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**A newsletter
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Microphones for Musicals

Of all the different events and activities throughout the year, musicals often require the most complex setup for a sound system. Proper selection and placement of the microphones will make the difference between a mediocre and a successful production.

The primary goal of sound reinforcement for theatrical productions is to provide natural reinforcement of the human voice. Often other sources of sound such as instrumental accompaniment and sound effects are also incorporated. Three basic types of microphones are useful that meet these requirements:

- 1) Boundary microphones
- 2) Wireless lapel or headworn microphones
- 3) Handheld solo microphones (also usually wireless)

Boundary Microphones

A primary microphone type for theatrical productions is the boundary microphone. Boundary microphones are

generally flat, low-profile designs, often incorporating a hard, flat plate surface as a base.

Several manufacturers produce boundary microphones in both unidirectional (favoring one direction) and omnidirectional types (non-directional). Only unidirectional boundary microphones should be considered for purposes of theatrical sound reinforcement.

Unidirectional models will help increase the amount of amplification available before feedback occurs. Also, unidirectional microphones can be positioned so audience noise is not picked up. In addition, proper use can help isolate the voices from the orchestra or instrumental accompaniment.

Depending on the width of the stage, one to four boundary microphones can be placed across the front of the stage (see Figure 1).

To select how many:

- 1) Always remember when it comes to sound systems, "less is better."

Continued from page 1

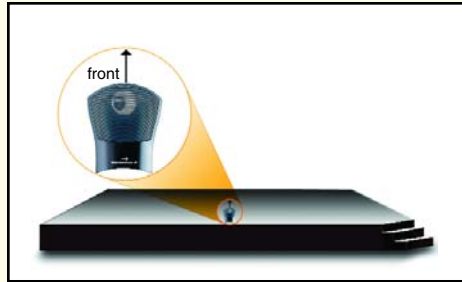


Figure 1
Placement for one boundary microphone

2) Keeping Number 1 in mind, start with one boundary microphone centered at the front of the stage. If any dialogue is lost at extreme stage left or right, then add an additional microphone.

3) Adjust the two microphones so they split the stage in thirds. Increase the distance between the microphones until the extreme left and right are reinforced.

4) Now check the front center stage area again. If the above two microphones are too far apart, the center stage pickup may be poor. You may want to add another center stage microphone. The two outside microphones should be moved farther away from the center microphone until you notice a weak spot in reinforcement when someone is standing directly between the center and either outside microphone.

5) A fourth front stage microphone would be required only if the stage is very wide. Use the same guidelines as above. Don't forget that "less is better."

Place the microphones on the front lip of the stage. Make sure you have them aimed in the right direction! The back of the microphone needs to be aimed so it is pointed toward sound sources you don't want amplified, such as the audience, or orchestra or monitor loudspeakers. Also, angling the microphones toward each other causes unwanted interaction (Figure 2).

Now check to see how far upstage (away from the front lip of the stage and the microphones) you can move before the dialogue starts to fade. If the blocking (movement of the actors) requires upstage areas that the front microphones cannot cover, additional area microphones will be needed.

Wireless Microphones

After placing the boundary microphones, you may need to reinforce individuals such as the main characters or a weak singer. The best option is to use wireless lapel or headworn microphones. The number of wireless microphones you can use will depend on the size of the cast and your budget. Most churches don't own enough, but the obvious solution is to rent microphones when you need them. The rental vendor can help you coordinate the frequencies of your wireless microphones with the rented ones. This is critically important. You don't want any interference to occur during a dramatic moment.

Handheld Microphones

Handheld microphones can also be used if that is the only way to get enough volume from soft-spoken talkers or singers. A handheld microphone may be the only way to get a singer above an orchestra or soundtrack. A wireless microphone is again highly recommended since it can quickly be moved from one person to another. There are also no cables to get twisted or tripped over.

Children's Voices

Children's voices are often so weak that the only way to amplify them is to set up microphones on stands. The children can now move up to the microphones to speak or sing their lines. Although the microphones are obvious, parents would rather hear their child speak than have the microphones hidden. Miniature gooseneck microphones have minimal visual impact, yet they work and sound great. Simply mount them on a short stand.

Operational Tips

As with any sound system, the gain or volume before feedback is affected by the number of microphones turned on. Again, less is better. A microphone not in use should be turned down. This method will give you more volume on the active microphones before feedback occurs. If you need all the gain you can get (which is usually the case), the sound operator will need to constant adjust the volume controls by adjusting up the needed ones and turning down the unused ones. Mixers with good channel on/off switches can help the sound operator accomplish this difficult task. Some high-end mixers even have programmable mute switches. This allows any combination of microphone channels to be turned on or off with just one button. Another great tool is the automatic mixer.

Please feel free to call us if you have any questions. We want to help you with your sound needs so that everyone in your audience can hear your message.

Travis Ludwig

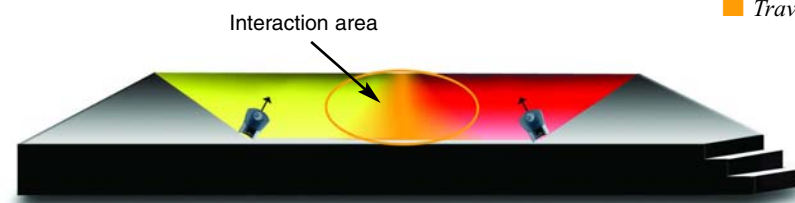


Figure 2

TECH TALK Sound System Improvements on a Budget

In today's economy, budget constraints are a reality for everyone. This article will give you advice to keep your sound system from becoming obsolete while taking into consideration a real-world budget.

What's First

The first step of any sound system upgrade is to evaluate the strengths and weaknesses of your current system. This is best done by someone with a good understanding of sound system equipment, design and installation techniques. A knowledge of new equipment is also helpful.

Since everyone is not a sound system expert, we can help. We will evaluate your present equipment and give you advice on what is working. We can also give you advice on new equipment which may solve a sound system problem or need you may have. Please call us for help.

So let's now assume you know what useful equipment you have and what equipment you may need for a successful sound system solution. If the solution requires more funds than you can commit, some choices must be made. This requires setting priorities for short- and long-term goals.

Budget Smart

Once you know the amount of money needed, you can start setting up a budget. You'll want to spend what money you have wisely.

A quality sound system should last for many years. This means the equipment you purchase now should

be items with the greatest longevity.

Most basic sound systems are comprised of equipment from the following categories:

- 1) Main loudspeaker system
- 2) Microphones and source equipment
- 3) Mixers and control equipment
- 4) Peripheral equipment and accessories

These categories are listed in order of priority for improvement considerations.

Loudspeaker System

Let's say your current loudspeaker system cannot be heard equally well in every part of the auditorium or it simply does not sound very natural. Perhaps the sound becomes distorted before the level is loud enough. If this is your situation, the loudspeaker system is probably the best place to invest the majority of your budget.

If your loudspeaker system is not capable of providing good coverage with clear intelligible sound, improvements to the other system components will not necessarily improve the sound. A good loudspeaker system requires an engineered design along with a careful selection of the right components.

Microphones and Source Equipment

Microphones are also extremely important. A great loudspeaker system with poor microphones will still produce poor sound. Bad quality "in" will produce bad quality "out." The opposite is also true. Great

microphones will still sound bad on a poor loudspeaker system.

Microphones are designed with certain characteristics for specific purposes. Please call us for advice when you are looking for a new microphone.

Mixers and Control Equipment

In recent years, mixer and control equipment has greatly improved and has also become more sophisticated. This allows us to provide you with more options and suggestions for improvements. Like many areas, computers and computer controls are becoming increasingly useful in providing a good system with unprecedented function and control.

And Don't Forget...

One important area that is often overlooked in the sound system budget is the need for maintenance and supplies. It's simply not prudent to purchase a high quality system and then not have the finances for batteries.

Help is Available!

Let us help you develop a plan that provides the most value for the investment you make, both now and for the future.

Travis Ludwig