

# Getting Started





Congratulations on your purchase  
of a new MXL microphone.


MXL microphones are the result  
of world class engineering and  
manufacturing capabilities.

They are designed to provide  
you with outstanding performance  
and exceptional value. A high quality  
studio microphone is one of the  
essential tools in any musician's  
equipment arsenal. To help you obtain  
the best results from your new  
purchase, we've provided some tips,  
tricks, and answers to commonly  
asked questions. We encourage  
you to review these materials.

**T**he purpose of a microphone is to convert acoustical energy into electrical energy and MXL makes a variety of different microphones to accomplish this. Each type of microphone has its strengths and weaknesses depending on the application. Some of the different types of microphones are condenser, dynamic, ribbon, and USB. Each microphone will react differently to sound waves arriving from different directions. This is referred to as a microphone's polar pattern.

One of the most popular polar patterns is a cardioid  which picks up sound from the front of the microphone, less sound from the sides, and has good rejection of sound to the back of the microphone. The cardioid pattern is well suited for situations when you want to pick up specific sound sources like a guitar within an ensemble and is recommended for recording applications where the acoustics are good but not perfect. For instance, a cardioid pattern is less likely to pick up ambient noise from computers and recording equipment.

An **Omni-directional**  microphone picks up sound equally from all sides of the microphone. Omni-directional microphones are recommended for environments with excellent acoustics as they tend to pick up ambient noise. This pattern is well suited for picking up sound from a wider recording area. Omni-directional mics are less sensitive to "plosives", handling noise and proximity effect.

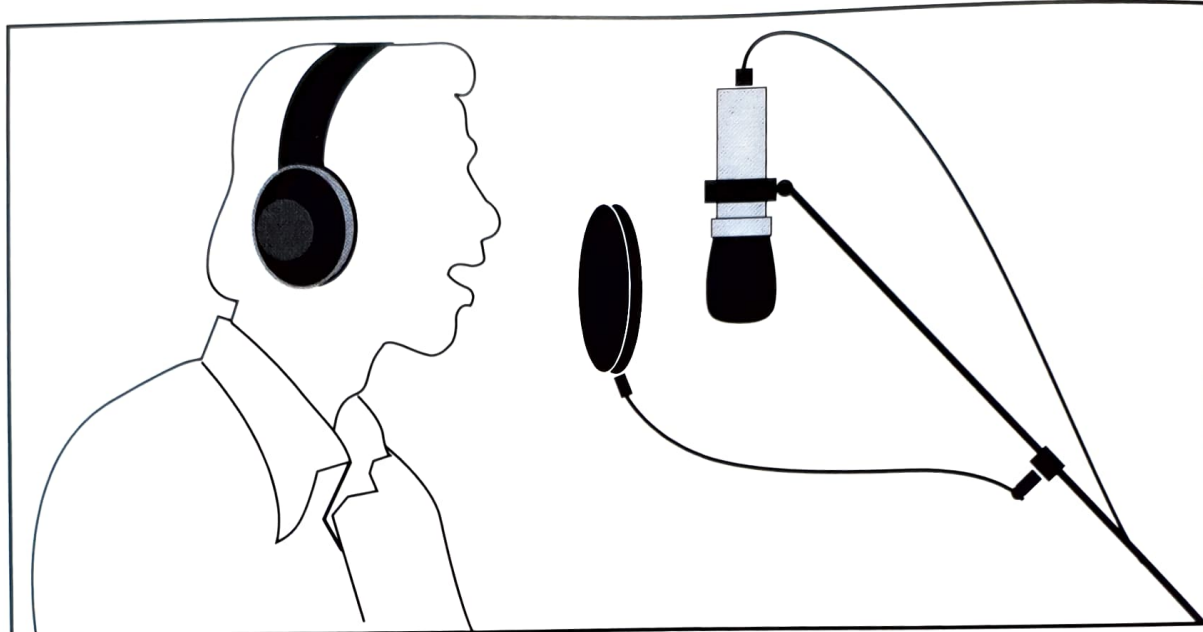
Commonly referred to as bi-directional, the **figure 8 pattern**  will pick up sounds from the front and back sides of the microphone with equal sensitivity while maintaining a large amount of rejection 90° off axis. Figure 8 patterns are the most susceptible to proximity effect and are commonly used in "mid-size" stereo recording setups.

While there are no hard and fast rules for microphone positioning, the setups on the following pages are a good place to begin as they work well in many recording situations—though we encourage you to experiment.



# Recording Vocals & Dialog

Fig. 1



Ideally, you want to record vocals in a relatively “dead” room. If you clap your hands and get an echo effect, you should consider adding some carpet, blankets, drapes, or other sound absorbing materials. On that note, make every effort to avoid getting too close to the room’s walls. These hard, reflective surfaces can easily complicate the recording process. Move your mic setup toward the room’s center. Generally, you should position the vocalist roughly 6 - 8 inches away from the microphone. Getting too close to the microphone tends to increase bass response and can create problems with plosive sounds - those popping Ps, Bs, Ds, and Ts (more on this in a moment). Getting too far away makes the microphone more subject to picking up room ambience - creating the effect of the vocalist being in a bowl. While vocalists may need to move around in order to hit those high notes, make every effort to maintain a constant distance from the microphone, as this will provide the greatest tonal balance. (*see Fig. 1*) For

the most part, the microphone’s axis (or center line) should aim toward the nose and mouth to obtain the fullest sound. It’s not a bad idea, however, to experiment angling the microphone slightly away from dead center so as to help minimize plosives. Further, you should always place a “pop” filter between the vocalist and the microphone, with the pop filter positioned 3 - 4 inches in front of the microphone. This will greatly increase your ability to achieve the most natural sounding recordings with minimal interference from plosive sounds. Fixing plosives with audio editing software often creates more of a problem than the plosive itself. Use of a pop filter will also protect your microphone’s sensitive capsule - keeping it free from moisture caused by saliva (and breath condensation) projecting from the performer’s mouth. Remember... Good microphone technique, proper positioning, and using a pop filter can make all the difference between a so-so vocal recording and a great one.

# Recording Acoustic Guitar

While it may seem obvious, your best results for capturing the acoustic guitar (or any similar stringed instrument for that matter) begin with a properly tuned instrument and strings that, while not old, aren't so new so as to create tuning issues due to stretching.

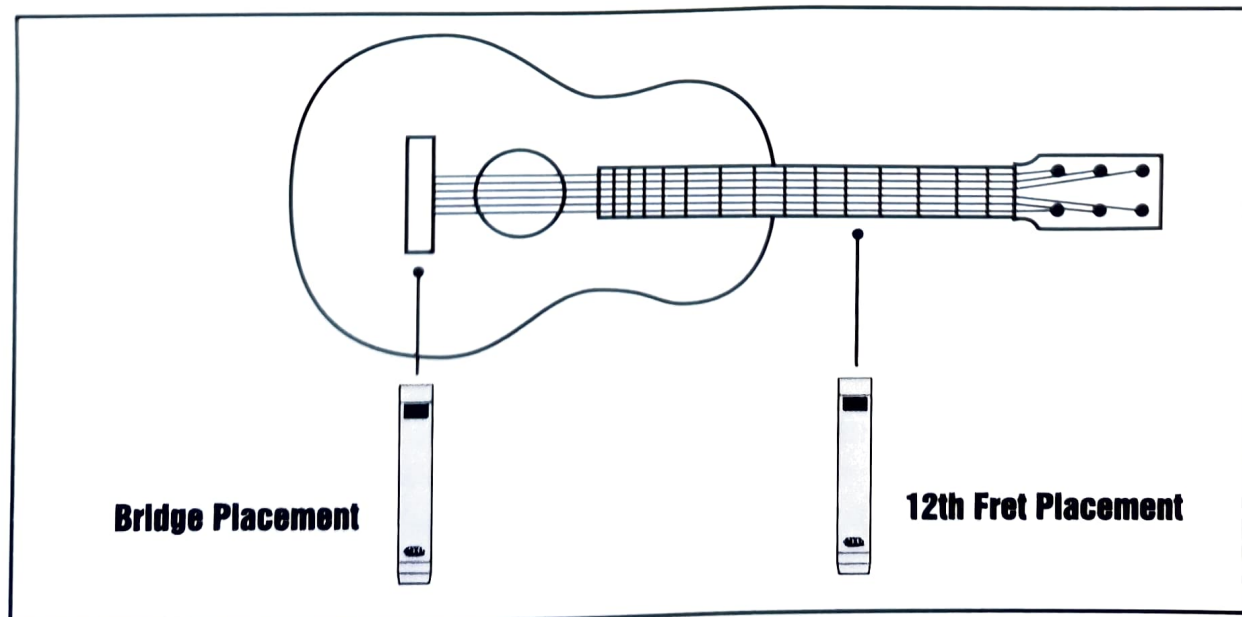
There are two optimum points for microphone positioning - either near the bridge or by the twelfth fret. While it may seem natural to place the microphone in front of the instrument's sound hole, doing so usually increases low frequency response, causing the instrument to sound "boomy."

**Twelfth Fret Placement:** Placing the microphone roughly 2 - 4 inches from the twelfth fret and aiming it directly at the strings will generally produce a warm, full bodied sound with good tonal balance. Using this technique, the sound hole's contribution will be moderated since the microphone is not pointed directly at it.

**Bridge Placement:** Similarly, you can position the microphone 3 - 6 inches from the guitar's bridge. This will generally produce a somewhat brighter tonal quality. You should also be prepared to experiment with positioning the microphone slightly off-axis if you find yourself capturing too much low frequency response from the guitar's sound hole.

The acoustical characteristics of your room will also have a pronounced effect on your results. A "live" room will produce an overall "brighter" guitar sound, while a "damped" room will produce more of a mellow tone. If you have two microphones, you may wish to experiment using one in close proximity to the guitar as previously described, with the second microphone on a stand a few feet away to capture the room's ambience. Blending the two sources can produce excellent results.

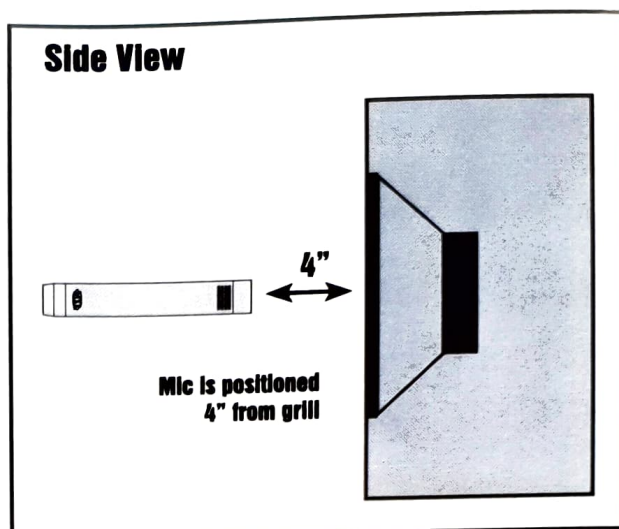
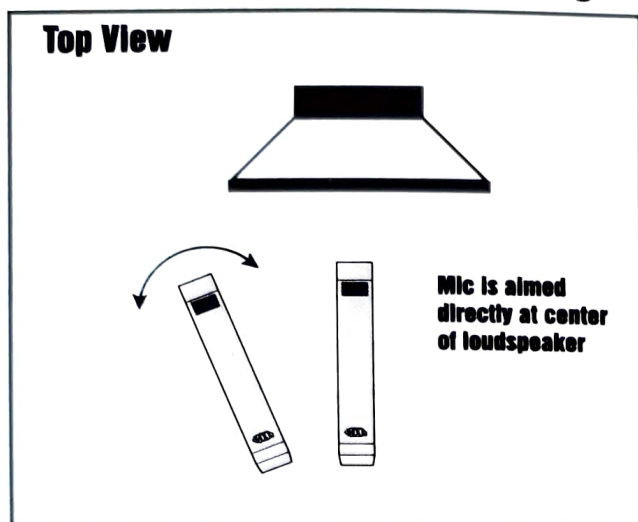
Fig. 2





# Recording Amplified (Electric) Guitar

Fig. 3



While the electric guitar can certainly be recorded directly, there are times when there is simply no substitute for the sound of a real amplifier. Guitar amps have particular gain stages that facilitate the popular "crunch" guitar sound. While digital modeling and processing systems certainly have their place, they may not have the same level of realism as the sound from an amplifier. A small guitar amp can be just as effective for this application as a stack, because you don't necessarily need to "crank" the volume. Instead, you want to increase the amp's initial gain to achieve the desired amount of overdrive.

Typically, a guitar amp is close miked to achieve the highest direct sound. Placing the microphone roughly 4 inches from the grill, aimed directly at the center of the loudspeaker will produce the most "edge" to your sound. By angling the microphone slightly off axis and

towards the wall, you can add more "room sound." Experimentation is a key factor in achieving the sound you are looking for. (see Fig. 3)

Placement of the amp is another important factor. To reduce the brightness of the sound, set the amplifier on a carpeted floor. Similarly, elevating the amplifier off the floor may result in a loss of low end. If you're looking for a big reverberant tone, placing the amp and microphone in the bathroom is another popular technique. The hard tiles and other reflective surfaces can do wonders for a dull sound. In this case, move the microphone back a few feet from the loudspeaker and crank it up!

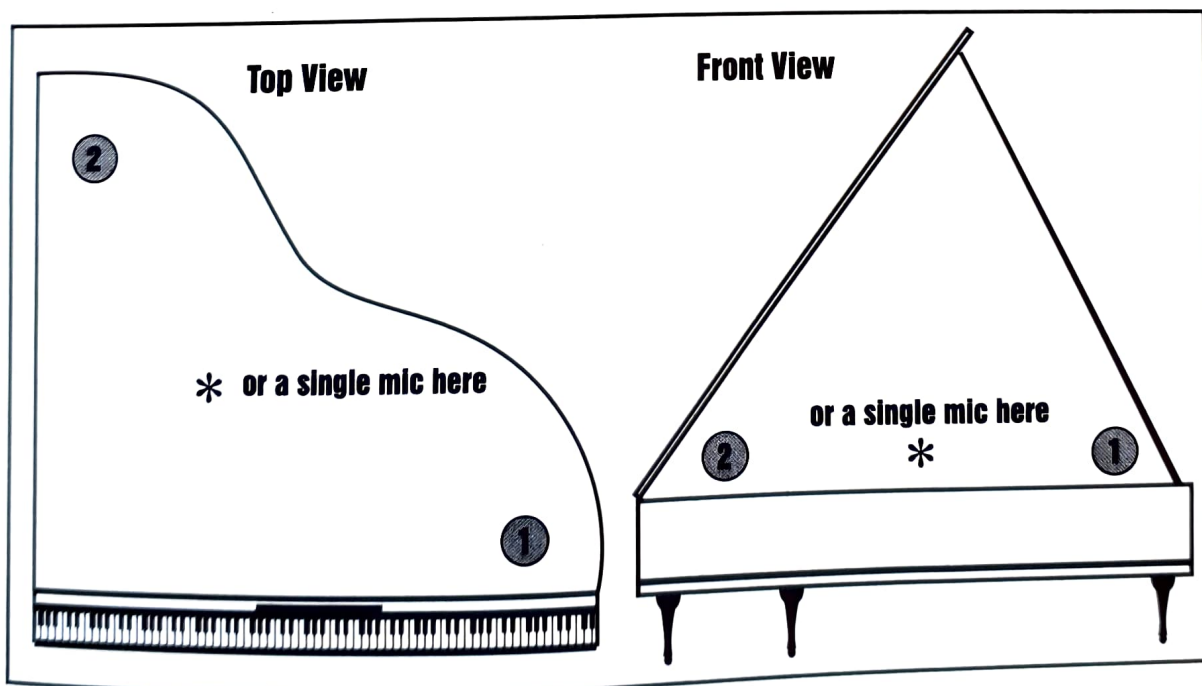
# Recording Piano

The piano is one of the most challenging instruments to record, and many problems stem from the quality and maintenance of the instrument itself. You'll obtain the best results by using an instrument that has just been tuned and is in good mechanical condition.

The piano is generally recorded using the close miking technique. Ideally, you'll want a minimum of two microphones. Usually the microphone capturing the higher strings is assigned to the left channel and the microphone capturing the lower strings is assigned to the right channel in the final stereo mix, though the stereo spread generally is not hard left and right. While a single microphone can be used, the lower and upper extremities of the instrument will likely be compromised.

**Grand Piano:** For the upper strings, position the microphone approximately 8 inches from the piano hammers (to reduce mechanical noise) and 8 - 11 inches above the strings, with the Pan position set to left of center. For the lower strings, position the microphone toward the far end (away from the keyboard) roughly 6 - 12 inches from the end and 8 - 11 inches above the strings, with the Pan position set to right of center. Position the piano's lid at full stick. (see Fig. 4A) If you are using a single microphone, position the microphone approximately 8 inches from the piano hammers (to reduce mechanical noise) and 8 - 11 inches above the strings - centered over the piano's mid point. Pan position should be centered and the piano's lid should be at full stick.

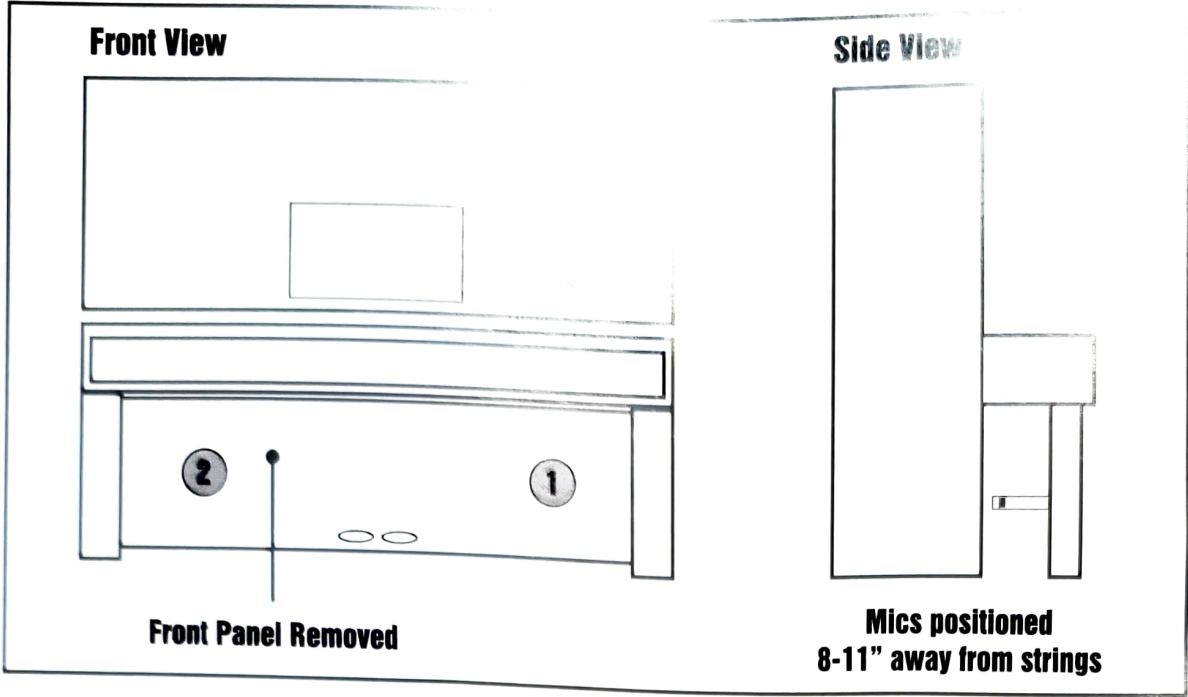
Fig. 4A



**Upright Piano:** With an upright piano, the two microphones are generally placed either just over the top of the piano with the top open, or you can remove the piano's front panel beneath the keyboard and place the microphones below.

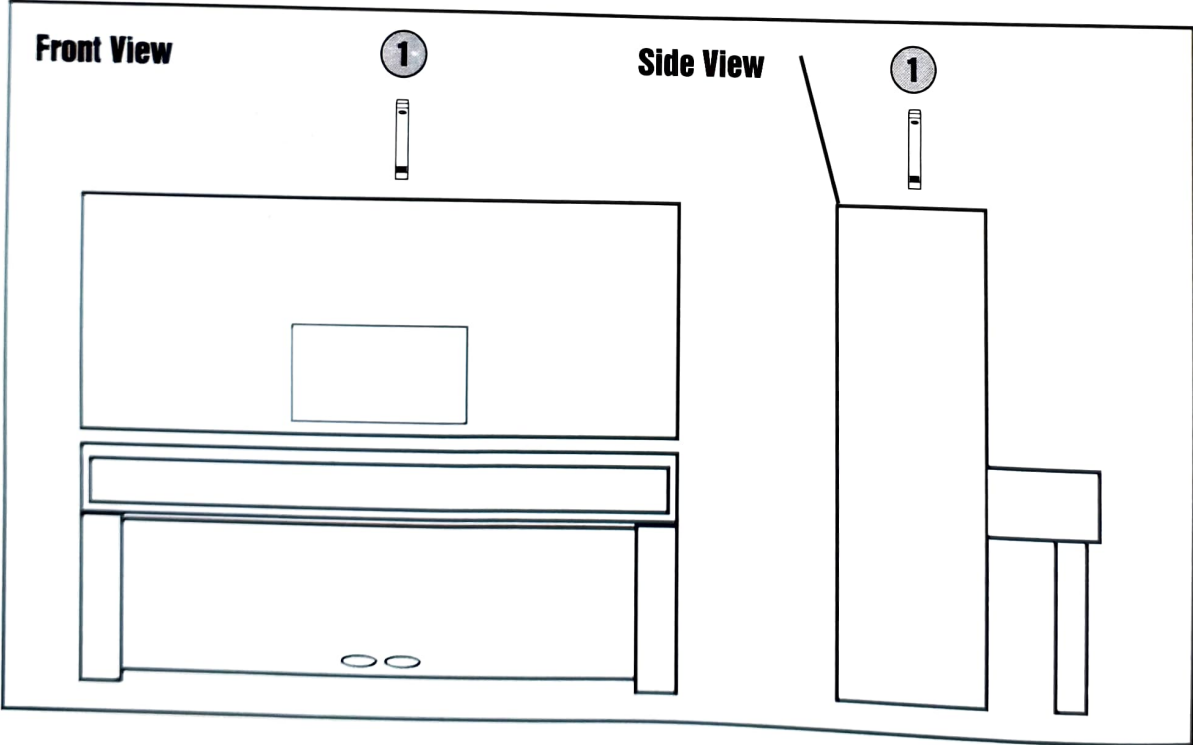


Fig. 4B



**Front Panel Placement:** For the upper strings, position the microphone approximately 8 - 11 inches away from the strings, with the Pan position set to left of center. For the lower strings, position the microphone 8 - 11 inches away from the strings, with the Pan position set to right of center. (see Fig. 4B)

Fig. 4C



**Single Microphone / Open Top:** If you are using a single microphone, it is generally recommended that you record from above, as placement of the microphone in the lower center may interfere with the performer's ability to access the pedals and the microphone will likely pick up excessive pedal and other mechanical noise. Position the microphone just over the open top, centered over the instrument. (see Fig. 4C)

# Recording a Drum Kit

Like the piano, capturing the drums successfully can be quite a challenge because you must be very careful to avoid positioning the microphone(s) where they could be hit! Ideally you'll want a minimum of two microphones for this job, though a single microphone can be employed.

**Stereo Overhead Pair:** Position the two microphones approximately 16 - 20 inches above the performer's head — separated laterally by roughly 2 - 3 feet and placed 5 - 6 feet out in front of the drum kit. Adjust the two microphones' pan position so you achieve a good stereo spread, though generally not hard left and right. (see Fig. 5A)

## Single Overhead Microphone:

Position the microphone approximately 16 - 20 inches above the performer's head, centered 5 - 6 feet in front of the drum set. The microphone's pan position should be centered for mono drums. (see Fig. 5B)

For best results, record the drums in an acoustically "dead" room. If the room is "live," the sharp attack transients of the drum kit will become more difficult to capture, resulting in a muddy sound without definition. Further, you should always record the drums dry, then add signal processing after recording.

Fig. 5A

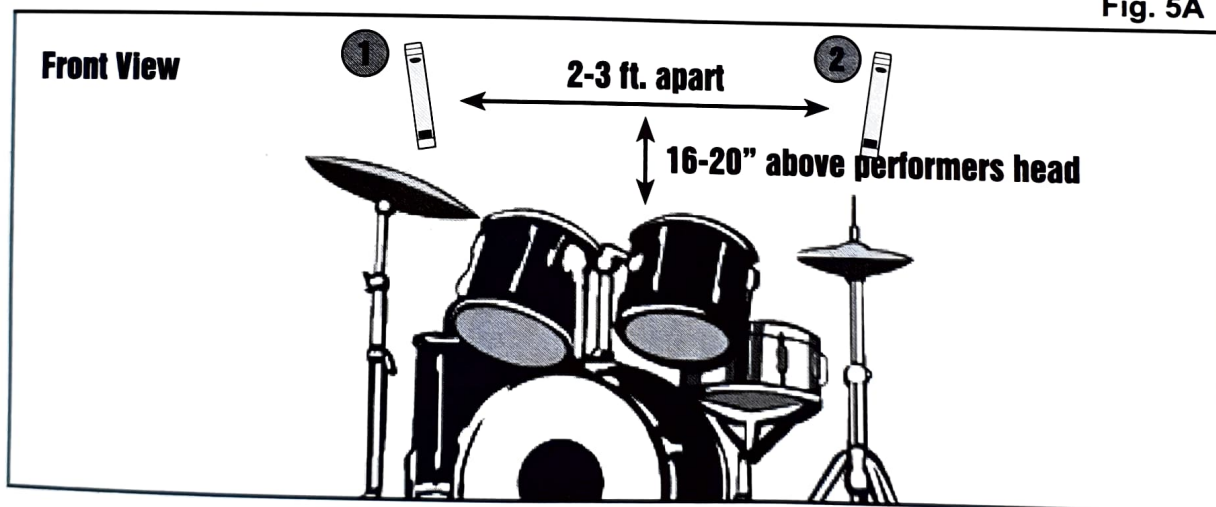
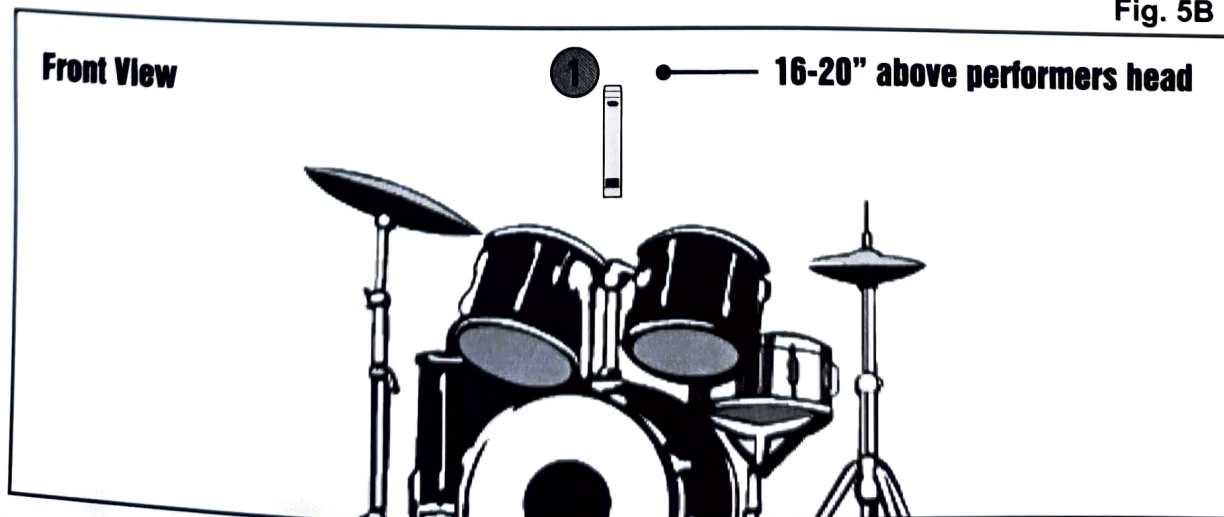


Fig. 5B





# MXL FAQ

**Q: Where is the front of the microphone?**

A: There are two styles of microphones in the MXL product line. One type is a side address microphone. This has a cardioid pattern symbol or an MXL logo on the body or the grill which indicates the front of the microphone. The other type is an end address microphone in which the front of the microphone is located at the opposite end of the XLR jack.

**Q: My microphone makes no sound. What do I do?**

A: Your microphone may require phantom power. Consult your user manual to determine if your mic requires phantom power. If it does, confirm that the preamp you are plugging your microphone into has phantom power and it is turned on (see more about phantom power below). Check the cable you are using; there is a chance that the cable is bad or you are using the wrong type of cable to transmit phantom power. If you are plugging your microphone into a computer via an audio interface, make sure you have the correct input settings.

**Q: What is phantom power?**

A: Phantom power is DC power, typically in the form of a 48-volt signal (though phantom power can range from 9V – 52V), supplied to condenser microphones by either a dedicated preamplifier or a preamplifier built into an audio mixer's input channel. Phantom power enables the microphone to operate.

**Q: Where does phantom power come from?**

A: Phantom power is provided by either a stand alone microphone preamplifier or one that is built into an audio mixer's input channel. Many hard disk recorders have phantom power built in.

**Q: What if I don't have phantom power?**

A: You can obtain phantom power by purchasing a dedicated microphone preamplifier or a 48-volt phantom power equipped audio mixer.

**Q: How many volts of phantom power do I need?**

A: MXL microphones require 48-volt phantom power to operate correctly. Some devices provide 15 volts. Although some MXL microphones will work at 15 volts, they will not operate at maximum efficiency.

**Q: What kind of cable do I need to use with phantom power?**

A: You must use an XLR cable. The XLR cable uses a 3-pin connector on both ends of the cable. Phantom power will not work with a cable that has an XLR connector on one end and a quarter inch phone plug connector on the other end.

**Q: Is phantom power bad for my other microphones?**

**A:** Phantom power is typically not harmful to microphones that do not require it. Most microphones that do not require phantom power will ignore the unneeded voltage; however, some ribbon microphones can be damaged by phantom power. Please read your microphone's owner's manual for specific instructions about using phantom power with your microphone.

**Q: My microphone keeps cutting in and out while I'm recording.  
What is the problem?**

**A:** Condenser microphones require a pop filter for vocal work. A pop filter can either be metal, or a round ring with a very fine mesh material stretched across it. The pop filter should be placed roughly 3 - 4 inches away from the microphone – between the microphone and the vocalist. The pop filter not only eliminates plosives (those “popping Ps”), it also collects breath condensation, protecting the microphone's capsule from moisture in the process. Condensation on the microphone's capsule will cause the microphone to short circuit resulting in the microphone cutting in and out during operation. Should this occur, you can leave the microphone uncovered and out in the open for approximately two weeks to thoroughly dry, which will likely rectify the problem. Afterward, you should always use a pop filter.

**Q: What is a shockmount and why would I use it?**

**A:** Shockmounts de-couple the microphone from the mic stand and the environment. The shockmount will minimize floor noise as well as any noises induced by people handling the microphone stand. Shockmounts should be considered standard equipment for all recording applications.

**Q: What is a -10 dB pad?**

**A:** A -10 dB pad is a switch or knob that lowers the level of an incoming signal (such as a microphone) before it reaches the rest of the circuitry. If you are recording something very loud (such as a guitar amp) and signal is overpowering your recorder, you would select the -10 dB pad to lower the volume of the microphone to make the input signal more manageable.

**Q: What is a lo-cut filter?**

**A:** A lo-cut filter is an electronic filter that allows only the frequencies higher than a given point to pass, eliminating all frequencies below this point. In actual use, it has an effect similar to using a shockmount because it eliminates low-end rumble and similar noise. Lo-cut can be used when recording acoustic guitar and vocals to alleviate low frequency noise that can seep into your recording.