



Fresh from the Bench

IsoAcoustics Aperta Speaker Stands

Effective Floating Isolation



Photo 1: The Aperta is IsoAcoustics' latest offering in its line of speaker isolation stands. The top and the bottom platforms are made of cast aluminum. The stands are available in black or natural aluminum finish. (Photo courtesy of IsoAcoustics)

IsoAcoustics recently introduced Aperta, a new aesthetically pleasing and cost-effective line of aluminum acoustic isolation stands built with a unique, patented isolation technology that enables speakers to float in free space, resulting in clear uncolored sound.

By
Gary Galo

(United States)

IsoAcoustics is a Canadian firm specializing in loudspeaker isolation stands for both audiophiles and audio professionals. Company founder and President Dave Morrison worked for the Canadian Broadcasting Corp. (CBC) for nearly 20 years. While there, he was closely involved in the design and the construction of radio and television studios. Perhaps his foremost technical challenge was as a member of the design team for the world's largest multi-media center. Located in Toronto, with a size of more than 1.72 million ft², the facility includes recording studios for drama, musical ensembles, special effects, plus radio and television production. The design of the IsoAcoustics speaker stands was an outgrowth of the experience he gained while working for the CBC.

Patented Design

Morrison's "floating design" concept is described in detail in US Patent No. 7,640,868, co-authored by Canadian inventor and designer Robert G. Dickie (available from Google Patents). In email correspondence, Morrison noted that his design concepts work "in a different direction than the

common paradigms and status quo."

As we learned from Isaac Newton, for every action, there's an equal but opposite reaction. And when a loudspeaker cone moves forward, the enclosure wants to move back and vice-versa. In an ideal world, the enclosure would not move or vibrate at all. But that could only be possible with an enclosure of infinite mass, which is impossible in this universe. A loudspeaker enclosure must normally rest on something, whether a floor or a desktop. Unless the supporting surface also has infinite mass, it will vibrate in sympathy with the enclosure. Sympathetic vibrations from the supporting surface will color the sound produced by the loudspeaker. Vibrations reflected back to the loudspeaker enclosure will only exacerbate the problem.

The conventional solution to this problem is to isolate the loudspeaker from the supporting surface with metal spikes or cones, which are made with a variety of materials including steel, brass and aluminum. But, spikes and cones are only partially effective. As Morrison explains, spikes create secondary reflections similar to throwing a rock in

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www.isoacoustics.com
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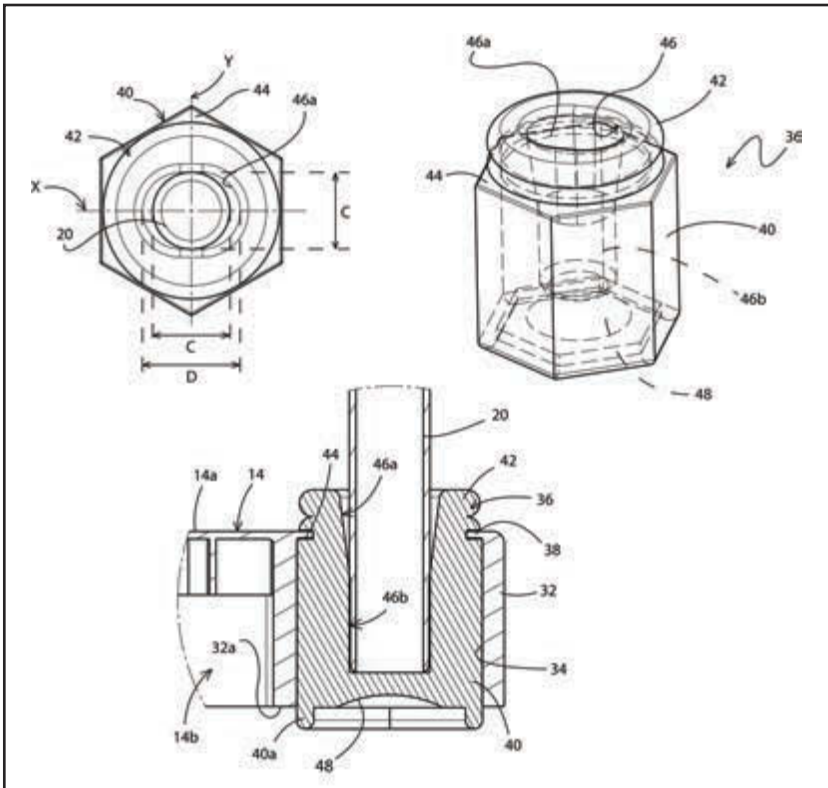


Figure 1: An illustration from the David Morrison and Robert G. Dickie patent shows the rubber bushings and the connecting rods. The upper left and right drawings show the oblong shape of the bushings, which enable front-to-back movement of the connecting rods, while minimizing side-to-side motion. The bottom drawing shows a cutaway view of a connecting rod inserted into a rubber bushing. (Image courtesy of IsoAcoustics)

a swimming pool. The ripples hit the hard edges and converge again as we are about to throw in the next boulder. The only way to eliminate those reflections would be to make the pool infinitely large.

The IsoAcoustics stand consists of two platforms—one on which the loudspeaker sits and a second which rests on the supporting surface. Each platform has four injection-molded, rubber bushings in each of four corners, which function as isolators (see **Photo 1**). The two platforms are connected by four aluminum support rods inserted into the bushings. The openings in the bushings are oblong, which “polarizes” them so they enable front-to-back movement of the top, speaker support platform, while minimizing side-to-side movement (see **Figure 1**). They are also tapered vertically, which enables the support rods to be firmly seated.

The system is designed to allow front-to-back movement of the speaker and the top platform, while preventing that motion from being transmitted to the lower platform. If the lower platform remains stationary, the supporting surface is isolated from speaker vibration.

Morrison notes that even when used on a high-mass supporting surface (e.g., a solid granite pedestal), “the speaker is allowed to breathe and we mitigate the bass smear. A buildup of smear and secondary reflection leads to a collapse of the sound-stage, as any replication of these elements in the left and right channels is perceived to be in the center.”

Morrison explains that “The isolators are tuned by adjusting the shape, thickness, and durometer of the isolators to manage the response and on-axis alignment.” The two aluminum platforms are not identical. According to Morrison, “We have to keep the mass of the upper frame down so it reacts with the speaker, and so the articulation happens in the body of the isolators. The upper and lower frames act as a parallelogram as the isolators maintain alignment. The shape of the frame provides the torsional strength so the isolators can provide a consistent response.”

Each platform also has four concave rubber flanges that contact the bottom of the speaker and the supporting surface. The concave flanges act as suction cups, improving the integrity of the mechanical connection between the upper platform and the loudspeaker, and between the lower platform and the supporting surface. The concave shape also contributes to the compliance of the isolators. The flanges and isolators are actually one piece, inserted through holes in the corners of each platform. There’s also a secondary benefit of using these stands—by raising the speaker at least 3” off the



Photo 2: At the Munich High End Show 2015, Dave Morrison demonstrated IsoAcoustics’ unique speaker stand approach, with its Modular series supporting a 3.5-way Focal Maestro Utopia loudspeaker weighing 256 lb (116 kg). (audioXpress photo)

supporting surface, airborne reflections off that surface are reduced.

IsoAcoustics manufactures five different stands in its ISO-8LR series, ranging in sizes to accommodate the smallest mini monitors to large studio monitors and subwoofers. At 17" x 9" (43.2 cm x 22.9 cm) the ISO-L8R₄₃₀ is the largest in the series, and is big enough to handle musical instrument amplifiers. Most models come with two sets of vertical supports, allowing heights of either 3" (7.62 cm) or 8" (20.32 cm). They also make a Modular series that can be custom-sized for a variety of speakers from small to very large. The Modular stands can also be used in performance and recording situations, including isolation of drum-set platforms.

Morrison mentioned that the Modular stands work well with Focal's 573-lb (260 kg) Grande Utopia loudspeakers (see **Photo 2**). IsoAcoustics products are beginning to be embraced by the loudspeaker industry. The respected Danish manufacturer Dynaudio bundles its stands with the BM mkIII series of studio monitors, and IsoAcoustics is currently working to create similar arrangements with several other loudspeaker manufacturers. On its website Dynaudio states: "When we started looking for the

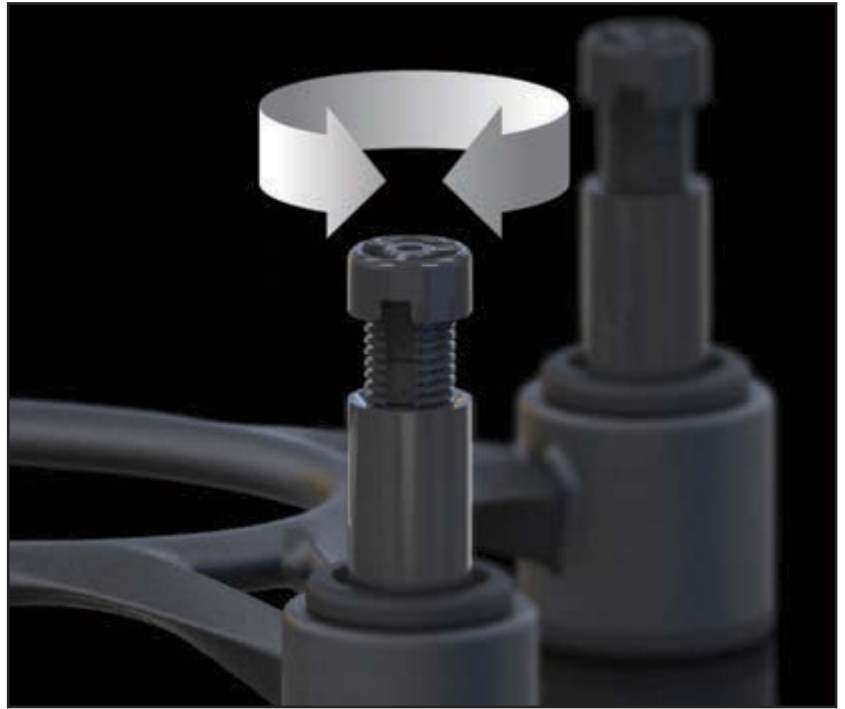


Photo 3: Threaded inserts in two of the aluminum support rods enable a tilt adjustment of up to 6.5°. By rotating the stand 180°, the speaker can be tilted backward or forward. A red mark on the threaded inserts appears when the maximum tilt angle has been exceeded. (Photo courtesy of IsoAcoustics)

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Photo 4: A loudspeaker is shown mounted on an IsoAcoustics isolator, which was tested with a laser vibrometer in an anechoic chamber at the Canadian National Research Council in Ottawa, Canada. (Photo courtesy of IsoAcoustics)



best solution for isolating the BM mkIII monitors from the surface, we found that IsoAcoustics provide the best and most flexible product on the market.”

Aperta Specifics

The Aperta (shown in **Photo 1**) is IsoAcoustics’ newest model, and is the same overall size as the lower-cost ISO-L8R₁₅₅. The ISO-L8R₁₅₅ is

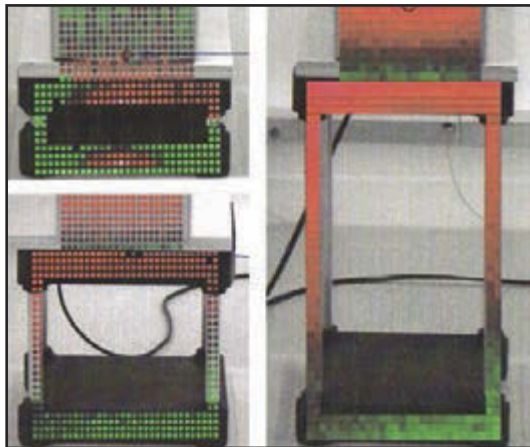


Photo 5: These are the laser vibrometer test results for IsoAcoustics speaker stands of three different heights. The change in color from red to green shows excellent vibration attenuation through the stands. (Photo courtesy of IsoAcoustics)

About the Author

Gary Galo retired in June 2014 after 38 years as an Audio Engineer at the Crane School of Music, SUNY, in Potsdam, NY. He now works as a volunteer, transferring vintage analog recordings in the Crane archive to digital format. He is the author of more than 280 articles and reviews on musical and technical subjects. He is an active member of the Association for Recorded Sound Collections (ARSC) and has been a regular presenter at ARSC conferences. Several of his conference papers have been published in the *ARSC Journal*.

manufactured from high-strength Acrylonitrile Butadiene Styrene (ABS, a thermoplastic polymer), whereas the Aperta is cast, sculpted aluminum.

The Aperta’s overall dimensions are 6.1” × 7.5” (15.5 cm × 19.05 cm), for medium-sized studio monitors weighing up to 35 lb (15.9 kg). The Aperta comes with a single set of vertical supports, configured for a height of 3”. Morrison notes that IsoAcoustics “continued to tune and refine the isolators for the Aperta to the extent our evaluation group unanimously selected the Aperta over the ISO-L8R₁₅₅ in final testing.”

The Aperta stands cost \$240/pair, and are available with a black or natural aluminum finish. They’re sold by several pro audio and Internet dealers, including Amazon, and the “street” price is usually around \$200/pair. A complete list of retail and Internet dealers, plus information on international sales and distribution, can be found on the IsoAcoustics web site. All IsoAcoustics products are warrantied for two years.

The Aperta stands are equipped with a tilt adjustment that enables users to dial in the optimum tilt angle for their listening positions (see **Photo 3**). Two of the aluminum support rods have threaded inserts, which enable height adjustment on one end of the stand. The inserts are calibrated in degrees, with fine gradation marks, and a red mark appears when the maximum angle of 6.5° is exceeded. By rotating the stands 180°, the loudspeaker can either be tilted backward or forward.

The owner’s manual is bare-bones—a small, five-page foldout with illustrations that are largely self-explanatory. There are no verbal explanations, which avoids the need for multilingual versions. More detailed information can be found on the IsoAcoustics website.

Performance

IsoAcoustics isolators have been subject to testing at the National Research Council in Ottawa, Canada, using an anechoic chamber and laser vibrometer. As Morrison explains, “The anechoic chamber was used to verify that the stands did not change or colorize the speaker’s enclosure and the response of the stands to the speaker’s movement. The laser vibrometer measures the acceleration of the speaker enclosure and the response of the stands to the speaker’s movement.”

Photo 4 shows a loudspeaker mounted on an IsoAcoustics isolator, inside the anechoic chamber. **Photo 5** shows the test results for three different height stands. These graphics illustrate 75-Hz tests, with an amplitude of up to 314 μM/s on the front plane of the speaker enclosure. The red and green

colors indicate maximum and minimum vibration (i.e., attenuation through the stands). The results show excellent attenuation of vibration from the loudspeaker and the top of the stand to the bottom of the stand.

Subjectively, I found the IsoAcoustics Aperta speaker isolators to deliver what the manufacturer claims. I evaluated the Aperta speaker stands in my studio at The Crane School of Music, SUNY Potsdam, using a pair of Monitor Audio Bronze BX2 loudspeakers driven by Monarchy Audio SM-70 power amps (see **Photo 6**). The Monarchy amplifiers were operated as fully-balanced monoblocks fed by a Benchmark DAC1 USB D/A converter. The loudspeakers were bi-wired with DH Labs T-14 speaker cable. Interconnects between the D/A converter and power amps were made with DH Labs Pro Studio cable and Neutrik XLR connectors with gold-plated pins.

I've experimented with metal cones, but never found them particularly effective in desktop applications, and they tend to slide around on smooth surfaces, which is an annoyance. The Apertas stay put on the desktop and definitely improve the sound.



Photo 6: For the listening tests, I mounted a Monitor Audio Bronze BX2 loudspeaker on an IsoAcoustics Aperta speaker stand. Monarchy Audio's SM-70 power amplifier, operating as a fully-balanced monoblock, is seen on the left.



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Fresh from the Bench

Both the bass and midrange show improved clarity and definition.

I prefer the Monitor Audio BX2 loudspeakers with the foam plugs inserted into the vents, which essentially converts the woofer loading from vented

to aperiodic. Even so, the bass is still a bit boomy due to excitation of desktop resonances. The Apertas minimized this problem, resulting in a smoother, more natural low end. I also found that the sound-staging improved, taking on a more holographic quality. The placement of individual sections of an orchestra are rendered with greater precision.

One installation issue not discussed by the manufacturer concerns the positioning of speaker cables. It's important that speaker cables don't interfere with the movement of the speaker and top platform. My short runs of DH Labs T-14, which is relatively stiff, are dressed to form an inverted "U"-shaped loop between the amplifier and the speaker, and don't allow the cables to simply hang off the backs of the speakers, vertically pulling down on them. Free movement of the speaker and the top platform, relative to the bottom platform, are essential to achieve proper isolation.

The Aperta speaker isolators are fairly priced for the quality of design and construction, and the performance benefits they deliver. Anyone using medium-size monitors should consider the Aperta stands a cost-effective way to improve loudspeaker performance. 

Resource

D. Morrison and R. Dickie, "Stereo Speaker Stand," US Patent No. 7,640,868, www.google.com/patents/US7640868.

Sources

DAC1 USB D/A converter

Benchmark Media Systems, Inc. | www.benchmarkmedia.com

T-14 Speaker cables

DH Labs | www.silversonic.com

BM mkIII Series monitors

Dynaudio Corp. | www.dynaudioprofessional.com/en/bm-series

Monarchy Audio SM-70 power amplifiers

Monarchy Audio | www.monarchyaudio.com

Monitor Audio Bronze BX2 loudspeakers

Monitor Audio, Ltd. | www.monitoraudiouusa.com

Neutrik XLR connectors

Neutrik USA, Inc. | www.neutrik.us

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