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MAKING THE CONNECTION

The Importance of Vibration Control

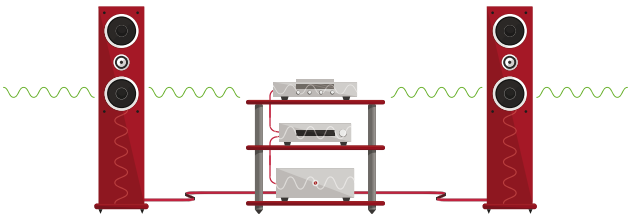
As most audio enthusiasts know, sound in itself is a fascinating topic. Sound is made from vibrations that disrupt the air and travel to our ears, where we transform them into a message our minds can understand. Without vibrations or the ability to decode them, sound simply would not exist. In understanding how sound is created and perceived, we must also understand how it can be altered by its environment and interactions. After all, an entity made entirely from vibrations is just as fragile as it sounds.

While sound is made of vibrations, they are also its most dangerous enemy. Unwanted vibrations from any source have the ability to alter sound, causing distortion, disrupted imagery, and even timing issues. A simple way of understanding the effects of vibration on sound is to think of how your phone or speaker sounds as it vibrates against your desk. There's a loud buzz and hum accompanying the distorted music that's playing. But once you lift your device, the buzzing stops and your music sounds much clearer.

Imagine that the negative vibrations you experience from the phone on your desk are amplified in your audio equipment. As we know, audio equipment can be quite fragile, and the vibrations they or their environment create are just as disruptive as our example. In order for your music to sound the best it possibly can, you must eliminate harmful vibrations. Fortunately, vibrations can easily be reduced by improving the placement of your components and speakers, and by utilizing various de-coupling and coupling accessories.

What sonic benefits can you expect to hear when you eliminate both external and internal vibrations? The background in your music will become more transparent and as a result reveal finer nuances and textures in vocals and instruments. Your soundstage will expand in width, depth and height and become much more three dimensional or even holographic in the best of cases.

Vibration Effects on Audio: Internal vs. External



When talking about vibrations and their effects on audio equipment, we look at two different types of harmful vibrations: internal and external.

External vibrations are more commonly considered, as they tend to be the most obvious. External vibrations can reach your components through the stands they rest on, nearby structures, and anything that could physically cause vibrations in your equipment, like air conditioners, traffic noise, walking around your room, or low rumbles. Even audio components themselves, such as loudspeakers, can be the cause of degrading external vibration for components housed on your audio rack.

Internal vibrations are less obvious, but equally harmful to the quality of your sound. These vibrations come from the equipment itself. While many manufacturers address internal vibration when designing their components, just as many overlook this issue, even though vibrations have a large effect on your audio equipment's ability to reproduce sound accurately. As enthusiasts know quite well, audio equipment is made up of dozens of intricate components, each playing a crucial part in producing the audio we hear. Something as simple as a loose connection or cheap cable can spoil the experience.

The complications of internal vibration come from those same intricate parts. In order to produce sound, these parts need to move, and in turn, create their own vibrations. Harmful mechanical energy is generated by circuit boards and power supplies inside audio components. Similarly, equally harmful vibrations are produced by the drivers and crossovers in the speakers.

When building your dream audio setup, you must consider the effects of both internal and external vibrations on your equipment. Fortunately, reducing vibrations is not as complicated as it sounds. There are many things that you can do, even during the set-up of your system, that will greatly reduce the effects of harmful vibrations.

How to Reduce Vibrations in Audio Equipment

There are a number of ways to easily reduce vibrations in your audio equipment before purchasing any corrective devices. Here are a few simple steps you can take to protect your setup from external vibrations.

1. Avoid placing your audio equipment in corners, behind speakers, or within the same space as household appliances like air conditioners, washing machines, etc.

2. Rest your audio equipment on solid, level, sturdy surfaces.

3. Avoid placing your speakers or equipment in box-like, confined spaces that could cause resonance or vibrations, like shelving units or cabinets.

4. Make sure your speakers are at least two to three feet (or more) away from your equipment, preferably resting on their own stands or dedicated surfaces.

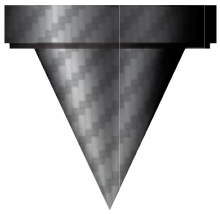
Once you've completed these steps to reducing vibrations from your environment, it's time to look into purchasing products to further reduce unwanted vibrations in your components and loudspeakers.

Common Solutions: De-coupling (Isolation) vs. Coupling

The two commonly known methods of controlling vibrations in your audio equipment are "isolation / de-coupling" and "coupling".

De-coupling / Isolation refers to the act of separating (isolating) a component from the surface it is sitting on using a de-coupling device. This method is used to reduce harmful external vibrations, essentially absorbing them before they reach the equipment. Many manufacturers offer some form of soft pad or feet with their products, ensuring that they stay isolated from whatever surface they rest on. However there are many after-market de-coupling products designed to reduce external vibrations even further.

Coupling refers to the act of merging a component to the surface it is sitting on using a coupling device. This is essentially the reverse method of isolation, mentioned above, and is used to reduce harmful internal vibrations that the components produce as they operate. Unfortunately, this is an area that many manufacturers and enthusiasts frequently overlook. As a result, the harmful internal vibrations produced inside equipment prevent their components from achieving their full performance potential. The most common form of coupling devices are cones and spikes made from composite, ceramic, or carbon fiber materials.



Best of Both Worlds: Resonance Control

As mentioned above, de-coupling devices help you to mitigate external vibrations from impacting the performance of your components, whereas coupling devices address the internal vibrations produced by the components themselves. But is there a way to address both sides of the problem?

This is exactly what Nordost was looking for when we began developing our Resonance Control Products. Nordost's Sort Kone and Sort Füt products are essentially coupling devices that allow internal vibrations to drain out of the chassis of components or loudspeakers. At the same time, the construction of both the Sort Kone and Sort Füt create a mechanical diode which only permits vibrations to travel in one direction – out. This ensures that external vibrations cannot enter into the components, both protecting your components from internal and external vibrations.

Nordost's Sort System products are designed to be added to any setup to instantly improve the overall sound quality. This line currently offers three resonance control devices: the Sort Füt designed for use with audio racks and speakers; the Sort Kone, designed for components; and the Sort Lift designed for cables. These simple additions to your system can transform your soundstage, allowing your components to resonate at their natural frequency without the burden of extraneous, damaging vibrations and the constraint of damping materials. For more information about our resonance control devices, visit the Sort System section of the Nordost website.

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