

Probably the most important yet contentious part of a good audio system, subwoofers are almost a science in themselves, particularly for those with limited space. We take a look at some of the characteristics of a good subwoofer.

Subwoofers

Bass is crucial in the reproduction of all musical genres. It adds presence, depth, warmth, punch and excitement whether you are enjoying the kick drum in a piece of rock music, fast and funky synthesised bass lines in dance music or the low, low rumble of timpani in an orchestral piece. Traditionally, subwoofers are big (up to 24in in diameter) due to the overriding principle that the bigger the speaker the lower the bass. However, recent technological advances and researchers' tireless pursuit of more space-efficient bass solutions has seen specialist companies produce far more compact subwoofers even as small as 6in. The most common sizes in the car however, are still 12, 10 and 8 inches.

Many large subwoofer cones are made of compressed cardboard which has been the weapon of choice for many years. However, they are prone to physical distortion when subjected to large sudden movements and so other materials have been sought to help add rigidity. These include lightweight super-rigid materials such as carbon fibre and aluminium and have also led to the manufacture of new composite materials.

Bass requires a lot of energy and therefore subwoofers tend to have much larger magnets than full-range speakers do. This has a direct impact on the metalwork that supports the cone and magnet, known as the basket. The basket is also subject to large forces but must remain stable at all times and have little or no resonance that could compromise or interfere with the vibrations of the cone. Just as important as making the cone move quickly is the ability for it to stop when energy is removed. This requires a counter force to dampen the cone's movement as quickly as it starts. This job is carried out by what is known as a spider, which is a disc of corrugated fabric, card, metal or a composite of the three.

The voice coil inside the speaker needs to be kept cool, so the best quality subwoofers will make special provision for this via strategically placed holes or airways in the base plate. Efficient and fast airflow in and out of the area containing the voice coil is

very important and your FOUR MASTER will be able to show you these features.

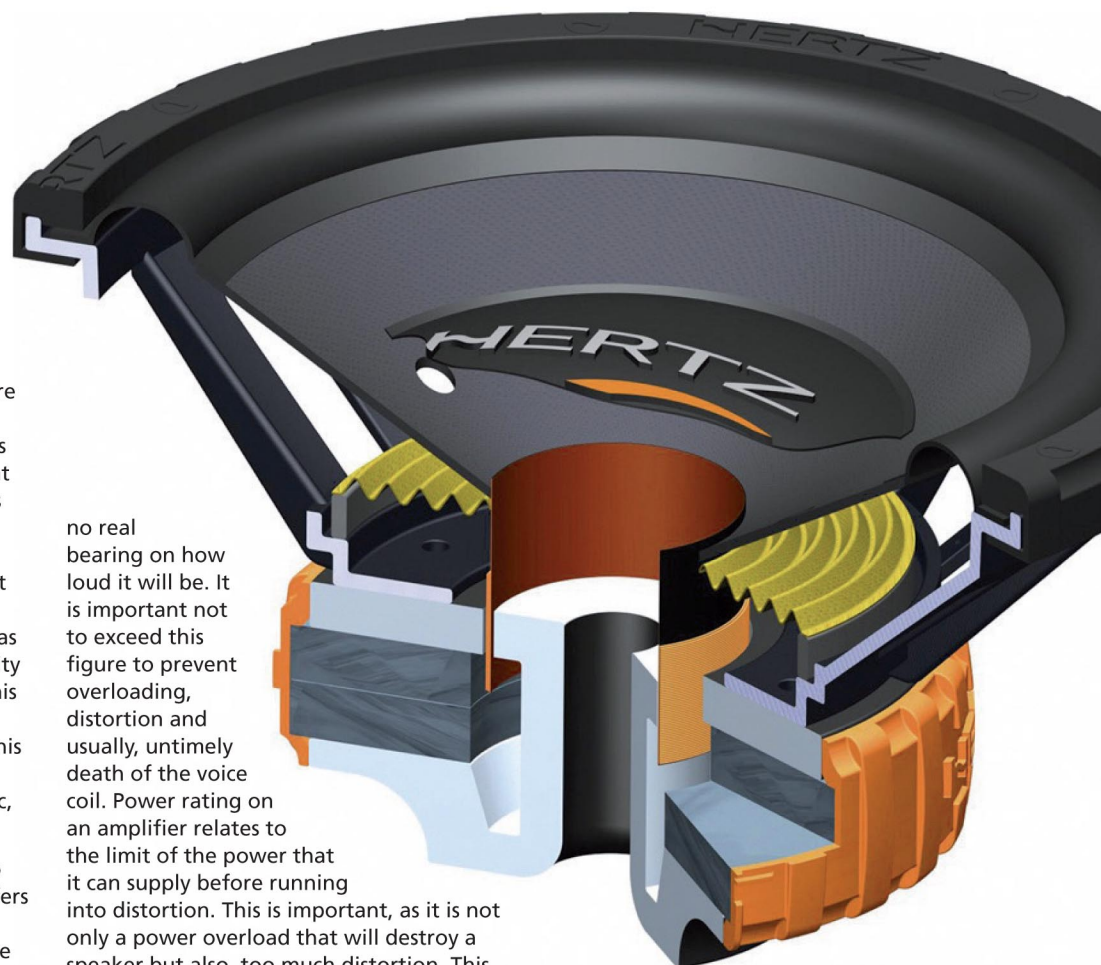
Power and impedance matching between amplifier and subwoofer are vital to get the best sound per watt from the combination of the two and also to protect both components from harm. This is made fairly simple as manufacturers of amplifiers and speakers will quote the impedance of their products (typically 4 Ohms for automotive use). If you are using multiple subwoofers on a single channel of amplification however, then some science and maths has to be applied.

Subwoofer power output specifies the amount of power it can handle and has

not designed to and invariably lead to a much-shortened life.

Don't be fooled into thinking that because you listen to a gentler genre that you don't need bass. In most cases this is not true and good bass reinforcement will always bring realism and scale to your listening experience, with an extra slice of pure joy.

If in doubt, trust your FOUR MASTER. He has knowledge of what subwoofer suits which purpose and if space is an issue, state this up front. Some subwoofer systems can be capacious, particularly when designed with high performance enclosures.



no real bearing on how loud it will be. It is important not to exceed this figure to prevent overloading, distortion and usually, untimely death of the voice coil. Power rating on an amplifier relates to the limit of the power that it can supply before running into distortion. This is important, as it is not only a power overload that will destroy a speaker but also, too much distortion. This will make the speaker move in ways it was