

/the bassics

supplying low-end energy, rhythmic balls and occasionally cracking melodies, the bass can make or break a track.

The most important relationship in dance music is between the kick drum and the bassline – the king and queen mix elements that have the power to drive a dancefloor wild and the sonic foundations upon which the rest of the production is built. Get it right and you're halfway to a hit.

The key to getting the two working together is picking a kick and bass that complement each other, rather than fighting each other for frequency space and impact.

As a general rule of thumb, if the kick is high in low-mid energy (the kind of cracking kicks used in nu-rave, electro or disco), the bass should sit below it, while if the kick is laden with low-end energy (like minimal 808 subs that boom at 60Hz) the bass should weave its magic in the lower mids. For those that insist on fat bass *and* a deep kick, sidechain compression will help keep the two apart – ducking bass volume when the kick drum hits.

Basslines inhabit two distinct frequency ranges. **Regular bass** extends from around 90Hz to 300hz (higher for harmonic overtones), while **sub bass** peaks at around 90Hz and extends as far down as 20Hz. For a full sounding house track you need to tickle both the regular and sub-bass frequencies in a precise, controlled way.

Sub bass frequencies are relatively new in recorded music. Acoustic instruments struggle to get anywhere near 90Hz – with only the biggest church pipe organs coming close – meaning that sub frequencies are absent from most orchestral and early pop recordings. Indeed sub bass generation was only made accessible to sound designers thanks to developments in electronics, with synths and more recently computers able to create and control the 'below bass' frequencies that their acoustic forebears couldn't.

Ignoring sub bass frequencies in dance music will leave your track sounding flat and weak, particularly on club systems. But the sub should never dominate, and getting the balance between sub and regular bass frequencies right requires a good listening environment – or frequency monitoring plugin – and some careful production.

The easiest way of thinking about sub frequencies is in terms of very low notes. These lower-than-low sounds are created by triggering notes in the C1–A1 zone (and a few notes either side). To fill out this zone using a synth all you need to do is introduce an oscillator that covers this range. If you're using a live bass sample you'll need to layer up a synth to bulk it up, or use a specific sub bass plug-in to generate lower sub harmonics.

Styles

Basslines can be split into three broad personality types.

The rhythm bassline

The simplest is the **rhythm bassline**, which underpins the groove with simple melodic content. It sees the bass take on a rhythmic rather than melodic role, working alongside the kick to drive the groove and anchor the beat. This kind of bassline can be programmed using just one note, which follows the key of the song. The most basic example is an off-beat pattern where the bass plays between each kick in a 4/4 groove – a favourite among progressive house producers.

Simple as it is, this kind of bassline can be devastatingly effective on the dancefloor. Stick it in the right frequency range and the regular pulse will provide a rhythmic backbone without drawing unnecessary attention to itself. Where the main interest of a track is a euphoric synth riff or complex

percussive workout, the rhythm bassline will sit in the background, freeing up space for other mix elements to shine.

In some cases this simple off-beat bassline is all that's needed in a track. In others it can be used to track the groove in the sub area while a second bass plays a busier sequence an octave above.

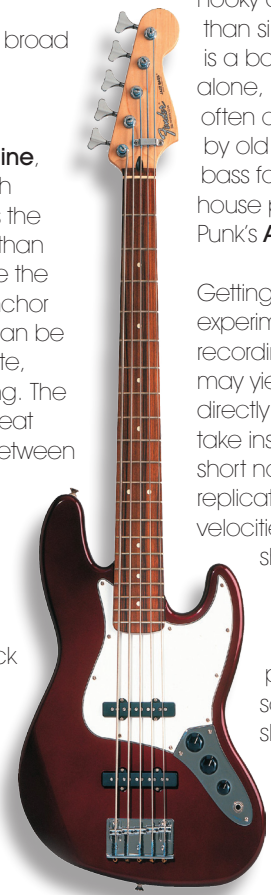
The bass riff

The **bass riff** tends to be more complex and memorable, with a melodic element and hooky quality that does more for the track than simply augment the rhythm section. It is a bassline that can stand loud and proud alone, but which works equally well below an often complex musical arrangement. Inspired by old disco and funk lines, it is the kind of bass favoured by disco, deep, latin and funky house producers. It shines in tracks like Daft Punk's **Around the World**.

Getting a great bass riff is as much about experimentation as musicality. Jamming and recording to a backing track then editing later may yield good results, as will programming directly into a note editor. Programming should take inspiration from live bass playing, with short notes and subtle use of pitch-bend to replicate live finger-plucks and slides. Keep velocities changing: certain hits should be short and loud for added emphasis.

For a truly live sounding bassline, introduce some samples. A mix of programmed and live bass can sound great: hits and hard-to-reproduce slides are particularly useful for adding authenticity.

The bass riff should generally be quantised with the same amount of swing, and to the same groove



template, as the beat. This helps all the groove elements lock together. If it feels too forced, reduce the amount of swing.

Bassline as lead

In both the rhythm line and bass riff the bass provides backing and support for a track's lead lines. But there's a third type of bassline coming out of the electro and fidget scenes: **bassline as lead**. Here the bass is the most dominant melodic force in the track. It doesn't just hold down the rhythm: it plays the lead riff and is mixed up-front and loud, occupying the frequency space normally occupied by both the bass and the synth top-line.

The sound source for this kind of bass is usually a synth with several oscillators and flexible enough filter and modulation sources to produce unique tones. Because this bassline takes the part of the lead, extra oscillators should be stacked into upper octaves to increase its harmonic quality and extend it into the area the lead would normally occupy.

The lead bassline needs to maintain interest throughout the track. This requires more complex programming than for other kinds of basslines. Producers use a straight version of it early on and then mess with it using a series of programming and effects tricks to alter both the sound and the sequence it plays as the track progresses.

Tip / For a punky, cut-and-paste style fidget bassline, program a simple 'raw' version of the lead bass and bounce it down. Then loop it and tweak the filter, envelope and LFO settings live while the backing track plays, bouncing down the tweaks. Listen to the tweaked version in the context of the track. Save the sections that work and use them for edits and fills. Fire up a

new set of effects and do the same again until you have a collection of glitched edits that you can call on as you continue building the track. This kind of technique produces a lot of rubbish, but it occasionally unleashes real gems. The results are also often wildly different to what you'd get when using a mouse to program fills and tweaks manually.

Tip / Electro basslines are prime candidates for 'call and response' programming. Play the lead riff using the main bass sound then mute it and play the riff on a second channel using the same synth with contrasting settings (or a different synth). Program the riff so it switches between the two sounds at regular intervals, like every two beats in the bar.

Back to the source

Synths

The synthesiser is the major source of house bass sounds. Both analogue and digital types are used, and a strong, effective bass can be programmed on the most basic synth. There are some long-time favourites though, including the MiniMoog, Yamaha DX7 and mighty single-oscillator Roland TB-303.

Most basslines are monophonic – with only one note playing at any single time. You can use any combination of oscillators and waveforms to produce the raw tone. In most cases, it's best to start simple, with a single oscillator supplying the weight, then add

additional oscillators to enrich the tone. For depth, add a sine sub an octave below the initial oscillator. Introduce a third, either a saw or triangle, an octave above. Detune upper oscillators to thicken the sound.

Tip / If a bassline is lacking in presence, double it with a different sound sent through a high-pass filter to add fullness in the mid and upper frequencies. Send the original and upper bass to the same bus for joint treatment.

Live bass

The use of live bass – from sessions or sample collections – is less prominent than it was in the days when disco, latin and funky house ruled. But there are producers still using it, and the latest wave of Parisian nu-rave producers have been mixing the best of both worlds, splicing heavily compressed and overdriven single bass hits with synths to create hybrid basslines oozing with attitude.

Playing disco and funk-style bass requires a bundle of niche talent. Fortunately there are a wealth of sample collections featuring great bass players. Don't just look for collections aimed at house producers: funk and disco products are often goldmines too.

If you've got the cash to pay for clearance (or rock-hard balls) then basslines are some of the easiest parts of classic records to incorporate into your tracks: just find a great line, edit it into time and then roll off the top end of the sample using EQ. Double the sampled bassline with a synth playing the same notes an octave above to augment the high end.

Finally, remember that live basslines will not have enough sub bass frequencies to shake a club system so will invariably need to be either doubled with a synth playing an octave below, or fed through a sub-bass plugin.

big bottom bass boxes

Some synths have been providing floor-shaking basslines for decades. The Minimoog (**below**) is renowned for its power and girth. The Yamaha DX7 has an uncanny ability to cut through the densest of mixes. And the king of all – single-handedly responsible for the acid-house revolution and some of the most memorable riffs in music history – is the Roland TB-303.

Despite having just one oscillator, the 303 has a flavour all its own, enhanced by the unique character of its internal step sequencer with its 'accent' and 'slide' steps. Clever programming, and the liberal use of overdrive and real-time cutoff and resonance tweaks give the 303 the rare ability to rock a party all night long.

The 303 has many clones, but possibly the most convincing is the DIY X0Xbox kit from Ladyada. As well as sounding and behaving almost exactly as the original, it also has an easy-to-program sequencer and a USB connection for backups.

Also worth a mention is Propellerheads' classic ReBirth, the first great-sounding software clone, which is now available for free download from the Propellerheads website.

