

Audiovector Trapeze

floorstanding loudspeaker

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Back in 1979, a Danish music lover called Ole Klifoth founded a company called Audiovector. His goal was to make a loudspeaker that brought together all the good qualities of the best loudspeakers of the time and iron out all the bad sides. So, no biggie, then! The first model was a giant eight-driver, six-way trapezoid design. But that was quickly followed by a more manageable three-way model called the Trapez, which proved a hit. And now, 45 years later, it's back and brought up to date in the Audiovector Trapeze.

Why would Audiovector recreate its first commercial success? Simply because it's still in the public domain. There are Audiovector enthusiasts – especially in Europe – who still own a pair of Trapez and claim it's the best loudspeaker ever made. Times change and floorstanding loudspeakers look very different to the wide-baffled designs of yore; but there are still those who feel the move to more svelte tower speakers loses as much as it gains. Trapeze addresses these concerns without falling into the trap of being a pastiche.

Isobaric Compound Bass

The new Trapeze is a three-way, Isobaric Compound Bass-loaded floorstanding loudspeaker design. It uses a 12-inch high-power mid/bass driver (with an eight-inch driver in an isobaric configuration), a five-inch-high speed midrange, and an Audiovector SEC Air Motion Transformer (AMT) tweeter specifically designed for this loudspeaker. There are several things to unpack in that fairly short description. Perhaps the most significant is the Isobaric Compound Bass design.

While isobaric loading is not unique, Audiovector has designed and engineered a unique solution to the design. The term implies 'equal' (as in 'isobars' meaning 'equal pressure', itself derived from the Ancient Greek word 'isobares' meaning 'of equal weight').

A typical isobaric chamber has two identical drive units, laid cone-to-magnet in phase, with both units in identically sized sealed enclosures. This means the pressure between the cones of the two drivers is equal and they act in parallel, behaving as one larger driver in twice the enclosure volume. The paired loudspeakers therefore deliver deeper bass than you expect from a given drive unit size. Another way of

thinking of this is making two smaller loudspeakers act as one big one, but with half the compliance and impedance.

The Audiovector Isobaric Compound Bass redraws these rules by using a smaller internal driver in a larger volume cabinet to partner with a larger external driver and a port between the two chambers. Pressure is equalised between the eight-inch internal driver and the 12-inch unit. This chambered internal construction couples the masses of the two drivers together, making it somewhere between a classical isobaric and a bass reflex solution, but the end result is functionally the same and delivers a good combination of weight and speed. A similar system has been used in larger Audiovector tower loudspeakers such as the R6 (tested in Issue 191) and R8 (tested in Issue 165) and manages to deliver uncanny levels of bass from a relatively narrow-baffle design, so it's not without precedent.

Drive time

That eight-inch internal driver is met by a 12" bass unit to the front of the cabinet. This bass driver is a custom design manufactured to Audiovector's specifications. The membrane is a lightweight yet stiff, long-fibre paper cone, with a corrugated 'concertina' surround. It uses a 4", hysteresis-free, fully vented voice coil. It also features an aluminium/magnesium chassis. The bass unit crosses over to the midrange at a relatively high 500Hz, which is rare in any sized drive unit, but almost unheard of in a 12" unit.

The midrange itself needs to be fast enough to cope with that blisteringly fast AMT tweeter. The five-inch custom-made Trapeze midrange driver uses a lightweight, impregnated paper cone, once more featuring a 'concertina' surround in place of the more commonplace rubber half-roll design. Like its big bass brother, it also features a hysteresis-free voice coil and a chassis made from a combination of aluminium and magnesium. However, in this driver, the magnet is a very strong vented circular Neodymium magnet, and the design includes a copper induction shorting cap on the pole piece.

Audiovector has long been a proponent of AMT designs, and the company claims its open-back Air Motion Transformer tweeter is the only one remaining true to Dr Oscar Heil's original design. The pleated membrane uses an extremely light and well-controlled mylar membrane with >>

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» aluminum leading strips and very strong N 51 Neodymium magnets. Mylar was chosen because of its good internal damping and inherent low distortion. Audiovector perfected its own etching process to produce the diaphragms for its current range. This is mounted to the cabinet with a clever three-point installation system, and its front fascia is made of aircraft-grade aluminium, milled with a circular pattern.

Occam's crossover

Audiovector designed the crossover network to meet the problem-solving principle known as Occam's razor. Attributed to 14th century English philosopher William of Occam, it's popularly stated as 'the simplest explanation is usually the best one'. The Trapeze's crossover is very simple (although no simpler than it should be!), developed for the loudspeaker itself, and uses high-quality components. It sports custom capacitors, which use polypropylene dielectrics with a tin-flashed copper foil, which are 'double cryogenically' treated and selected to have tolerances of less than $\pm 0.3\%$. Its copper inductor coils are also subjected to the same 'double cryo' treatment. Because one cryogenic treatment is taking simplicity too far!

Trapeze also uses high-quality film resistors in the tweeter section instead of the more commonly used reactive wire wound resistors. There is also an Audiovector x Duelund bypass capacitor for the extreme high-frequency component of the AMT.

Throwing shapes

Loudspeaker designers are trying new cabinet designs to help reduce internal standing waves. A conventional rectangular cabinet is uniquely designed to promote such internal resonance, and something as simple as a lute or boat-shaped enclosure can help. However, just as non-parallel walls can make for better sounding rooms, so non-parallel internal surfaces of an enclosure help reduce internal standing waves. This is where the trapezoid shape of the Trapeze does so well. By angling that front baffle, the cabinet is effectively a standing wave-free zone.

But to correctly achieve that goal beyond its non-parallel shape, there's some deceptively complex alignment of the acoustic centres of each driver. This has another benefit alongside the substantial reduction in standing waves; the correct placement of those drivers' acoustic centres contributes to creating 6dB/octave slopes between the drivers. The less perfect the positioning, the more complexity goes into the crossover network. Also, by angling the front baffle and the drive units on that baffle, it means toe-in is achieved while the rest of the loudspeaker is parallel to the rear and side walls. Not only does this aid installation but fits well with many listeners domestic demands.

A big hardwood high-density board cabinet also allows for lots of bracing. It doesn't necessarily need lots of bracing (once again, the thin-walled cabinets of BBC



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» designs famously had 'minimal' – British understatement for 'bugger all' – internal bracing), but the Audiovector Trapeze takes advantage of bracing to help lower cabinet-induced distortion and coloration.

Compatibility

A lot has changed in the audio world since the Trapez first appeared 45 years ago. Most notably in amplifiers, the prevailing technology then was a solid-state Class AB amplifier with moderately good damping factor. The notion of connecting a loudspeaker to a single-end triode design with a very low damping factor or a behemoth power amplifier with an extremely high damping factor were still some years away. Fortunately, Trapeze is one of the few designs that takes an amplifier's damping factor into account, with a three position switch on the rear panel.

You can also use this a little like a tonal compensation switch, taking some of the tautness out of a very dry-sounding amplifier, for example. The effect is noticeable, but given I spent an hour or so thoroughly enjoying the Trapeze in entirely the wrong position for the amp used, it's neither a deal-breaker or a speaker-destroyer if you just leave it in the middle position. It's worth doing the experiment, though.

And that word 'enjoying'... well, that comes up a lot when playing the Audiovector Trapeze. It's not a fussy loudspeaker, even though it's worth experimenting with accurate placement, partnering equipment and that damping factor switch. But Trapeze is the complete opposite to the stuffy audiophile loudspeaker that only springs to life when fed beautifully recorded music. This is the kind of loudspeaker you can happily surf through Tidal's or Qobuz' less salubrious sections, put on a musical horror and get a lot of fun from it. Play 'Just a Gigolo/I Ain't Got Nobody' by Louis Prima or 'All Star' by Smash Mouth (I have no shame) and it raises a smile. Play 'La Mer' by Julio Iglesias and you start sauntering across a room like you are

Colin Firth in the closing scenes of *Tinker Tailor Soldier Spy*. Or play something like Infected Mushroom or Iron Maiden and start headbanging until something bursts. It's that kind of speaker when it wants to be.

Given the Isobaric Compound Bass, I'm trying not to make it sound like word association, but I can't help thinking about the old Linn Isobarik loudspeaker when listening to the Trapeze. Back in the late 1980s, I used to sell Linn 'briks'. They did a lot wrong, but what they did right few other loudspeakers could do. That holds to this day, although in today's market arguably the 'did a lot wrong' part will weigh heavier. So, what did they do right? They made bass at once deep and visceral and rhythmically 'bouncy'. Everything else sounded like a slow, one-note drone by comparison. And if you liked that staggeringly good, forceful bass, you would likely overlook the Isobarik's lack of stereo imaging, relatively weak vocal articulation and midrange clarity, and its treble that could either sound underwhelming or screechy.

The Audiovector Trapeze is a Linn Isobarik with the nasty bits smoothed off. It's got that same sense of a visceral, 'meaty' and rhythmically precise bass, but this time coupled to a midrange that expresses itself beautifully and a treble that is at once detailed and never peaky sounding. Like most Audiovectors – and like most wide-baffle designs – it gives a fine presentation of stereo imaging. And it all hangs together beautifully.

Take it down a notch

Playing more informative pieces of music reveal a loudspeaker of depth and subtlety too. Imaging is first-rate, with the loudspeaker creating an image that's slightly deeper than it is wide, but still cast wide of the loudspeaker cabinets. 'The Ghost' by Anna B Savage [*in|Flux*, City Slang] has an atmospheric mix of real and synthesised instruments with her voice front and centre. It's easy for the mix to leave »



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» her almost removed from the music because she's close mic'd, but the point of the track is to be claustrophobic and intense, and the Trapeze presents that effortlessly.

It's a detailed and honest performer, although unlike many high-end designs, the detail is not thrown at you. It's a more cogent and coherent sound than that, and you never feel the interaction between drivers or any tonal shifts as you move through the registers. It just sounds natural, 'right' and always enjoyable.

As with many of the best loudspeakers, it gets the midrange very right, but once again the Trapeze never pushes this midrange clarity and absence of coloration. 'Entr'acte' from Caroline Shaw and the Attacca Quartet's *Orange* [Nonesuch] shows this midrange at its best; it swings between pizzicato and glissando, with moments of attack and others of Phillip Glass-like repetition. Get the midrange wrong and it sounds like string quartet warming up. The Trapeze locks your attention to the point where finding another track before it ends would seem like musical heresy. The same applies universally; listen to 'Peace Piece' by Bill Evans [*Everybody digs Bill Evans*, Riverside] and the world stops for six and a half glorious minutes. That wonderful midrange is underpinned by some solid bass, and even though the improvisation is mostly in the middle registers, it serves to root the sound in place brilliantly.

Normal rooms

Downsides are few, and mostly irrelevant. This is a loudspeaker sized, shaped, finished, and priced for 'normal' listening rooms rather than an oligarch's winter palace. As such doesn't reach down into the lowest octave where 64' organ pipes live. But, unless you live in a vast room, those deepest bass notes are more of a curse than a blessing, as you often need to control and contain them. The Trapeze is small enough to be used in homes where space is at a premium. In such rooms, this is as full-range as you need and anything else is excessive.

Although the Trapeze is barely at the high-end nursery slopes (you can buy power cords that cost more than these loudspeakers), I suspect they will have the same staying power as the Trapez of almost half a century ago. And it's the same motivation in people who still play their music through Linn Isobariks today. The Trapeze is the kind of loudspeaker that stays in the system for a long time, and you could conceivably move from good partnering equipment to some seriously high-end systems and still not feel a burning desire to upgrade the loudspeakers.

Sure, spending more gets you more, but if there's one thing you take from this review, it's that 'more' doesn't always mean 'better.' There's an impact and slam to the bass, a coherence to the overall sound and a simple sense of enjoyment that makes the Trapeze a tough act to follow, no matter how much money you spend on your loudspeakers.

A wide-baffle loudspeaker is always going to be a minority interest in today's audio world. For good or ill, most people buy slimline tower loudspeakers today, and for those people, there are a plethora of options open to them... including several from Audiovector's own range. But there are also those who see that loudspeaker design as a sonic misstep, and not all of them want the easy-going, laid-back sound of a pair of BBC derived designs. For those who want something that plays music with fun and force, those who want something that can produce detail and danceable tunes, and for those who want bass that has depth, slam and a wicked sense of rhythm... the Audiovector Trapeze is calling you. +

Technical specifications

Type: Three-way floorstanding loudspeaker with isobaric loading

Drive Units

High-frequency Unit: 3800 mm² Audiovector SEC AMT

Mid unit: High resolution 5" paper cone with Neodymium magnet

Bass Unit: High Power 12" paper cone with 4" Voice coil, with internal 8" Isobaric Compound Bass driver

Frequency Response: 34Hz-52kHz, ±2.5dB

Average Impedance: 8 Ohm

Minimum Impedance: 6.5 Ohm at 20kHz

Sensitivity: 88 dB SPL at 1m for 2.83Vrms input

Distortion: <0.2% THD at 90 dB SPL

Crossover Frequencies: 500 and 3.000 Hz

Terminals: High Current, gold plated copper/brass binding posts accepting 4mm plugs or spades

Finish: Nordic Oak, Italian Walnut, Black Ash, White Silk. Custom piano colours on request

Dimensions: (HxWxD): 87.5x42x43.5cm

Weight: 50kg per pair

Price: £15,500/\$19,950 per pair

Manufacturer Audiovector  www.audiovector.com

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