

JANTZEN AUDIO

Upgrading Crossovers

Please note that many of the points in this article are valid for both vintage speakers and more modern speakers as well.

As a general note, it is important to mention that we get the most evident and immediate changes to the sonic profile of the speakers, when exchanging/upgrading capacitors.

Induction coils have an equally important function, but for other reasons that relates more to overall performance and not so much the sonic profile itself.

When upgrading your vintage or new speakers using either completely re-designed crossovers or by upgrading the stock crossovers with better components, it is important to consider a few things.

Do you want your speakers to sound different or “*better*” according to common notions of how speakers should sound?

Or do you want to keep the original sound of the speakers, including any “shortcomings” that they may have in their sonic profile, compared to common notions of how speakers “should sound” in terms of sonic balance and transparency?

This is especially important to think about for vintage speakers, which often have that “warm/smeared/soft” sound, which may not sound good by modern notions, but is preferred by connoisseurs of vintage speakers.

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Crossover upgrade kits for vintage speakers:

Jantzen Audio offers some DIY crossover upgrade kits for a handful of vintage speaker models, which were all designed by loudspeaker designer, Mr. Troels Gravesen.

The idea behind the re-designed crossovers was to correct what Mr. Gravesen perceived as shortcomings and to make the speakers perform at their full potential.

We would advise that you read Mr. Gravesen's articles for the re-designed crossovers and the feedback from customers who upgraded their vintage speakers using the re-designed crossovers, before deciding if it is right for you.

General things to consider:

- Do you have the required experience with crossover assembly?
- Will there be room in your enclosures for the larger crossover boards that upgrading to better components will most often require or are you willing to make external crossovers?
- Mostly relating to vintage speakers, what is the condition of the drivers and are they in proper working condition or should your first step be to have your drivers repaired / refurbished?
- If the drivers are not in optimal working condition, you cannot be sure that the driver(s) will perform the same as it/they did some 30-50 years ago, thus a redesigned crossover may be necessary for changes in frequency response, phase, and impedance.

Considerations for induction coils:

- What is the condition of stock inductors and can they be re-used?
- If you want to exchange the **inductors** or upgrade to better inductor types, you will have to pay extra attention to the Ohmic resistance of the coils, as they may be an essential part of the crossover functioning.
- If you wish to exchange the stock inductors, it is necessary to measure the Ohmic resistance of the inductors with a precision milliohm meter. A standard multimeter is not good enough for this, as we are measuring resistance of e.g. 0.1-0.5 Ohm.
- Do your speakers have L-Pads/Attenuators and do you have the know-how to transfer to the new crossover boards if you want alternatively, would you be willing to sacrifice such features when upgrading the crossovers?

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What Jantzen Audio can and cannot offer:

- We offer DIY crossover upgrade kits for the following speakers only:
 - B&W 802 Matrix
 - Dali 800
 - JBL L100 (4310 / 4311), JBL L112, JBL L26
 - Tannoy MG15/MG12 monitors
 - Yamaha NS1000
- We cannot offer to design custom new crossovers for vintage speakers, as it would require Mr. Gravesen to have the speakers in his workshop, which is extremely time consuming and unrealistically costly
- We can offer general advice about component upgrades (mainly capacitors), if we are sent the following material:
 - Crossover schematics with component values for your specific model
 - If you wish to upgrade the induction coils, we also need to at least know the value and wire gauge of the stock coils, to determine estimated ohmic DCR target values
 - High-res photos of your stock crossovers to determine which types of coils, capacitors and resistors where used