

Recording Techniques

Recording Class Handout

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Microphone Placement

Acoustic Piano

Acoustic Piano can be one of the most difficult instruments to record. The instrument has an incredible dynamic range and produces a wide range of frequencies. When recording acoustic piano, you must take into account the extreme variations in the sound from one piano to another. Next factor in the sound of the room. Finally, when recording the piano along with other instruments, you must consider how to minimize the bleed from other instruments into the piano mics. In the end, it is better to know the range possibilities so that the best method for recording a specific piano in a specific session can be devised.

The following figures are examples of close mic techniques. Remember that when recording an acoustic piano, the lid may need to be propped open with an alternate stick. Some engineers make their own prop to provide a smaller opening than the small stick.

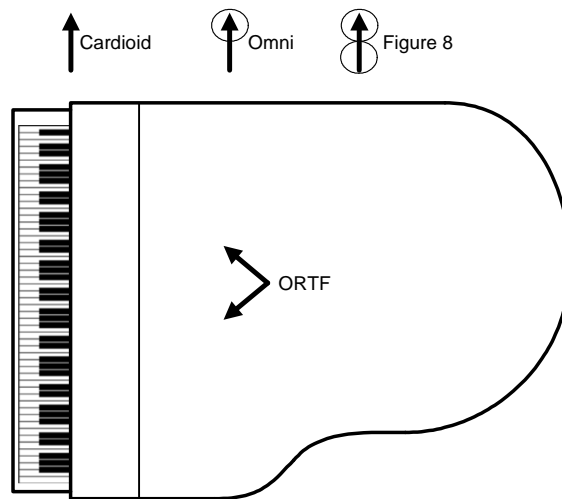


FIGURE 1 - ORTF 10" Above Strings

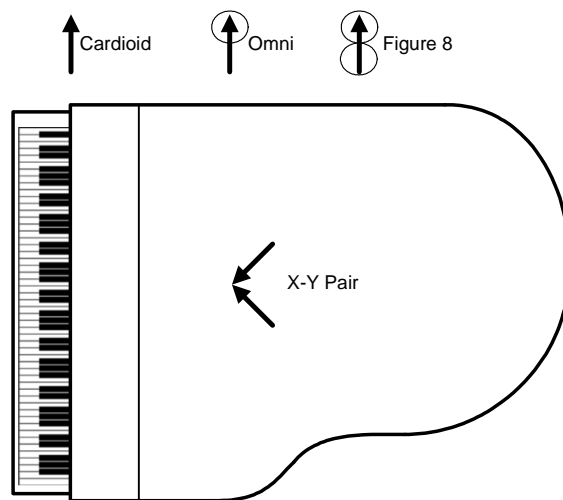


FIGURE 2 - X-Y Pair 10" Above Strings

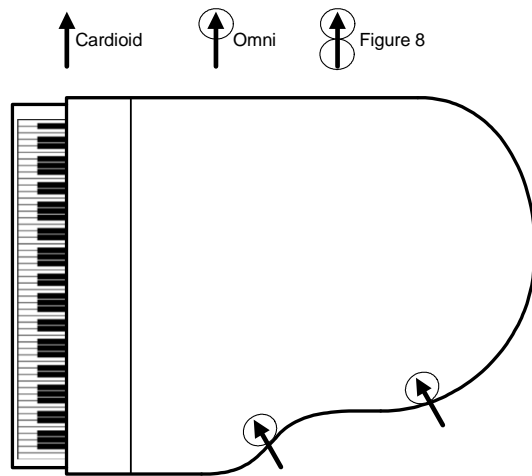


FIGURE 3 - Omni Pair Just Over Edge of Frame

The three previous examples are only a starting point. Each situation will dictate what mics are chosen and how they will be placed. More extreme measures may have to be taken with placement when recording a live performance when other loud instruments are present. Two miniature omni mics taped to the bottom of the closed lid may be necessary.

Padding the top of the piano with a heavy moving blanket can also help with isolation. Place the blanket so it also covers the opening of the lid.

Drum Kit

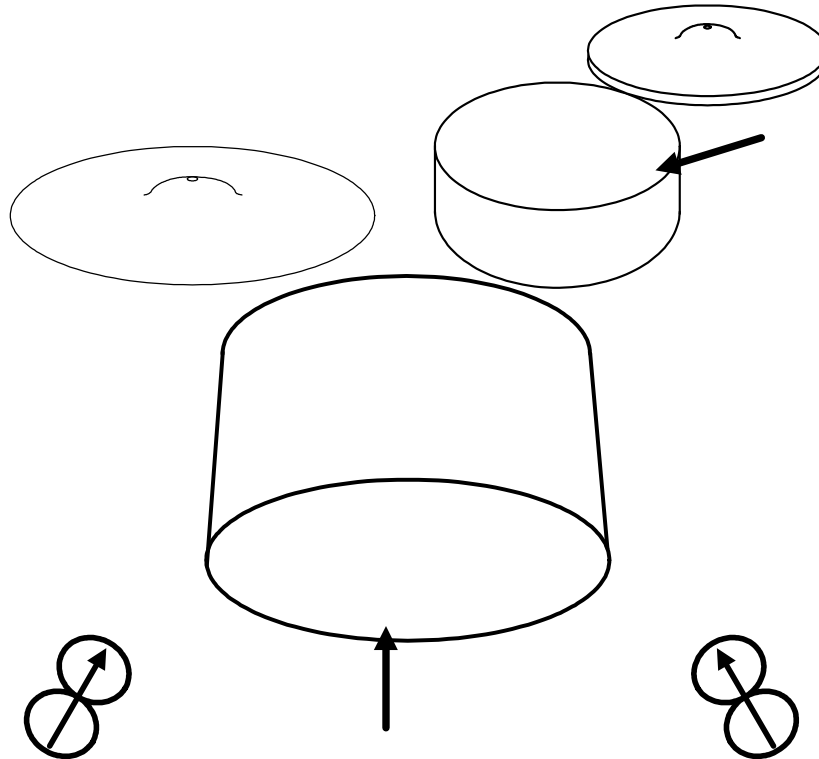


FIGURE 4 - Jazz Drum Kit

It has been said that the best drum sound comes from a pair of microphones above the drums, a single mic on the kick drum, and a great drum kit - in a great room - with a great drummer. No doubt, it is essential to start with a well-tuned drum kit that does not rattle or squeak. In the modern, multitrack world it is usually best to add some insurance to the recording process. If the tracks are available, mic everything. If the tracks are not needed, they can be discarded.

Figure 4 shows a variation on the “two mic overhead” technique. This involves 2 ribbon microphones positioned about 3 feet out from the kit and angled in at the “Acoustic Center” of the kit. The height of the mics is at about the same level as the rack toms. The mics can be adjusted for the best balance on all the drums. If ribbon mics are not available, two omni mics can also be used. The distance of the mics from the drum kit determines the mix of drum sound to room sound.

The kick mic is positioned about 2 inches from the front head of the kick drum and off center. It is important to have a microphone with a very good bottom end response. The Audix D6 is specifically designed for this type of application. Other suggestions: Sennheiser MD421, EV RE20, Shure Beta 52 and AKG D112.

The top pick for snare mic always seems to be the Shure SM57. When miking a Jazz Drum Kit, many engineers feel that the close mic on the snare is not always necessary, but good to have in order to capture brushes, side-stick and other light details. The Shure Beta 56 is also a good choice. This mic has the advantage of a shorter body length and adjustable body angle. Combining a Dynamic mic and a Condenser mic for the snare top is another possibility. In this case, the two mics must be adjusted to that they are time aligned. Once the mic position is set, they can be “strapped” together so that they cannot move during the session. An SM57 and an AKG 451 with cardioid capsule would be a good combination.

(In a digital audio workstation, these tracks can be visually “time aligned” after recording.)

Traditional overhead mics above the drum kit span a wide range of microphone models and configurations. The choice of mic and positioning will vary with the drum kit, the room and the drummer. The following is just a small sampling of the list of possibilities.

- Audio Technica 4051 - Standard X-Y pair positioned above drum kit
- AKG 414 - Standard ORTF pair positioned above drum kit (actually, above the drummer's head)
- Crown PZM - Pair of mics mounted on a 30" square plate positioned over the drummer's head. The plane of the plate bisects the drum kit at its acoustic center. The size of the plate determines the low frequency response: the larger the plate, the lower the response.
- Neumann KM184 - Standard X-Y pair positioned above drum kit
- Royer R-122 Ribbon - Spaced pair, placed just above and to either side of the drummer's head (Since ribbon mics generally have a figure 8 pattern, it is a good idea to avoid low ceilings.)

Electric Bass Guitar

Some engineers will say that the only way to record a bass is to go through a direct box and straight to the track. Others will say that the true sound of the bass comes from miking the bass amp. The truth is, every bass is different and there is no single best way. Again, the method of recording picked here, is the one that provides the greatest number of options during the mixing process. **Figure 5** shows the bass amp with a cardioid mic placed off center of the speaker and up close. The bass is also going to a direct box and then to the board. It is best to record the signals to two tracks (as long as the tracks are available). This way, the processing and blend of the tracks can wait until mixdown. (Note the optional ribbon mic. When available, place the ribbon mic next to the cardioid and close to the edge of the speaker. This is also great for electric guitar.)

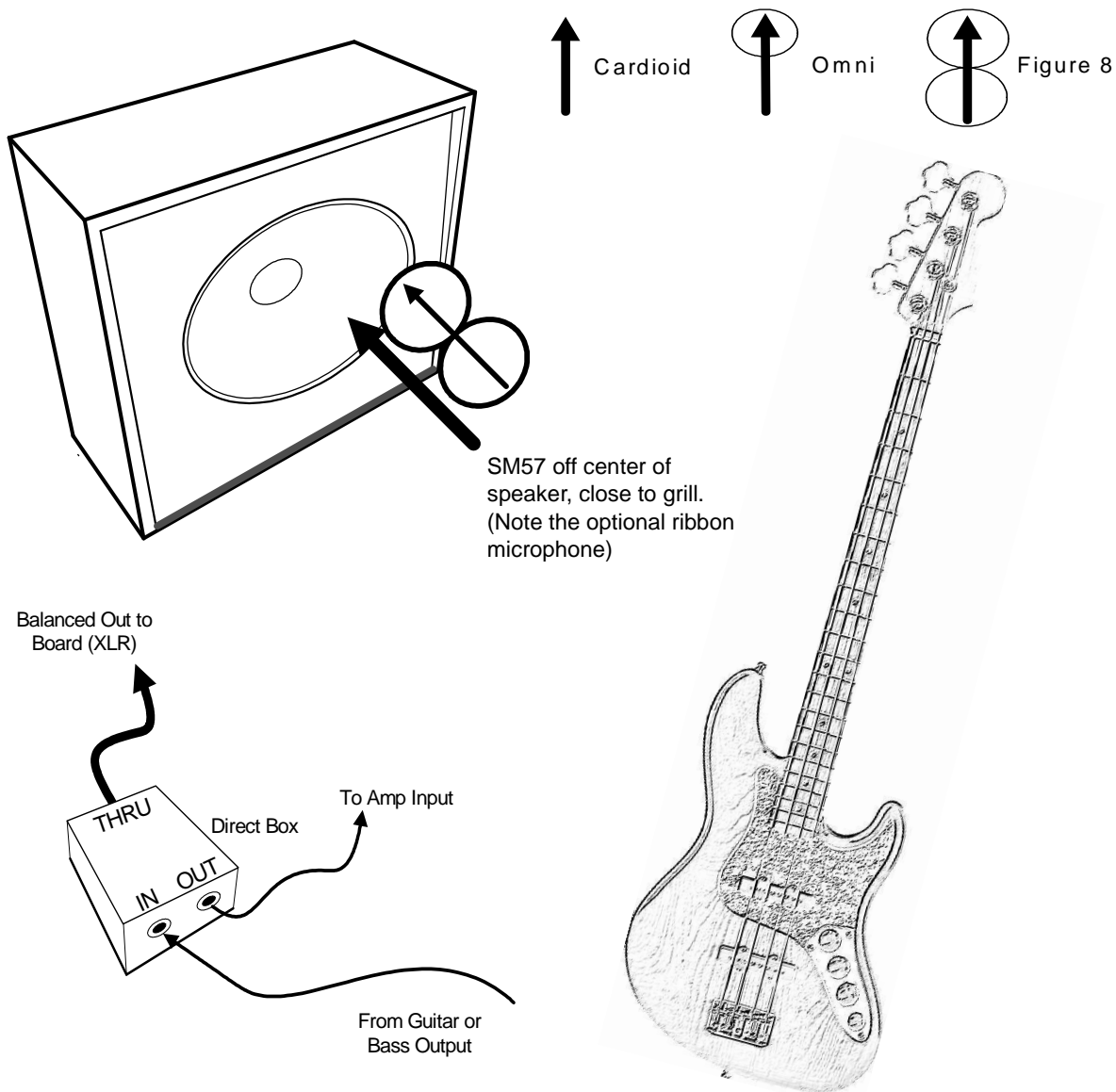


FIGURE 5 - Electric Bass