

Core Audio Rack/Shelving Systems by Cambré

Cambré is a Canadian manufacturing company specializing in supporting structures for audio/video components. Unlike most such designs, these stands or, more precisely, weight-bearing shelves, have been designed with considerable expertise. According to John Wiebe, president of Cambré, the design process began with sophisticated, systematic testing to measure all aspects of resonance and vibration in assorted materials commonly used for audio stands.

Appearance:

The racks and stands come in a variety of finishes with shelves held in place with aluminum rods. The standard finish is maple, but rosewood, black ash, walnut and cherrywood are available. Each shelf can support 110 pounds, making the weight capacity of a four-shelf rack 440 pounds—more than necessary to support most audio gear. Cambré can customize the component racks to accommodate up to six shelves and offers a cleverly designed back panel to keep wiring neat and inconspicuous.

Technology:

Unlike many audio/video stands, the Core models are scientifically designed to control resonance-causing vibrations. A couple of years of research, testing, measuring and listening has resulted in a product that addresses all aspects of physics—the study of the properties of matter and energy. Allow us to touch upon the subject, before we describe how Cambré achieved control over the various sound-changing or modifying elements.

Vibration in physics is typically described as an oscillatory motion—a movement to and fro in opposite directions. It is exhibited, for example, by the string of a musical instrument that has been plucked. Random vibrations are manifest by the molecules in matter (Brownian movement). Any simple vibration is described by three factors: its amplitude or size, its frequency or rate of oscillation, and the phase or timing of the oscillations relative to some fixed time. Sound is produced by the vibrations of a body and is transmitted through material media in pressure waves made up of alternate condensations which force the molecules of the medium together, and rarefactions which pull the molecules of the medium apart. In sound, the vibration is longitudinal, as the movement is to and fro along the direction in which the sound is traveling. When a sound wave of one frequency strikes a body it will vibrate naturally at the same frequency—this is called sympathetic vibration. A reinforcement of sound resulting from sympathetic vibration is called resonance. When the vibrations of a sound-producing body causes another body to vibrate at the same frequency, rather than at its normal frequency, the vibration is known as forced vibration. Heat is commonly defined as the energy of molecules, part of which consists of the energy of their vibrational motion. However, what takes place in an audio set-up is a little more complex when we address the related subject of harmonic motion.

Harmonic motion is described as vibration in which the acceleration of the

Source:
Cambré

Price:
\$24.00 to
\$1,000.00 Cdn

Rating: ♪♪♪♪

vibrating object is directly proportional to the displacement of the object from its equilibrium position but oppositely directed. Related to audio, this translates into a single component vibrating in this manner (simple harmonic motion) becoming significantly more complex when combined with one or more simple harmonic motions generated by additional components. Various methods have been employed to damp these harmonic motions by reducing the amplitude with each vibration. If the methods used to dampen the influencing forces are small compared to the restoring force arising from the original displacement, the object will vibrate a number of times with successively smaller amplitudes until the motion gradually dies out. Scientific calculations can help to insure that damping will return the vibrating component to its original calm in a minimum amount of time. This is termed critical damping. On the other hand, if the damping forces or methods are too effective compared to the restoring force, the component returns slowly to its original position without vibrating at all and the system or component is considered to be overdamped.

Based on the universal theorem of physics, Cambré proceeded to address all elements, beginning with the shelf. It was known that a shelf or board has a resonance frequency when excited by vibrations and that standing waves will also occur between the shelves. To overcome this problem, Cambré reduced the shelves' mass, by cutting grooves on the underside. This led to a more sophisticated "grooving", diagonally across the bottom and both the resonance frequency and standing wave problems were eliminated. Further improvements were noticed when the edges of the shelf were beveled. Assembled in a "rack" with stacked shelves, Cambré found that solid aluminum rods further reduced unwanted vibrations by prohibiting, among other elements, the dreaded "ringing" effect. If the stand is excited by, for example, a CD player on its top shelf, the

shelf will disperse, rather than kill these vibrations before they become resonances. The aluminum rods (also available in titanium) then handle stray or random vibrations, diminishing their energy significantly before it can be transmitted to the shelves below. The lowest shelf will have almost no resonance as any remaining energy is channeled into height-adjustable cones which conduct residual energy into the floor.

This seemingly simple design is far from being unsophisticated as countless hours of R&D, listening sessions and re-design work were spent during development. Let's now listen to a bit of furniture and see how it affects...

Core Component Racks:

There is never a shortage of components in our studio and we began testing the rack by moving our turntable from its location on one of our in-house stands to the Core. On our stand the table had been placed on vibration inhibiting accessories, thus tweaked to maximize performance. When it was placed on the Core, without accessories, we quickly found that we had achieved identical performance without adding any other "tweaks". We then proceeded systematically and deliberately to move each component—one by one—off our in-house rack and onto the Core shelving system. First, the amplifier(s)—the Marantz integrated and the Musical Fidelity kW integrated (both reviewed in this issue) then the Marantz and kW CD players (to be reviewed) and finally our Exact Power line conditioner (reviewed in Vol. 16 #3). Each time we changed from our rack to the Core, a conspicuously audible improvement followed. The basic sound—already well above average—didn't change in essence, but advanced to a more desirable level. The most audible improvements, noted immediately, were sound-stage definition (whereby imaging became sharper and better focused; horizontal, vertical and front-to-back imagery was more extended, sort of freed from the loudspeaker enclosures) and more vivid,

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clearer reproduction of sound.

Core Amplifier Stands:

We used them with the heavy Cary Audio 500 monoblocks (reviewed in this issue) as well as the Wyetech Labs Sapphire monoblocks (reviewed in Vol. 16 #2). Both brands have vibration inhibiting feet, with the Sapphires featuring an extensive, well-designed damping suspension. We expected little or no improvement, but were quickly convinced of the Core stands' distinction as the final upgrade. The amplifier stands further sharpened the image, defined midrange and high frequencies by a few notches and added weight and authority to the bass region of our auditioning systems. One might assume that the Core stands and rack do not work with all components or all system configurations, but this simply isn't so. Our first "qualifying auditions" were done at the manufacturer's show room where a small receiver, a medium-priced CD player and a pair of low-priced loudspeakers were used on three Core models, priced at \$400, \$700 and \$1,000 (the one under review). Each time the components were moved from one rack to the other, improvements were readily perceived. In our studio, using top of the line components and high-resolution loudspeakers—all reviewed in this issue—the audible improvement was nothing short of striking.

All in all, the Core component racks and stands initiated clear-cut improvements throughout all system configurations. While they should not be considered a Band-Aid fix to improve poor sound, they should be regarded as a component—part of a meticulously assembled audio system.

Synopsis & Commentary:

Everyone knows that high-end audio racks can cost literally thousands, while low-end shelves can be purchased for much less. Of course, the simple shelves do absolutely nothing to improve audio performance and will, in fact, add audible "trash" to a sound system. The most expensive stands, on the other

hand, will provide sonic stability and, although changes will be quite noticeable, they may include some undesirable side effects. The Core shelving system is a bit different as it seems to offer those who do not wish to "change" an already great sounding system a way to enhance its performance. In an industry that caters to all walks of life, from bargain hunters to snob audiophiles, the Core system stands as one of the unique components that may cover all markets, as it is affordable AND effective. Hard core audiophiles may regard the Core system stands as unimpressive, as they are engineered for function without the adornments found in the more expensive audio racks. However, those who have acquired the ability to determine good sound when they hear it will love the quiet elegance and sonic improvements the Core system offers—all without spending thousands of bucks, which likely would be better spent on other equipment that benefits the all-round enjoyment of music. We feel that the Core shelving system's affordability will enable anyone with a decent audio system to improve the performance of their components without breaking the bank. Even those who have high-end audio gear (and loads of disposable cash) would be well advised to audition the Core line of stands for, despite its relatively low price, the improvements are very audible. We consider the Core system's price/performance ratio way out of proportion in favour of the end-user—and that is very rare in a market that often offers 10 percent improvement for 100 percent additional expenditure. ¶

Addendum:

The beautiful young lady on the front cover is not included in the purchase price, though we suspect that she may also enhance an already great sounding audio system.

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