

Question: Which Amplifier (Kit) is right for me?

Answer: A key determining factor is the efficiency of your Speakers.

Unless you only listen at very low volume you need considerably more power as the REAL efficiency of you speaker lowers and your room size increases.

For this guide a listening room size of 50 square meter (500 square foot) or less is assumed. Please be also aware that some manufacturers will use measurement or rating methods that return higher efficiency numbers than the common industry methods. If possible we recommend crosschecking rated efficiency numbers against independent measurements.

Please also see the appendix "Speaker efficiency and Speaker sensitivity explained" below.

1) Conventional High End Speakers

Most 'high end' or 'high fidelity' speakers will have efficiency ratings of 84 - 90dB/W/m. For this kind of speaker an amplifier with 30 - 100 Watt output power is required. Lower power MAY work in small rooms or with simple music, however the full power of a Classic Orchestra for example makes much greater demands.

In our lineup the Ella (kit or assembled) and Fusion (assembled only) have enough power. Which is preferred depends on personal taste.

Ella offers the high resolution, powerful yet musical sound we are used to from a thoroughbred ultra-linear operated pentode/tetrode push-pull amplifier, such as found also in Amplifiers from ARC, CJ and Jadis. With around 60 Watt from either a pair of EL34 or a pair of KT88/6550 per channel, a modest amount of negative feedback to improve the damping factor for better speaker it is well suited to all kind of high end speakers, even ones known as somewhat difficult to drive.

Fusion offers the classic warm and musical 300B single ended sound we know from high performance single ended 300B Amplifiers such as offered by Cary and Wavac, however with the power and control of a medium powered solid state amplifier. It offers (in Fusion mode) an even lower output impedance than the Ella and around 50 Watt output power. By having the "Fusion" switch you can also listen to a pure, low powered 300B Amplifier where the around 10 Watt power are enough.



Ella - Ergo Amplifier



Fusion 300B Amplifier

2) Above average efficiency High End Speakers

A number of manufacturers of High End Speakers have offerings that show above average efficiency, in the range from 90 - 96dB/W/m.

Examples include the Audio Note AN-E, models by Verity, Klipsch and others.

Such speakers, especially if imbued with a relatively high impedance (>6 Ohm average) form an excellent alliance with higher powered single ended 300B Amplifiers.



With its uncompromising design and execution as well as due to its well above average 16 Watt power output make the Lux 91 THE partner for the best of such speakers. Marrying the delicacy and musicality of a pentode driven amplifier derived from the legendary Western Electrics Model 91 300B Amplifier with the robust overload behavior and dynamics of triode driven amplifiers the Lux 91 is best for high quality speakers at the lower end of the efficiency scale.

The original Lux offers almost the same traits with just a little less power and sonics that while close to its big brother offer just a touch less of that indescribable "WE magic".



[Lux 91 Amplifier](#)

In smaller rooms and with speakers near the upper end of the efficiency scale even the Standard Lady Day 300B SE Amplifier may work well.

3) High Efficiency Speakers

Speakers with a REAL efficiency above 96dB/W/m generally are classed as 'High Efficiency'. Many of these speakers are antiques or modern replicas/continuing production of such.

Others are large size horn loaded system like those made by Avant Garde. Our own Crescendo Grande system shown to the right, falls into this class as well. In both cases a high efficiency system with limited low frequency extension is supported with a solid state amplifier driven subwoofer.

If you are lucky enough to own such a system and be allowed the needed space the most refined 300B SE Amplifiers are eminently suited to drive your speaker system. The Lady Day standard is excellent for speakers at the lower end of this group.



Yet once we are past the 'magic' 100dB/W/m mark the Lady Day 91 is the choice. Being a faithful replication of the justly legendary Western Electric Type 91B Cinema Amplifier with modern transformers and capacitors allowing a wider bandwidth and lower colorations than the original. While providing only six to seven Watt of power, these are some of the sweetest, most immediate watts available.

And despite being the 'powerhouse' of our 300B Stable, the Lux 91 also is a good choice, as it shares the same tone, sweetness and immediacy as the Lady Day 91.

Of course, in the end the choice is yours and the notes above are merely to give some guidelines and impressions.



[Lady Day 91 Amplifier](#)



[Lady Day MK II Amplifier](#)

Appendix A: Speaker efficiency and Speaker sensitivity explained

Nowadays speakers are generally rated in XXdB/2.83V/1m. This is sometimes misidentified as XXdB/W/m, as 2.83V equals 1 Watt for an 8 Ohm Speaker load.

This 2.83V = 1 Watt is however true ONLY if the speaker is genuinely a 8 Ohm load, meaning it's impedance does not fall below 5.5 Ohm and is on average 8 Ohm between 20Hz & 20KHz. Tube Amplifiers only deliver their rated power and best sound if the speaker impedance matches the rated output load.

If the speaker has lower impedance than 8 Ohm it will demand more power at 2.83V, so for all Tube Amplifiers this means selecting a lower impedance output tap than 8 Ohm. Equally, if the impedance is higher less power results at 2.83V, however, the speaker must be connected to a higher impedance output tap.

The power available from each tap into a speaker with the same impedance as its rated impedance is the same as from the 8 Ohm tap to an 8 Ohm Speaker.

The upshot is that for an 8 Ohm speaker the sensitivity taken at 2.83V equals the efficiency.

For a 4 Ohm Speaker (minimum impedance no lower than 2.75 Ohm) we need to subtract 3dB from 2.83V/1m rating.

With a 2 Ohm Speaker (minimum impedance no lower than 1.375 Ohm) we need to subtract 6dB from 2.83V/1m rating.

Conversely, with a 16 Ohm Speaker (minimum impedance no lower than 11 Ohm) we need to add 3dB to the 2.83V/1m rating.

In practice one famous high end speaker is rated 96dB/2.83V/1m, though it measures around 2dB lower according to independent measurements. Its impedance is on average 2Ohm, despite being rated as 4Ohm speaker by the manufacturer.

For comparison, a classic Tannoy Monitor Red 15" Driver in a York reflex enclosure was measured as 97dB/2.83V/1m. It is rated as 15 Ohm speaker by the manufacturer, but would be classed 16 Ohm nowadays.



On the surface it may appear that there is little between these speakers, as the difference of 96dB vs. 97dB seems very minimal in real terms) and seemingly either Speaker would work well with a reasonable 300B SE Amplifier.

Yet the unnamed high end speaker needs a downward correction of 6dB for its low impedance and another 2dB to account for the manufacturer's enthusiasm when rating the speaker to arrive at its real efficiency of 88dB/W/m. So any tube driving this speaker should be equipped with a 2 Ohm output tap and offer at least 30-50 Watt power. And obviously a 300B SE Amplifier with less than 10 Watt output and without a 2 Ohm Tap is actually eminently unsuited to drive this speaker.

On the other hand the Monitor Red requires an upward correction of 3dB for its high impedance and non for being 'over-rated'. So we arrive at an efficiency of 100dB/W/m which places this speaker near the upper end of the efficiency scale overall and makes not just suited to the most refined 300B SE Amplifiers, but the lower output power, yet reputedly better sounding 2A3 Tube equipped SE Amplifiers as well.

So, once we have actually levelled the playing field, at least when used Tube Amplifier it turns out that the difference in EFFICIENCY (as opposed to sensitivity) is over 10dB and not the apparent 1dB. A 10dB difference in power means we require ten times the power to get the same sound level from unnamed speaker in our example, compared to the Tannoy Monitor Red.

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