

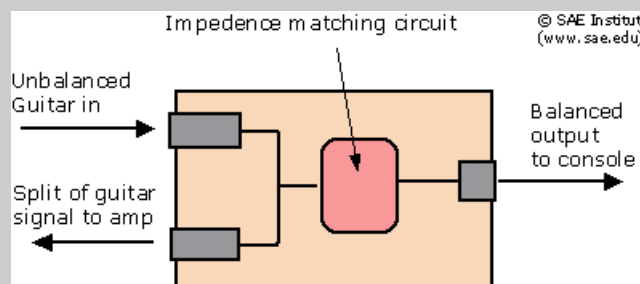
RECORDING ELECTRIC GUITARS AND BASS GUITARS

Electric guitars lend themselves to multiple recording techniques. You can put a mike on and amp and leave it at that or you can try all sorts of things. The following options are available:

1. Direct feed from the guitar.
2. Close mike on the amp
3. Ambience mike on the amp.
4. Direct feed from the effects units
5. Room Ambience mike.
6. Second Guitar amp.

Direct Feed.

If you are fortunate enough to have a real-time analyser you will find it interesting to plug your guitar straight into it and look at the frequency response a guitar puts out. The standard Fender Strat peaks at around 7kHz and rolls steeply off from there up whereas the old classic Les Paul peaks at around 4kHz and falls off quickly from there. It's worth noting that factor when listening to the direct sound from a guitar. If you are going to plug the guitar directly into the console you will need a direct box.

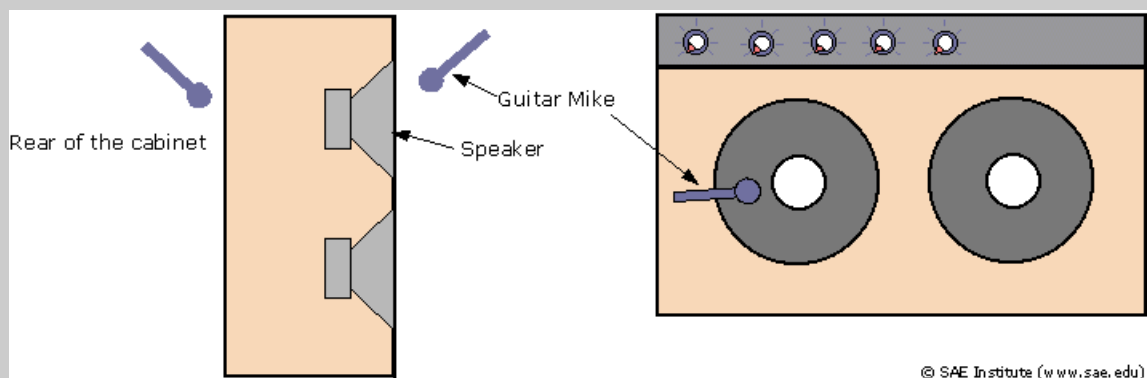


This is a box that matches the impedance of the console and the guitar. A guitar is designed to plug into an amplifier that has a high impedance input whereas a console mike input is designed for low impedance inputs thus the direct box. The impedance matching circuit can be either a transformer - passive - or a circuit - active. If your unit is an active one it will require power which can be supplied either by an internal battery or by Phantom Power fed from the console mike input. Once plugged into the console have a listen to the sound. You will find immediately that the sound is dull and has no real bite in the top end like we are used to in a guitar so quite a large amount of high end EQ is required to brighten up the sound. You can put the direct feed through some effects units and compress it and it will probably sound better but it won't sound like an electric guitar as we know it . On the other hand a small amount of the equalised/compressed direct signal added to the amp sound can add a soft presence to the sound that is nice in certain circumstances like a soft chorus guitar playing chords etc. To get the full grunt of a guitar you will need an amplifier.

Miking an amplifier.

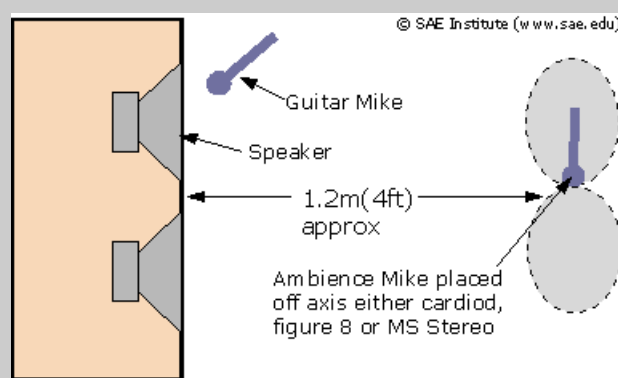
The thing about guitar amplifiers is that they have a huge amount of upper-mid and high end equalisation in the first stage, which is called the pre-amp, to compensate for the lack of high end in the original signal. Guitar amps also have addition equalisation on the front panel as an option. This equalised signal is then fed to the power amp and the speakers. Some amplifiers allow you access to the signal after the preamp and before the power amp. It is then possible to take a split of the signal after the preamp , with all the additional EQ, and feed it into a direct box and then straight to the console.

The standard mike technique for recording an amp is to place a mike 10cm(4") from the speaker at an angle.



You will note the mike at the rear of the cabinet. This mike has a boxier sound than the front mike and is 180 degrees out of phase to the front mike so a phase reversal is required. Remember when setting the sound of an amplifier to put your head where the microphone is. The front of a standard amp is directional and if you stand above the amp you won't get the true sound coming from the speaker. The microphone used must be capable of handling high sound pressure levels.

Adding an ambience mike.



An ambience mike will add another dimension to the sound. It can be another cardioid mike or you can use a U87 in a figure 8 pattern. (Very popular) This puts the direct sound off axis to the ambience mike and it also picks up the room ambience. This extra mike can be mixed with the other mike onto one track or it can be tracked to another track allowing you to adjust the balance at the mixing stage. It can also be panned differently than the close mike which gives the guitar sound a stereo sound with more breadth and makes the guitar sound bigger. Alternatively you can use a [MS Stereo](#) setup.

Using effect boxes.

Most guitarists these days have a bank of effect units setup between the guitar and the amp. You can intercept them by plugging them into the direct box before the amp or you can use your own effects. You must remember that the sound coming out of the DI box will not be the same as the one coming out of the amp because the amp adds all its EQ etc. but a feed from the units can contribute to the sound. Some of the effect units such as the multipedal floor units also operate in stereo and can give you a stereo feed of the signal with stereo effects.

But what about my own effects I hear you say - why should I use that cheap \$150 delay stomp box when I've got a \$2000 delay unit. This question is a matter of choice - the guitarist might like the cheap effect unit, is used to it and has created a sound around it - on the other hand you may be able to produce a much more diverse delay effect. Remember the guitarist's effects are going through the amp whereas yours aren't. This is where you and the guitarist must play

around and try different things. If both of you are into getting the best sound you will get it but if you are both into maintaining your respective egos all hell could break loose.

For more info regarding using effects units go to the pages on [Using Effect Units](#).

Adding a room ambience mike.

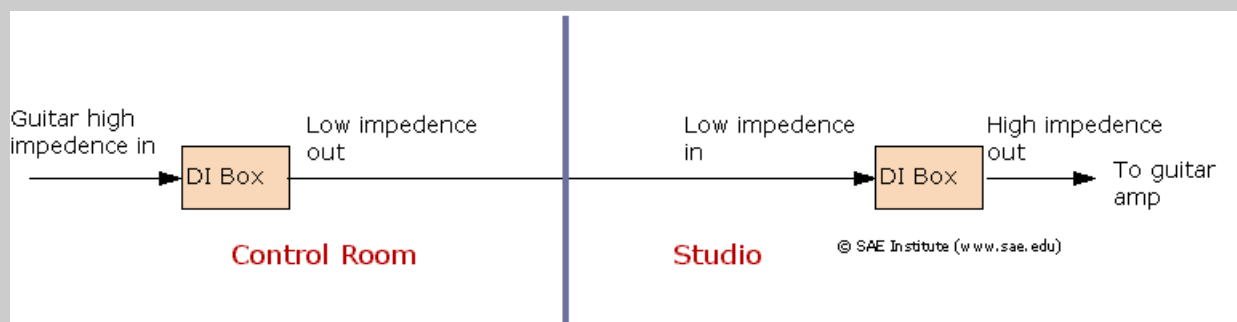
You can go one step further than the close ambience mike and add a room mike (or two). This can give that large grunge guitar an extra beef and for extra effect can be gated so it stops short when the guitar stops. It can be a mike like a U87 with a figure 8 setting or you can use a shotgun mike and aim it at the amp. Considering that sound travels at around 30cm(1ft) per millisecond a mike at 15ft is going to be delayed by 15ms. This could be great or it could be awful - experiment!!

Adding a second amplifier.

You can also add another amp and split the guitar feed into each. If you have a stereo effect system you can split it left and right, mike each amp and put a stereo ambience mike between both amps. You can set each amp up differently, or use two different amps. If miked separately you can achieve a perfect double track as each amp will sound different but have the same signal.

Playing in the Control Room.

Most guitarists like to play in the control room even though their amp is in the studio. This allows them to hear the guitar as it would in the track on your speakers and with any effects that you've added. To enable this you must run a long guitar lead through to the amp. It is worth considering having a plug in the wall that they can plug into that can be picked up on the other side of the wall and plugged into the amp. Alternatively you can run a long lead via the doors - unfortunately guitar leads don't like being long as they lose high frequencies when travelling long distances. One way to stop the loss is to use two passive transformer based direct boxes. You plug the guitarist into one in the control room and then take the low impedance feed out and run that into the studio. In the studio you plug in the other DI box and come out of the guitar input and plug it into the amp. What we are doing here is using low impedance to travel the distance and bring it back up to high impedance to plug into the amp.



You will need a sex change plug from male to female XLR to get back into the second DI.

Additional Factors.

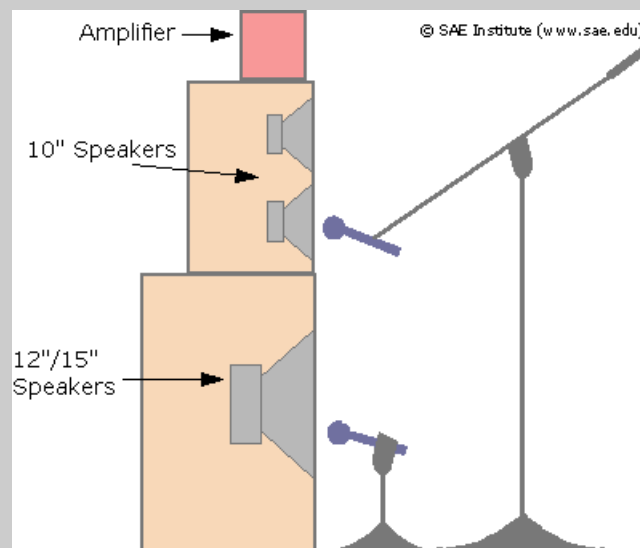
There are a few additional factors that must be considered here. I'm sorry but a great engineer can't make a bad guitarist sound great!! There are a few things that can seriously effect the sound a guitarist makes. Firstly, is the guitar setup correctly? Apart from the pickups, model etc. which are set, the variables are - correct alignment of the neck so that the strings are not too low. If they are too low you will experience string distortion caused by the string hitting the

adjacent fret, which tends to muddy the sound as the string is not free to vibrate evenly. Secondly the strings used can be too light. A guitar strung with light gauge strings will not sound fat and grungey. A very good guitarist friend of mine says that most people can't play his guitar because it is strung so high and the strings are heavy gauge, but believe me his sound is great. From a musical point of view the guitar might not have the harmonics in tune so that when the guitarist plays up high on the frets the guitar is flat or sharp. All these factors affect a guitar sound but you can't beat the truism that if you want a great guitar sound get a good guitarist.

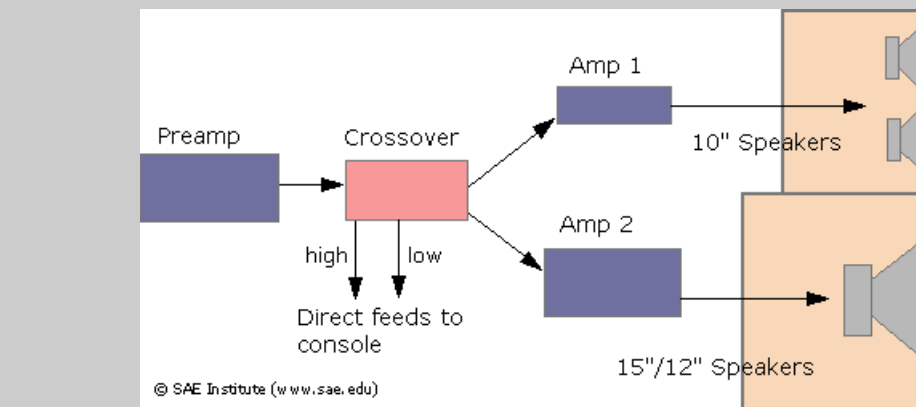
There are many ways of approaching recording the electric guitar. The main thing I believe is to give yourself as many options as you can. Experimentation is the call here, as with the acoustic guitars take the time to put up all the mikes and experiment with the different combinations. I can remember when I was recording an OZ band called Mondo Rock and we wanted a close sounding power chord in a song called "Come said the Boy". The sound we wanted was a Marshall wound up to 11 but recorded close. We tried every mike we had but they all distorted when put so close to the amp, even an SM57 fell over. That day a rep from Neuman came to the studio to try to flog us the new TLM mike. I was reading the specs and it said that it would handle up to 139spl so we asked him if he could leave the mike with us and we'd assess it. When he'd gone we quickly stuck it on the amp and bingo! it worked. The song went on to sit at number two on the charts for about eleven weeks constantly stopped from going number 1 by John Lennon's Imagine. Then the breaks!!

BASS GUITAR

The electric bass guitar differs from the electric guitar in that the direct signal from the instrument does not need special EQ so direct feed via direct box is the normal way of recording a bass guitar. Typically most bass amps offer an extensive EQ section and some offer a valve preamp but the bass amplifier is just a dirty big power amp which is required to move the cones of the large heavy speakers. Often a bass amp setup will have two boxes, one with a set of 10" speakers and another with a heavier 12" or 15" speaker. In this setup you can mike each box individually



The bass guitar also lends itself to **bi-amping** where a crossover circuit divides the signal into two or three frequency bands and uses a separate amplifier and speaker for each band.



The split from each frequency band is sometimes available as a console feed from the rear of the amp so you can take two/three direct feeds into your console. This allows you to compress and EQ each band separately and assign them to different recording tracks for full control later in the mix. The crossover frequency is selectable in most amps with the crossover frequency usually at around 100 - 150Hz with the 10" speakers handling the high section and the larger 12"/15" speakers handling the powerful lows.

I often feed the bass straight into a DI box and have the player in the control room which helps separation. The bass guitar lends itself to [compression](#). The low frequencies it produces contain a lot of energy and containment with compression is recommended.