or place the mic connector in the pocket to act as a cable strain relief.

Install a fresh battery in the transmitter before each service, and tell the mic user to turn on the transmitter before speaking.

If the worship leader sings with the band, give the leader a handheld or headworn vocal mic with a foam pop filter to reduce breath pops. This mic can be wired or wireless.

### Choir

Some worship services have two types of choirs or singing groups. One is the traditional choir of about 15 or more people. The other group I'll call the "praise team" of up to eight singers.

You can hang miniature choir mics over the choir. Most mic companies offer specialized choir mics that are almost invisible in use. Use one microphone in the center of every 20-30 foot span. A choir of 30 to 45 voices should need only two or three mics. Place them close to the choir to minimize feedback: about 1½ feet in front of the front row of singers, and about 1½ feet above the head height of the back row (Fig. 2). If you don't want to hang the mics, attach them to mic stands with baby booms.

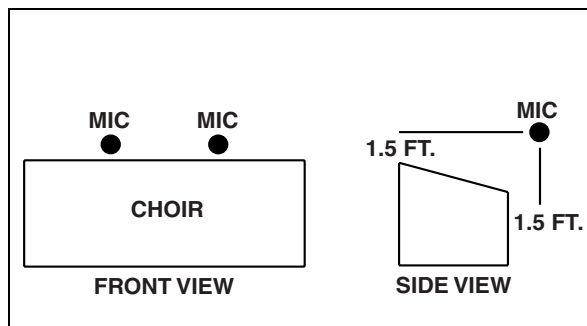


Fig. 2. Miking a choir

For a praise team of up to eight singers, give each one a handheld or stand-mounted cardioid microphone (condenser or dynamic) with a foam pop filter. Each person should sing about 2 inches from the microphone to reduce feedback and aid isolation.

### Soloist

This person can be picked up with a stand-mounted cardioid vocal mic or headworn mic, wired or wireless. Be sure to use a foam pop filter.

### Acoustic Guitar

It can be difficult to pick up the guitar with enough gain-before-feedback and isolation. A pickup is a good solution. Plug a phone-to-phone guitar cord into the guitar's endpin jack, which is wired to the pickup. Connect the guitar cord to a direct box, and connect the direct box to a mic input. Set the ground-lift switch on the direct box to the position where you monitor the least hum (usually not lifted).

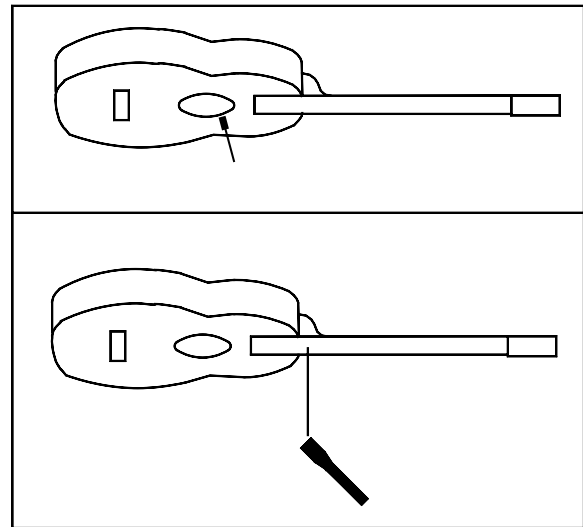


Fig. 3. Top: Miking the sound hole with a mini mic. Bottom: Miking near the 12th fret

While a pickup provides excellent gain and isolation, it tends to sound "electric." Some guitarists prefer to combine a pickup with a microphone to add some "air" and string sound. A number of pickup manufacturers offer a kit that combines a mic and a pickup. The two devices plug into a small mixer, and you connect the mixer output to a direct box.

One way to mike the guitar with good isolation is to tape a miniature omni or cardioid mic onto the guitar body at the edge of the sound hole (Fig. 3, top). The sound is bassy there, so roll off some low frequencies around 80 Hz with your mixer's EQ. A great-sounding mic technique is to place a cardioid condenser mic near the 12th fret, where the neck joins the body (Fig. 3, bottom). This method might pick up too much leakage if loud instruments are playing at the same time as the guitar.

For a singing guitarist, angle the vocal mic upward toward the mouth and angle the guitar mic (if any) down toward the guitar. This increases isolation and prevents phase interference between the two mics, which can color the sound.

### Electric bass and synthesizer

Plug the instrument into a direct box. Connect the XLR output of the direct box to your mixer's mic input, and connect the phone-jack output of the direct box to the player's onstage amplifier (if any). Some guitar amps have a direct-out on the back so that you can plug directly into the amp.

### Electric guitar

Some guitar players use a guitar amp; others use a guitar-amp simulator such as the Line Six Pod. If the amp is part of the guitarist's sound (including amp distortion), mike the amp very close to one speaker, a few inches off-center, using a directional microphone (dynamic, ribbon or condenser). Otherwise, just plug a direct box into the amp-simulator output or the guitarist's effects output.

### Drum set

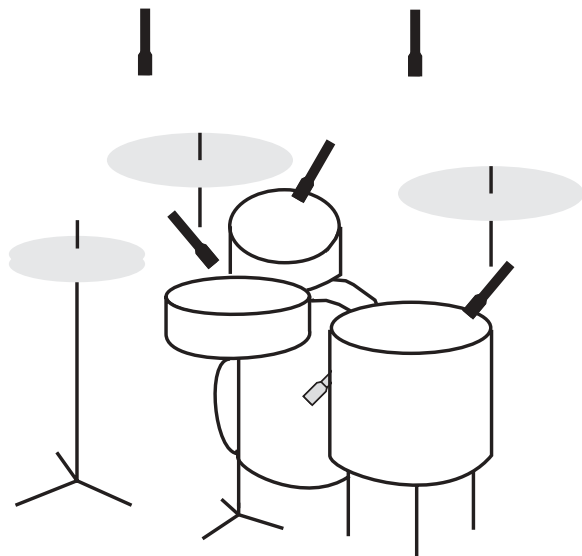


Fig. 4. One method of miking a drum set

If the drummer is very loud, the drum sound can leak into other instruments' microphones. To prevent this, you might surround the drummer with clear plexiglass panels.

First tune the drums to sound good. Try to have equal tension around each drum rim to prevent ugly-sounding beat frequencies. Here are some suggested techniques for each element of the drum set (Fig. 4):

Snare: Cardioid dynamic or condenser mic about 2 inches above the rim, aiming at the head.

Toms: Cardioid dynamic or condenser mic about 2 inches above the rim and 2 inches in from the rim, aiming at the head. Mic-Eze makes clips that mount microphones on drum rims, eliminating the clutter of boom stands. Also, miniature clip-on mics can be used to reduce clutter.

Cymbals overhead: One or two cardioid condenser mics about 2 to 3 feet over the cymbals. This can be a spaced pair, coincident pair, or stereo mic.

Kick: Remove the front head and place a pillow or blanket against the bottom of the beater head. This dampens the vibration and tightens the beat. Ask the drummer to use a wooden or plastic beater, rather than felt, so that the attack of the beat will be clear. A typical mic for kick drum is a large dynamic mic with good low-frequency response. Another choice is a boundary mic. It often helps to cut a few dB around 400 Hz to reduce the papery tone.

If you can spare only a few microphones for the drum set, mike just the kick and cymbals, and maybe the snare.

### Grand piano

One way to mike a grand piano is to tape two boundary microphones to the underside of the raised lid, one over the treble strings and one over the bass strings (Fig. 5). If feedback is a problem, close the lid and adjust your mixer equalization until the sound is natural. Often you'll need to cut a few dB around 300 Hz or so.

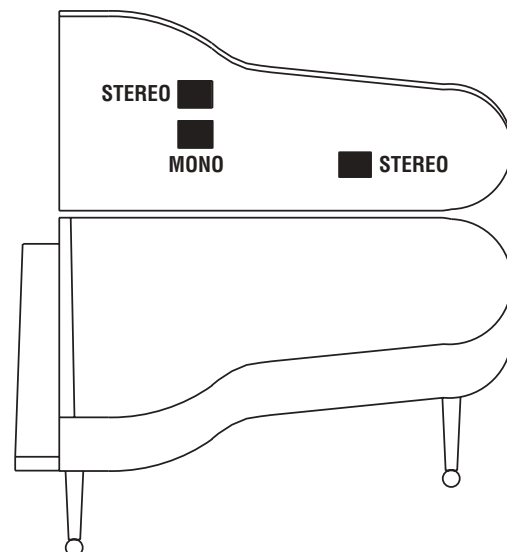


Fig. 5. Miking a piano with boundary mics

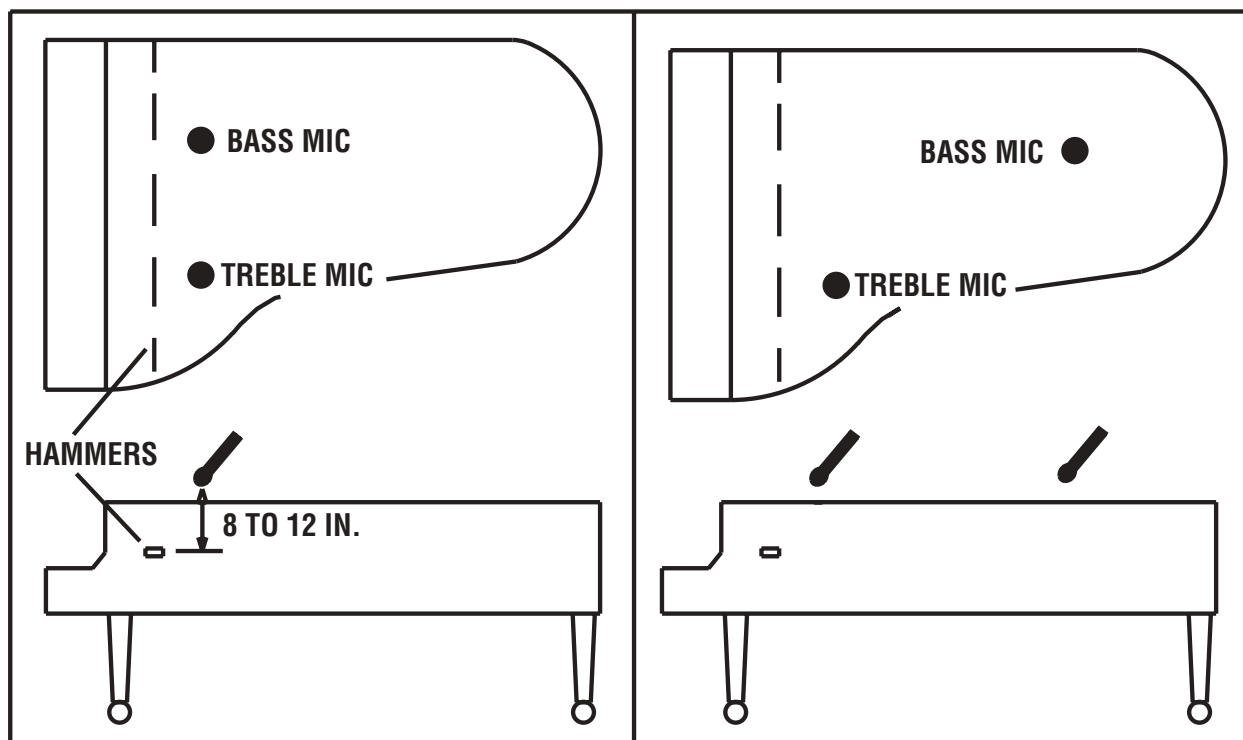


Fig. 6. Miking a piano with stand-mounted mics

Another option is to place two cardioid condenser mics about 8 inches horizontally from the hammers, 8 inches above the strings, over the bass and treble strings (Fig. 6). Some engineers prefer to put the bass mic toward the tail of the piano, over the soundboard.

An upright piano can be miked with two cardioid mics a few inches from the soundboard on the bass and treble sides.

### Horns

A popular choice is a flat-response dynamic or ribbon mic on every one or two players. Be sure to follow the 3-to-1 rule of mic placement: the distance between mics should be at least 3 times the mic-to-source distance.

I hope that these miking tips give you better sound and enhance your services.

*Bruce Bartlett is a recording engineer, audio journalist, and technical writer/mic engineer for Crown International. For more on mic techniques, point your web browser to [www.crownaudio.com/mic\\_htm/mic\\_pubs.htm](http://www.crownaudio.com/mic_htm/mic_pubs.htm). Scroll down to "Microphone Application Guides". Also check out the Crown microphone website: go to [www.crownaudio.com](http://www.crownaudio.com) and click on MICS.*