

Which amplifiers do you recommend

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There are many products available, with new ones appearing on a regular basis, and availability differs markedly from country to country. Because of this, and the finite resources at B&W, we feel we are not in a position to make recommendations of specific brands and models, simply because our database of first-hand experience must be limited. Yes, we use ancillary equipment in the R&D department that meets the needs of the engineers who design the products we make, but only to recommend the products of which we have first-hand experience would be likely to steer the customer away from other products that may meet his needs somewhat better. It is therefore vital that the customer consults a reputable dealer, who can actually demonstrate the performance of our speakers with a variety of equipment.

There are, however, some general guidelines that may help you in your choice

What power output do I need?

This is dependent on four factors:

- The sensitivity of the speaker – the higher this figure, the lower the power required to reach a given loudness level.
- How far from the speakers you sit – you hear a combination of direct and reverberant sound and the level of direct sound falls off by 6dB for each doubling of distance.
- The size of the listening room – the larger the room, the more energy is needed to build up the reverberant sound level.
- How loud you like to listen - this may be limited by domestic situations, such as having consideration for the well being of your neighbours.

Can the speaker handle the power?

It is important to match the amplifier to the power handling capability of the speaker. In our specifications, we recommend a range of amplifier power outputs. The smaller figure represents the minimum you need to achieve reasonable levels in a small room. The larger figure is defined by the maximum power the speaker can handle.

This last figure requires some explanation. It assumes that the amplifier is not driven into clipping – where the amplifier tries to output a higher voltage than it is capable of delivering and the tops of the voltage output peaks get sliced off.

A typical music or speech signal has a complex energy-time characteristic; it contains many short-duration, but high level peaks which, although they contribute little to heating the voice coils of the drivers, still require the amplifier to be capable of delivering the required voltage without clipping. Obviously, an amplifier that can do this is also capable of delivering continuous tones that *do* contain high levels of energy that *may* damage the driver voice coils. This is especially true at high frequencies, where the relatively small tweeter cannot handle the same level of continuous power that the more rugged bass and midrange units can. In fact a typical continuous power rating for a tweeter might be 10 to 20 watts, yet it can be used in a complete speaker system having a power rating in the hundreds of watts – providing the signal is speech- or music-based.

Perversely, an amplifier within the recommended rating of the speaker can cause damage if used incorrectly. If the output signal becomes clipped, the energy-frequency distribution becomes significantly altered. The sharp corners of the clipped signal contain much more high-frequency energy than the unclipped signal, so proportionately more energy is fed to the tweeter. The tweeter may be called upon to take more energy than it would from a higher-powered amplifier still working within its capability and this may be over its safety limit.

How can I tell if the amplifier is clipping?

The initial stages of clipping add harshness to the sound. At higher levels, this progresses to a gritty sound; not dissimilar to the effects of having fluff on the stylus of a vinyl disc player.

It is a common misconception that the position of the volume control on the amplifier is a direct indication of the percentage of total power being output from the amplifier. “But the volume was only set to 10 o’clock, how could I damage the speaker?”

The volume control simply alters the gain (multiplication factor) of the (pre-) amplifier. The output level is therefore dependent on the input level, which varies from one recording to another. It is also a sad fact that amplifier manufacturers sometimes deliberately design the volume control so that the amplifier reaches maximum output well before the control is at maximum. This is done to impress the customer in the shop. “Gosh, if it sounds that loud when the volume is set that low, think what it will do full up.” Distort is what it will do!

What other amplifier parameters should I look for?

Not all aspects of sound quality are directly described in written specifications. Total harmonic distortion (THD) is often quoted, but this must be read with care. Some harmonics are more offensive to the ear than others and an overall figure can hide the effects of small amounts of higher harmonics that are readily discernible. It is surprising in this day and age how much crossover distortion is still to be found in amplifiers, even some very expensive ones. Its presence can add a harshness to the sound, although this is sometimes interpreted as a more clinical or analytical sound.

A low crosstalk figure is usually indicative of an ability to create a better three-dimensional image, as there is less interference between the signals in each channel.

The noise level in the amplifier affects the amplifier’s ability to preserve low-level detail. The higher the signal to noise ratio, the better.

The amplifier should be capable of driving the complex impedance load of a speaker. This can require the amplifier to deliver higher current than it would when driving a simple resistor. A rough idea of the amplifier’s ability to drive a complex load can be gleaned from looking at the power output into different impedance loads. Usually, the power output is quoted into both an 8 ohm and a 4 ohm load. If there were no limit on the current capability of the amplifier, it would be capable of delivering twice the power into the lower impedance. Some amplifiers are capable of this; most are not, but the nearer to this figure you can get the better. Some of the best amplifiers can double the power again into a 2 ohm load and so on. Improved current capability translates into better control and dynamics, particularly in terms of bass attack.