IsoNodes - Frequently Asked Questions

Q. What will I experience when I add the IsoNode feet?

A. The first thing you will notice is superior resolution and picture quality from video and increased clarity, dynamics and more extended bass response from your audio. As you play your home theater, more subtle improvements can be perceived: greater dimension and depth plus more vivid color from video and enhanced soundstage, smoothness and detail from audio. In fact, *every* aspect of your home theater is significantly improved! Eliminating vibration and resonance has a profound effect on a home theater system.

Q. Which component benefits the most from IsoNode feet?

A. The source (DVD player, CD player, etc.) typically exhibits the greatest benefit, but all of the components in your system will improve by adding the IsoNode feet. The center channel speaker and any speakers in the same cabinet as the components are in critical need of IsoNode feet as they are the main source of harmful vibration.

Q. What if my component exceeds the weight limit of a set of IsoNode feet?

A. You can easily add additional IsoNode feet under a component to increase the weight capacity. Each large IsoNode foot holds 10.5 lbs and each small IsoNode foot holds 7.5 lbs.

Q. If my component weighs less than 30 lbs, are the large IsoNode feet better than the small feet?

A. Even if your component weighs less than 30 lbs, the large IsoNode feet do have a greater ability to absorb harmful vibration than do the small IsoNode feet. The small IsoNode feet are best if you have height restrictions in your cabinet or want to maintain a lower budget.

Q: Some people claim that adding damping to components to control vibration can sometimes make them sound less dynamic and somewhat lifeless. Why should this be so when damping reduces vibration and resonance?

A: We have also heard the same comments a number of times. Unfortunately, people mistakenly attribute these negative changes in performance solely to the addition of damping to a component. If we look at the entire evolution of an audio or video system we can gain a much more clear understanding of what is happening and why it is happening.

Let's say that John, who is an audio and video enthusiast, decides to put together a really nice home theater system. He reads a number of the magazines, visits websites devoted to these topics and assembles a system composed of many highly rated components. John sits down to enjoy a well produced action movie but a few minutes into the first scene realizes that he's not hearing or seeing what's been described in the magazines by the reviewers. The highs are bright and harsh, midrange is forward and the bass is bloated and ill defined. The video picture is also disappointing – the images are not very sharp or detailed, it looks rather two dimensional and the color is only so-so. What's going on? These are all really good and pretty expensive components!

John decides to try different interconnect and speaker cables to deal with the audio problems. After two or three weeks of trying a number of different brands he decides on Brand A between the converter and the surround processor (it had the smoothest highs) Brand B between the processor and the amplifiers (it had the best midrange) and Brand C to the subwoofer (it had much better bass). In addition, he spent a many hours trying different speaker positions. It also happened that the "S" cable between the DVD player and the video projector John chose was from Brand B - it reduced many of the video problems he was seeing. He then had a technician come out and recalibrate the projector for this new cable. Now John is happier with the system, after all, he even switched the front amp for a different brand. But after a few weeks he is still noticing that the highs have sibilance during loud passages, are still kind of bright, and the midrange, although better than before, still honks a little and is not that distinct on complex dialog. Plus imaging is good but not great. The bass is better but he's had to try the subwoofer in nine or ten different positions and, of course, the one that sounded best was right in the middle of the walkway!

John is bummed but starts thinking about acoustical treatment for his room and decides that adding some of that will surely make the system sound great. He borrows a bunch of different devices from a number of dealers and spends all day and night Saturday and Sunday trying all of the devices in different combinations and positions. By 11:49 P.M. on Sunday night he's finally found the best compromise that takes care of many of the other audio problems, although some still remain.

All this work has left John exhausted but happy for a couple of months. He can now at least enjoy watching movies but increasingly is annoyed by the remaining audio and video problems. Over time he's also noticed some new problems he hadn't noticed before!

Well, now what? John does more reading. He's read about vibration control before but now starts to think more seriously about it. He knows that Bright Star products get great reviews and have won lots of awards so he decides to try them. He places a Big Rock under and a Little Rock (both are very high-mass high-absorption damping devices) on top of the DVD player and the surround processor. Well just about all of the remaining audio and video problems are now gone – the highs are very smooth, the midrange is clear and the bass is much tighter, the video picture is far better – but somehow things sound constricted and lifeless. John likes the improvements but is not very sure that this is good thing overall.

What is really going on? As we've seen, John has taken a fairly convoluted road to reach the point of trying the damping products. Along the way he has made many choices of associated components, accessories and set-up to optimize the system. "Optimize" has mostly meant reducing obvious and subtle problems and enhancing certain other aspects of performance. Unfortunately, much of this effort has been an attempt to reduce the negative audio and video artifacts of vibration contamination. The choice of cables, acoustic treatment devices, speaker position, etc. have all been made to ameliorate the symptoms, not the cause of the problem – vibration! Once the cause of the problem is eliminated, the system shows itself for what it is – a system where the highs and mids have been pushed down in level and dynamic range because of acoustical treatment devices and associated components, where imaging has been manipulated by speaker position and acoustic treatment to compensate for random out-of-phase elements, where subwoofer position has been chosen as a compromise, where video calibration and associated components have been selected to compensate for vibration induced jitter and other artifacts in the video bitstream, etc., etc., etc. It is no wonder that John was under-whelmed when he added the damping devices!!

It is often the case that the choice of set-up, associated components, ancillary accessories, acoustic treatment, etc. has to be significantly reevaluated when adding devices that eliminate basic problems in a system – especially problems that are as pervasive and permeating as those brought about by unwanted vibration and resonance.

Q: Do pointed cones really provide good vibration isolation?

A: For a number of years it has been thought that a pointed cone provides vibration control by "draining" unwanted stored energy out of a component and restricting the movement of vibration up into the bottom of the component due to the small contact area of the point against the shelf surface. Some people have called a pointed cone a "mechanical diode" allowing energy to transfer in one direction but restricting the energy flow in the opposite direction.

A closer look at the interface of the bottom of the component with the top of the cone, the point of the cone with the shelf surface and the material from which the cone is made and its shape will reveal the true nature of a cone's capabilities and limitations. A component placed on a normal shelf is subject to external vibration trying to enter from underneath due to the transfer of energy from the speaker through the floor and up through the equipment rack, plus the shelf itself contains additional resonance due to its vibrating in sympathy with the air-borne vibration from the speaker.

Placing the component on a cone will change the nature of the stored energy present in the component by *altering its resonant frequency*. The amount of change will differ from component to component due to the way the bottom plate of the component will be damped by the amount of surface contact with the top of the cone, the pressure of the cone against the bottom plate, the resonant frequency of the cone (which depends on its material construction and shape) and the position of the cone on the bottom of the component. That is why some cones sound better in some situations than others. It is really “hit and miss”, especially when you consider that a cone is a rigid device. Being rigid, it is *impossible* for it to really stop vibration from entering from underneath a component. In fact, it readily transfers vibration *into* the bottom of a component, it just does so *differently* than the original feet did. Additionally, raising the component further away from the shelf allows more acoustic energy to reach the bottom plate directly from the speaker. Using only three cones under a component (a popular practice) which reduces chassis “chatter” by allowing the three points to more easily define a plane so the component will sit evenly, allows two of the component's corners to dangle unsupported. This situation is not desirable since the chassis can now be more easily excited by air-borne vibration.

A cone may sometimes be better than using the original feet on a component but it cannot stop or absorb unwanted vibration or resonance.

Q: How effective are bases made with opposing magnets?

A: At first glance, a platform made by using opposing magnets would seem to be a good idea for vibration control. After all, there is no physical contact between the upper and lower sections of the platform so vibration should be completely stopped. Right? Well, no. That's not right. When a platform or mount that uses opposing magnets does not have any weight placed upon it the magnets are at a natural distance from each other which is determined by the strength of their magnetic field. Pressing down a moderate amount on the upper section does show it to be rather compliant and probably would reject a decent amount of surface-borne vibration. But in actual use, a component with a fair amount of weight will load the top plate and bring the opposing magnets in much closer proximity to each other which will significantly increase the strength of their repulsion. The closer the top and bottom plates are to each other the “stiffer” the compliance of the platform will be and the less effective its vibration control abilities. In other words, when a weighted component is placed on the upper section of a platform that uses opposing magnets, vibration that is present at the lower section will in turn cause the upper section to vibrate since the magnetic reaction between them is quite strong. In addition, this type of platform does virtually *nothing* to deal with air-borne or internally generated vibration and resonance.

Q: What are good vibration control materials (granite, marble, steel, wood, glass, etc.)?

A: The choice of materials for effective vibration control is critical. It is important to remember that ***energy (e.g.: vibration) is never destroyed, it can only change form***. A component is subjected to a number of sources of vibration and resonance: A) energy travels from the speaker and air conditioning or heating systems through the floor and up through the equipment rack into the bottom of the component, B) air-borne energy travels directly from the speaker towards the component's chassis, C) vibration and resonance are created internally by motors, spinning fans and buzzing transformers. A correctly designed vibration control product will deal effectively with *all of these sources* of unwanted vibration and resonance.

Placing a component on a hard, rigid surface will readily allow vibration to easily transfer into the component's chassis. Even though granite or marble are heavy and massive, they ring significantly when their surface is excited and they do not have *any* ability to absorb or diffuse vibration - they transfer vibration directly into the component from below. Most other rigid materials such as concrete, cement, glass, etc. react the same way. Wood generally acts as the previously mentioned materials but with one significant difference - natural wood is highly resonant and easily imparts its own “resonant signature” or personality to the component in contact with it. Steel not only rings and transfers energy, it has a strong electro-magnetic interaction with components and cables and is a poor choice as a vibration control material.

Q: Are audio components the same as musical instruments, and is it desirable to "tune" vibration and resonance?

A: No. A musical instrument *creates* music. An audio system *re-creates* the sound of that instrument as it has been captured in the recording. The recordings that we play on our audio systems have captured a musical event and contain the unique and fragile interplay of instruments. To play back these recordings with maximum fidelity we must ensure that our audio systems do not alter the musical signal. Anything, which is added or taken away from the content of the original recording, is distortion. Resonance and vibration have an audible effect on the musical signal that takes us further away from the faithful recreation of the musical event.

Each musical instrument captured in the recording has its own unique resonance. That is what makes a violin sound different than a cello and indeed what makes one violin sound different from another. The choice of the actual instruments used and their combination during the musical passage is a very serious matter to the composer, arranger and musicians. The interplay of the instruments, including their unique resonance signatures, is vital to convey the ensemble's musical ideas. The playback system, however, is ***not*** a musical instrument. Its function is to play back many different recordings of many different instruments. A playback system which has its own resonant signature it will color *every* instrument which it tries to reproduce. The most faithful playback system will not exhibit resonance and reproduce only what is contained in the recordings - nothing more and nothing less.

We know that vibration changes the signal flowing through a component. Merely "tuning" the nature of the vibration acting upon the component makes further changes to the signal (even though the changes may be more "pleasing" than leaving the original vibration present) but it does not return the signal to its original unaltered state. Only *eliminating* the vibration and resonance can allow the true nature of the musical instrument as it has been captured by the recording to be faithfully reproduced by the audio system.

Q: Are concrete floors really better than wood floors?

A: Concrete floors and suspended wood floors each have their own set of properties and issues which present challenges for proper vibration control.

Concrete floors are solid slabs which would seem to restrict floor-borne vibration created by the speaker and air conditioning or heating systems from reaching the audio or video equipment. But concrete, although massive and strong, does not dissipate vibration. In fact, because it is very rigid, it transmits vibration quite readily *into* the bottom of equipment stands and up into the components themselves.

Suspended wood floors are typically not very rigid. Wood flexes easily, absorbing and then releasing energy such as vibration, and as we all know, wood resonates. The vibration created by the speakers and other equipment transfers quite easily into audio and video components.

Vibration control platforms which use compliant, energy absorbing materials will be quite able to eliminate the vibration traveling through either a concrete or wood floor before it can contaminate the components in an audio or home theater system.

Q: What about "Rolling Ball" type of devices?

A: Vibration control devices that use a rolling ball under a component can do a good job of deflecting horizontal displacement of a component when it is subjected to vibration (typically the vibration directed to a component's chassis directly through the air from the speakers). That is why some people have reported improvements when rolling balls are used. The problem with rolling balls is that they are rigid devices which couple the bottom of the component to whatever the rolling ball is sitting upon. When vibration is presented in the vertical plane, the rigid coupling still allows vibration to travel up into the bottom of the component. In addition, a rolling ball does virtually *nothing* to deal with internally generated vibration from spinning motors, humming transformers or cooling fans.