

CROWN MICROPHONE APPLICATION GUIDE FOR HOUSES OF WORSHIP



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MICROPHONE TECHNIQUES FOR HOUSES OF WORSHIP

In your house of worship, wouldn't you like to better understand what is being said, and hear music reproduced with a full, natural sound? You can do this with a good sound system.

One goal of the sound system is to help the congregation hear more clearly. The message is important, so it must be loud enough and easy to understand. Another goal is to reproduce music with high fidelity or naturalness.

To help you meet these goals, this guide offers some tips on **microphone techniques**. The types of microphones you choose—and their placement—have a major effect on the sound quality.

MICROPHONE TYPES

Microphones (or “mics” for short) are available in many types.

- **Miniature clip-on mics** (lavalier mics), which you clip onto the minister's robe or onto musical instruments.
- **Lectern mics**, which you mount on the pulpit or lectern.
- **Surface-mounted mics** which you put on surfaces (floor, ceiling, walls, tables).
- **Miniature choir mics** which you hang over the choir.
- **Handheld mics** for vocalists and instruments.

Crown makes a microphone for each of these needs. Many of the mics are so small, they become nearly invisible in use. In this way, the microphones do not distract from the service.

Microphones can also be classified according to the way they pick up sounds from different directions. An **omnidirectional** (omni) mic picks up sound equally well from all around. A **unidirectional** mic picks up mainly what it's aimed at. The most common type of unidirectional mic is the **cardioid**

type. Unidirectional mics help prevent feedback.

Feedback is the squealing sound you hear when the sound system is turned up too loud. The amplified sound from the loudspeakers enters the microphones and is reamplified.

Microphones also differ in the way they convert sound to electricity. A **condenser** or **electret condenser** microphone is charged with static electricity inside; a **dynamic** or **moving coil** microphone has a magnet and a coil of wire. Generally, the condenser type is higher quality, but requires a power supply to operate, such as an internal battery or an external **phantom power supply**. This supply is already built into some mixers. Another advantage of the condenser type is that it can be miniaturized.

A miniature condenser mic is desired when you want the mic to be invisible—say, hanging over the choir, clipped onto the minister's robe, or affixed to the pulpit.

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 loudspeakers and microphones as far apart as is practical.
- Turn down microphones 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).

SPECIFIC MIC TECHNIQUES

Below are some suggested microphone techniques for each sound source.

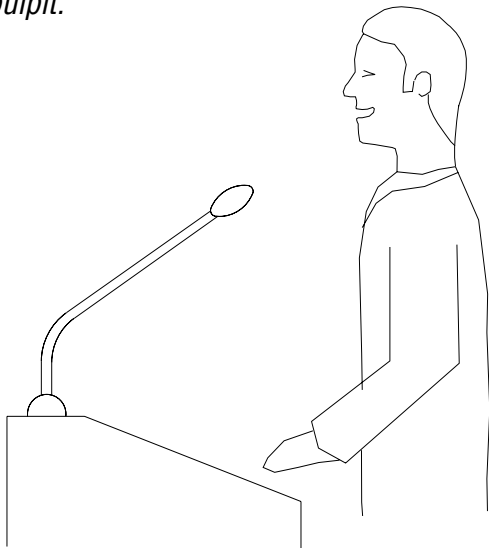
Minister

The type of mic you will use on the minister depends on whether the minister stays at the pulpit or moves about.

If the minister 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.

Crown makes three microphones for this purpose: the LM-201, LM-300A, and LM-301A. The LM-201 (see page 8) has a shock-mounted mic capsule and a ball-and-socket swivel mount that adjusts silently. The LM-300A (see page 8) is a slim gooseneck model that also adjusts silently. It plugs directly into a connector on the pulpit. The LM-301A adapts to a 5/8"-27 threaded adapter, and its cable can exit downward or out the side.

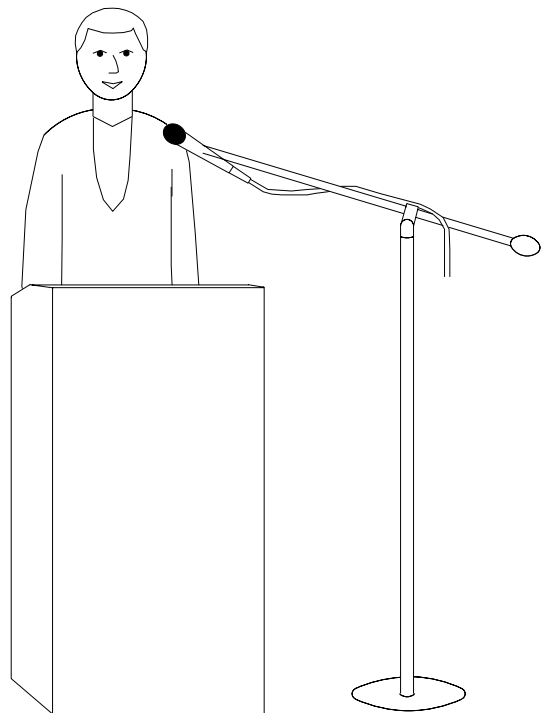
Fig. 1—Miking the minister with a lectern mic on the pulpit.



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.

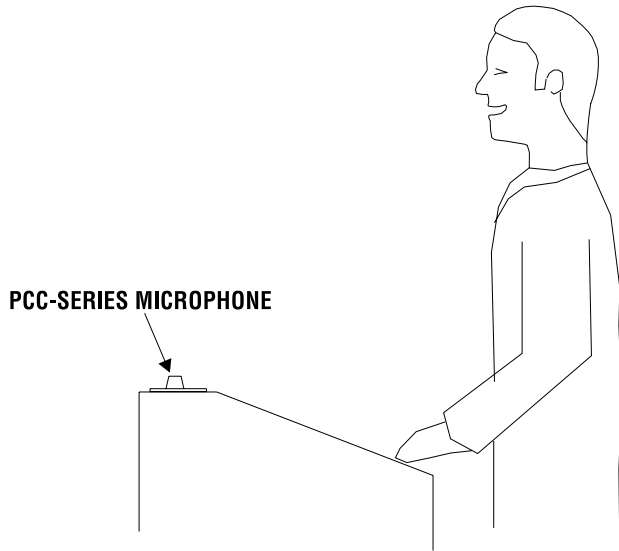
If you don't want to install the pulpit mic permanently, try mounting a handheld mic (*CM-200A or CM-700—Fig. 2*) on a boom stand about 8 inches away from the minister's mouth. Put a foam pop filter (windscreen) on the microphone.

Fig. 2—Pulpit miking with a CM-200A.



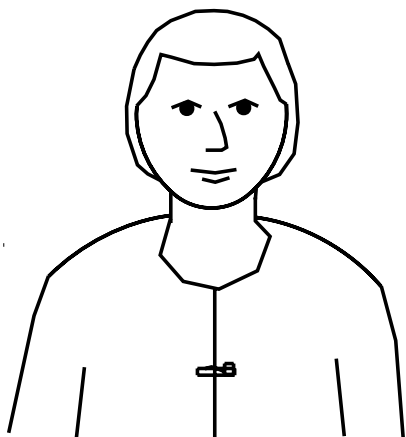
Yet another alternative is to place a unidirectional boundary mic (such as the Crown (PCC®-130, PCC-160, PCC-170) on top of the pulpit, near the edge furthest from the person speaking (*Fig. 3*).

Fig. 3—Pulpit miking with a PCC-160.



If the minister moves about, use a clip-on lavalier microphone (Fig. 4), 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 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.

Fig. 4—Miking the minister with a clip-on microphone.



A wireless lavalier microphone also works well for a storyteller on the steps of the platform. Install a fresh battery in the transmitter before each service, and tell the minister or lay person to turn on the transmitter before speaking.

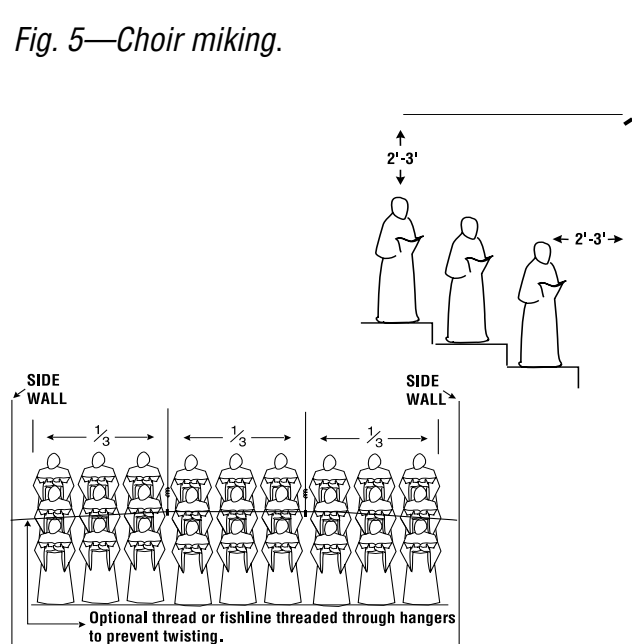
Choir

If your choir is loud enough in your church without amplification, you don't need to mike the choir unless you want to pick them up for recording or broadcast.

For permanent installations, you can hang miniature mics over the choir. The Crown *CM-30* or *CM-31* microphone (see page 8) are especially designed for choir miking; they are almost invisible in use and sound natural. 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.

If the choir mics are used for sound reinforcement, 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. 9). If the mics are used only for recording or broadcast, you can place them a few feet farther to pick up the acoustics of your sanctuary.

Fig. 5—Choir miking.



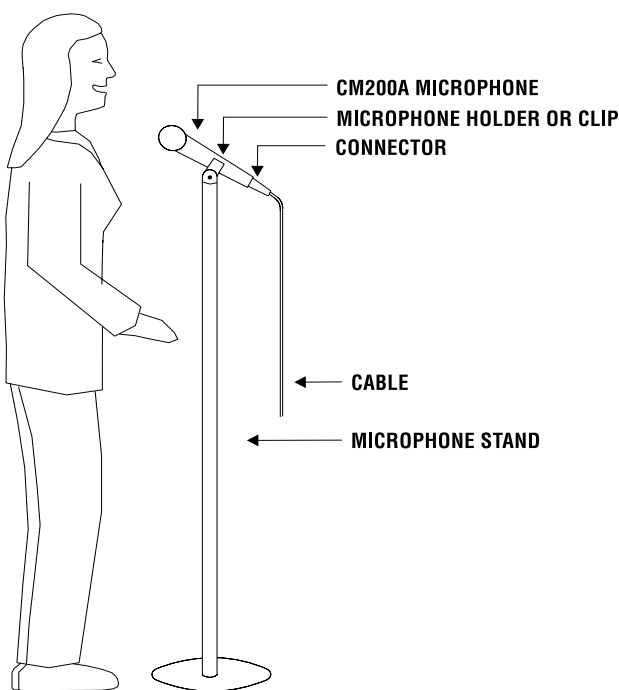
If you don't want to hang the mics, attach them to stands using the CM-30SA stand adapter. Make the mic stands tall by adding baby booms.

Soloist or Reader

This person can be covered with a stand-mounted handheld microphone such as the Crown *CM-200A* (Fig. 6). The handheld mic will come with a mic holder (swivel mount or clip) which screws onto the mic stand. Be sure to place the foam pop filter (windscreen) on the mic to prevent breath pops. Use a baby boom on the mic stand to reach a person seated in a presider's chair.

A vocalist might prefer a wireless mic in order to move freely on stage. This is a microphone with a radio transmitter built into the handle. Wireless mics are susceptible to interference from lighting dimmers, fluorescent lights and auto ignitions, but this interference is minimal if you use a VHF high-band or UHF system. Good wireless mics cost \$1000 and up, so try the mic in your house of worship before buying.

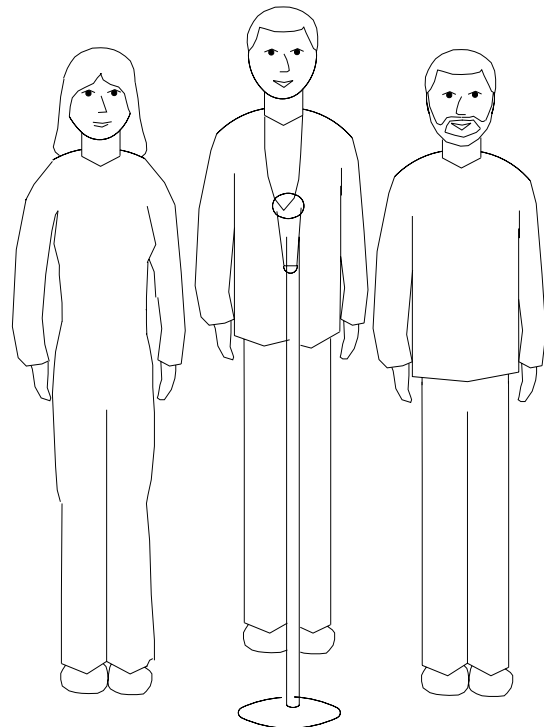
Fig. 6—A stand-mounted handheld microphone.



Vocal Duo or Trio

As shown in Fig. 7, place one CM-200A handheld mic on a stand 1 to 2 feet in front of the center of the group.

Fig. 7— Three singers using one microphone.



Predu **(Kneeling Bench for Weddings)**

Try a *PCC-160* unidirectional boundary microphone on the floor near the bench.

Altar Table

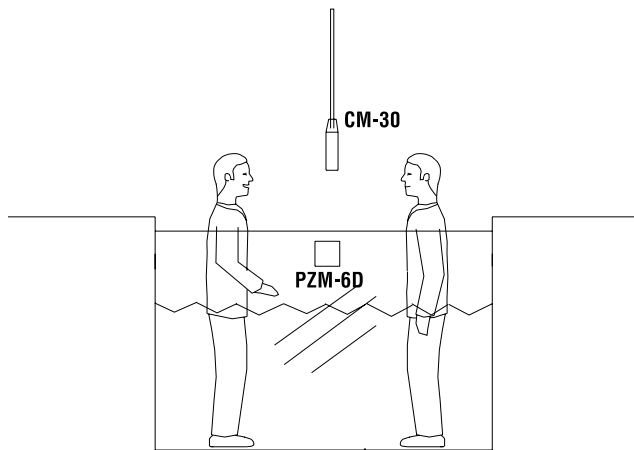
Place a *PCC-130*, *PCC-160*, *PCC-170*, unidirectional boundary mic on the table aiming at the people speaking. The first three models listed above are available in white to blend with a white tablecloth.

Baptismal

Hang a miniature choir mic (*CM-30* or *CM-31*) overhead, or mount a *PZM®-6D* inside on the glass (Fig. 8). If the baptismal is shallow, you can use a wireless lavalier mic because it eliminates the electrical

hazard of dropping a microphone into the water. The wireless mic uses only a 9-volt battery and poses no risk of shock.

Fig. 8—Baptismal pickup.



Wedding

As shown in *Fig. 9*, try one lavalier mic on the minister. It will pick up the minister, bride and groom.

Fig. 9—Wedding pickup.



Organ

You won't need to mic the organ for sound reinforcement, but you might need to for recording or broadcast. Crown *GLM-100* or *CM-150* mics are recommended because they reproduce the low

notes with richness and depth. Hang one or two mics 10-20 feet from the organ pipes or organ loudspeaker, 3 feet apart for stereo. Use one microphone for each group of pipes.

If stereo imaging is important, use a Crown *SASS®-P MKII PZM Stereo Microphone* (inside back page) 10 to 20 feet from the pipes.

Congregation

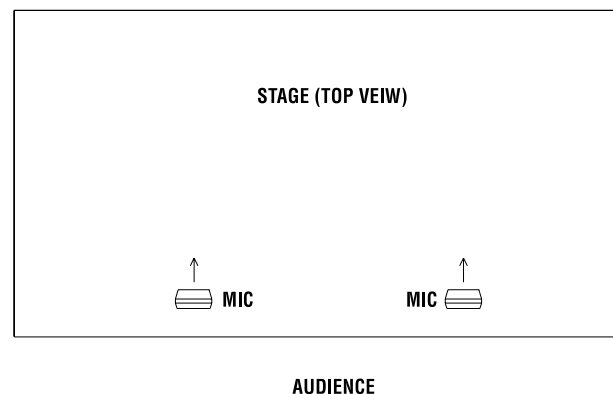
You need to mike the congregation only for recording or broadcast. To do it, hang a microphone (such as the Crown *CM-30*) several feet over the front row of the congregation, aiming at the back row. If the recording or broadcast is in stereo, use two microphones 3 feet apart, or place a *PZM* on each side wall.

Plays

Place two *PCC-160* mics on the floor in front of the actors. Spread the mics a few feet apart so they pick up all the actors equally well (*Fig. 10*). Turn off all the other mics in your system to prevent feedback. An alternative is to hang two *CM-30* or *CM-31* miniature choir mics overhead.

Typically, children's voices are too quiet to pick up with a distant microphone. When you turn up the volume enough to hear them, you hear feedback. You'll need to place a handheld mic (*CM-200A*) on a mic stand, and place a foam pop filter on the microphone to prevent breath pops. Have the children say their lines close to the microphone.

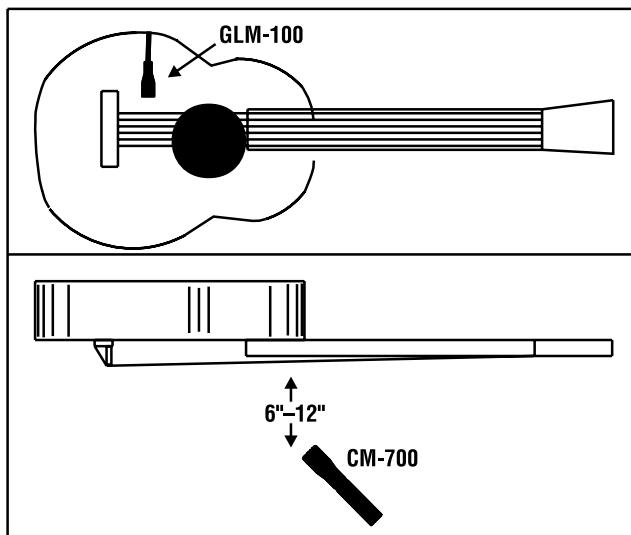
Fig. 10—Stage miking with PCCs.



Musical Instruments

Microphone techniques for individual instruments are covered in the *Crown Microphone Application Guide* and the *Crown Boundary Microphone Application Guide*, both available free from Crown or your Crown dealer. In this booklet, we'll cover only the acoustic guitar and piano. If the guitarist has an electrical pickup on the guitar, its cable probably has a phone plug on the end. Connect this phone plug 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. If you want to mike the acoustic guitarist, there are several ways. One is to tape a *GLM-SM* surface mount onto the guitar body, halfway between the sound hole and the bridge, near the low E string (*Fig. 11 top*). Insert a *GLM-100* mini microphone into this surface mount face down. Another way to mike the guitarist is to mount a *CM-700* on a boom stand and place the mic near the 12th fret (*Fig. 11 bottom*).

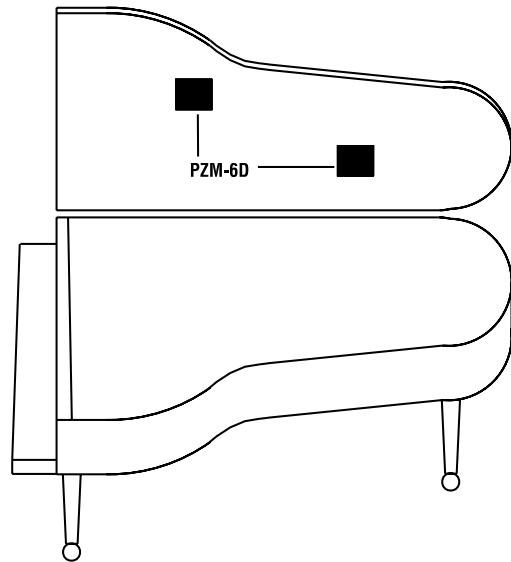
*Fig. 11 : Top miking with a GLM-100.
Bottom miking with a CM-700*



To mike a grand piano, tape two *PZM-30D* boundary microphones to the underside of the raised lid, one over the treble strings and one over the bass strings (*Fig. 12*). If feedback is a problem, close the lid and adjust your mixer equalization (tone controls) until the sound is natural. Another option is

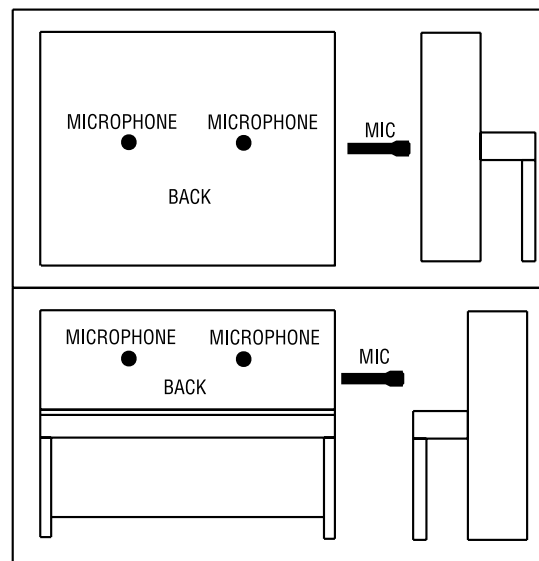
to place two *CM-700*'s about 8 inches horizontally from the hammers, 8 inches above the strings, over the bass and treble strings.

Fig. 12—Miking a grand piano with PZMS.



An upright piano can be miked with two *CM200A* or *CM-700* microphone near the sound board, or aiming at the open front (*Fig. 13*).

Fig. 13—Miking an upright piano.



We hope that these suggestions give you better sound, and that our microphones enhance your services.



CM-200A handheld/stand-mount microphone



PCC-160 supercardioid boundary microphone



PCC-170 supercardioid boundary microphone



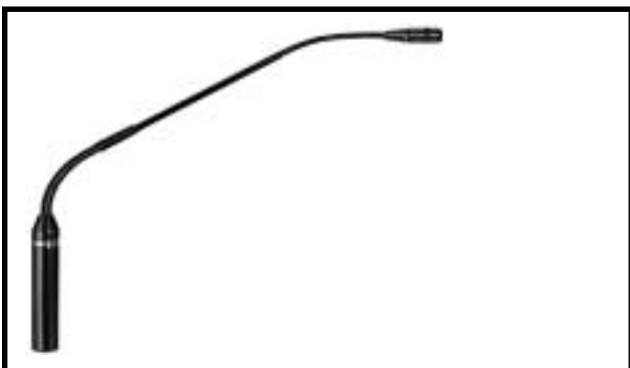
CM-30/CM-31 choir microphone



CM-700 vocal/instrument microphone



SASS-P MKII PZM stereo microphone



LM-300A lectern microphone