

Application Guide

You are here: Application Guide » **Grand Piano**



Grand Piano

Important considerations to be made before recording a concert grand piano.

A concert grand piano is among the largest and most versatile acoustical instruments in the world. Capturing the natural timbre and the full dynamics of an instrument of these proportions takes both skill and quality recording equipment. Furthermore, the grand piano interacts with the room in which it is placed and the recording method requires independent consideration in each situation and each location. Even how it is played will influence the choice of microphone technique.



The room acoustics

The room acoustics are such an important factor when recording a concert grand piano, that it is important to assess whether the room will do justice to the instrument or not. A concert grand piano is built for playing in concert halls where the reverberation times normally are acoustically tuned between 0,9 seconds to 1,3 seconds at 500 Hz and the room volume is minimum 10.000 cubic meters. Concert halls specially designed for playing Wagner can even have reverberation times around 2 seconds. With the lid open, the concert grand piano is capable of giving a full musical experience to the audience throughout the hall. This must be taken into account if the location is a recording studio. Finding a good location with a well tuned grand piano is the first thing to do - and the hardest.

The music

The choice of recording method also depends on the repertoire to be played. Classical piano music deserves a natural blend of ambience, but different composers all have their own characteristics which leave more or less space for the ambience to influence the music. Many a record producer and sound engineer has added his own interpretation of the grand masters' notes while immortalizing their compositions through a pair of microphones.

Rhythmic music and jazz traditionally are played in different types of locations. Therefore the listener's expectations of the timbre and the ambience are somewhat different. In many cases, it was the composer's intention that his work be replayed on a hi-fi system in the home environment. The room acoustic of the location in which the jazz piano has been recorded is therefore judged by different and possibly less critical criteria, but, to give the grand piano its unique timbre, the recording still needs to convey a sense of location. This will furthermore give the listener a sensation that will bring him to the edge of his chair, so to speak.

Classical piano music and A-B stereo

When recording classical piano music, the finest results come out of two omnidirectional microphones in an A-B stereo setup in front of the grand piano. The A-B stereo pair is placed on the side of the piano to give the listener an illusion of being a part of the audience. By adjusting the distance to the piano and the exact placement next to the piano, the amount of ambience and the timbre of the instrument can be tuned. Placements around the mid of the piano 1 to 2 meters away are often preferred. The microphones are normally spaced between 40 to 60 cm and the stereo image is adjusted, so the pianist is to the left, of course. The height of the stereo boom is quite low, 1.2 m to 1.5 m above the boundary on which the piano is placed. By pointing the microphones to the open lid of the piano, the sound reflecting on the inner side of the lid will be brightened up and a beautiful

depth will be added to the recording.



Rhythmic piano music and directional microphones

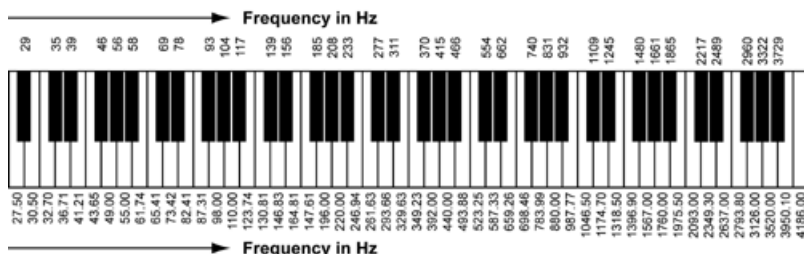
In rhythmic music and jazz, all the musical instruments are more or less used as rhythmic instruments, maybe even a sort of percussion. This also goes for the grand piano. It is therefore important to capture the attack of the player. The beautiful sound of the mechanics and the hands against the keys are often preferred to a correct stereo perspective. The "produced" sound is more accepted even for acoustic instruments. The pace and the rhythm does not leave much space for reverberation, which only will make the music sound muddy and unclear. The goal is therefore a tight and

fast instrument which of course also sounds incredibly good. To achieve this goal, the microphones need to be placed close to the piano, maybe even inside the open lid over the strings or the hammers. Only here is it possible to capture the attack and the more rough side of the versatile queen of instruments. To distinguish the room reflections and the reverberation, the use of directional microphones is recommendable. Two extremely successful stereo set-ups using directional microphones inside a grand piano are mentioned following:

1: ORTF stereo set-up approximately 30 cm over the strings at the mid frame. The microphones are pointed 45° downwards and at the pianist.

2: Two parallel cardioid microphones spaced 60 cm and placed over the mid hammers pointing 45° downwards and at the pianist.

Please note that the sound pressure level inside a concert grand piano can exceed 130 dB SPL peak 20 cm over the strings. So be careful when choosing microphone types.



Miking a piano with Miniature Microphones

With e.g. the SMK4061 Stereo Microphone Kit a number of useful piano set-ups can be achieved: This is a low cost stereo kit, equally suited for project studios and for hidden mic setup on stage, using two high quality 4061 omnidirectional miniature microphones and a variety of mounting accessories for placement in and on the piano, with either open or closed lid.



Try placing 4061 miniature microphones in foam windscreens with the DMM0011-B magnet holder in and around the sound holes of the piano. You can use 2 or 3 4061's and create a balanced multidimensional sound with good front of house and monitor volume along with recordability. Place one mic in or near the high hole, another mic over the last octave of low strings (maybe the second to last octave). This method will give you high gain before feedback because of the close distance to the frame. It will also provide a thick full-bodied midrange sound that often fits well into rhythmic genres.

Boundary Layer Mounts (BLM6000) are also included in the SMK4061 kit. Mount two BLM6000s inside the open piano lid to get a natural sound for recording. The pressure zone technique will “draw in” and accumulate the piano’s timbre nicely and at the same time be very discrete. Placing them directly on the sounding board under the strings gives a sharp pop sound for on-stage use with a penetrating “honky-tonk” sound colour.

With the DMM0007 Universal Surface Mount you can fix the mics directly on the inside of the piano lid. This is also an almost invisible mounting technique. The microphone element is able to hang from its own integrated cable with the double-sided tape pads and the height/acoustic balance can hereby be adjusted. A well balanced, open-sounded position is 12 - 16 in (30-40 cm) over and in front of the hammers with approx. 24 in (60 cm) spacing.

Related products:

Item:	Name:
3511	4011-TL Stereo Kit
3521	4021 Compact Stereo Kit