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Magic Act!

MAGICO'S AMAZING V3

MARANTZ UNIVERSAL PLAYER

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MAGIC ACT!

Magico V3 Loudspeaker

Robert Harley

Magico founder Alon Wolf made an off-hand comment to me that cut to the core of how he approaches loudspeaker design. We were setting up the V3 in my listening room when he remarked that he had hoped the V3 would cost less than $20,000, but "we couldn't get the level of performance we wanted at that price." Rather than compromise the sound quality to hit a price point, he designed the speaker to deliver certain performance criteria and set the price *after* the speaker met his goals.

It's simply not in Wolf's nature to accept compromised performance. High-end audio is filled with perfectionists, but Wolf takes perfectionism to an extreme. As you'll see in the Technology sidebar to this review, and in Jonathan Valin's accompanying review of the Magico Mini II, Wolf builds loudspeakers to an uncompromising vision.

The V3 is the first Magico loudspeaker that is truly a commercially viable product. The company's previous efforts have been ultra-exotic (the $329,000 Ultimate that I profiled in Issue 160), extremely limited in production (the $120,000 Reference used in mastering studios), or have appealed to a very small pool of potential buyers (the $29,600 Mini II mini-monitor). The V3 is an attempt to bring the exotic technologies employed in these previous products to a loudspeaker that makes sense to a larger audience of music lovers. Although $25,000 is hardly chicken feed, it is nonetheless a price breakthrough for a full-range, floorstanding loudspeaker from Magico.

As described in the sidebar comparing and contrasting the V3 with the similarly priced Revel Salon2 I reviewed last issue, this new Magico represents minimalist design in its purist form. There's no grille to cover the drivers, no glossy veneers, and no fancy brochure. What you get instead is a product that's entirely performance driven, with the external appearance reflecting the loudspeaker's core technologies.

The V3 is a three-way, floorstanding speaker employing dual 7" drivers coupled to a 6" midrange and a 1" ScanSpeak Super Revelator tweeter. The woofers and midrange driver are all custom made by Magico, and feature exotic materials and construction (see Jonathan Valin's sidebar on "Nano-Tec" technology in this issue). The midrange and tweeter are similar to those used in the Mini II. In essence, the V3 is a Mini II in a floorstanding enclosure augmented by the dual 7" woofers.

But how can a three-way, four-driver floorstanding speaker be *less* expensive than a stand-mounted two-way that employs the same drivers? First, the Mini's stands, which are an essential component of the speaker and account for three fifths of the product's total weight, are extremely expensive to manufacture. That money was spent on the V3's larger cabinet and additional drivers. Second, the Mini's cabinet construction is over-the-top; sheets of birch ply are machined into a shape that includes the internal ribs, and then glued together into a solid block to produce a structure of unparalleled rigidity—and unparalleled expense. The V3's cabinet is still made from birch ply (Wolf rejects MDF as a cabinet material—see the accompanying interview), but is built differently. The sheets of birch ply are cut into 1.5"-thick strips which are glued together to create the enclosure.[1] Between the cost savings of this technique and cutting out the expense of stands, Magico was able to deliver a three-way, floorstanding loudspeaker with same drivers as the Mini for less money. Although the V3 lacks the cost-no-object cabinet construction of the Mini, it has in its favor the three-way design, which keeps low frequencies out of the midrange driver, not to mention extending bass response. (See "Technology" sidebar for more details on the V3's drivers and construction.)

Listening

The V3 isn't one of those products that I listened to for a long period, cataloging its strengths and shortcomings with intellectual detachment and then dispassionately judging its sonic trade-offs relative to similarly priced competitors. Instead, the V3 absolutely bowled me over from the first seconds it began reproducing music

[1] The $45,000 TAD Model 1 was a full-sized loudspeaker built with the same cabinet-construction technique as the Mini. TAD discontinued the speaker because it was just too expensive and time-consuming to build.

in my home, and maintained this grip up to the minute I had to pack it up for shipment for this issue's cover photography. (The V3s are, however, coming back to me after the photo shoot.)

The V3's special qualities are instantly obvious, and immediately identify the V3 as not just another loudspeaker. The V3 has three characteristics that are, in my experience, state of the art, and which combine synergistically to make this such a musically compelling and rewarding loudspeaker. Those three qualities are the richness, density, and truthfulness of tone color; the palpability and tangibility of instrumental images; and the resolution and separation of individual instrumental lines. Any one of these qualities would have made the V3 a great loudspeaker, but with all three present simultaneously, the effect is jaw-dropping.

Let's explore these areas individually. In its ability to make reproduced instruments sound like the instruments themselves, the V3 was unparalleled, in my experience. Timbres had the depth, density, intensity, and richness that one hears in life. The V3's low coloration allowed tone colors to be reproduced naturally, rather than being overlaid with a synthetic patina. In addition to this low coloration, the V3 had a startling transparency that allowed timbres to emerge in their full glory. Reviewers often draw an analogy between system transparency and washing a window; listening through the V3 wasn't like washing a window—it was like removing the glass entirely. Another contributing factor to this truthfulness in timbre was undoubtedly the V3's spectacular resolution of low-level information, in this case the fine harmonic and dynamic structures that underpin timbre. This micro-detail contains a wealth of information about how the sound was created, infusing timbres with a vividness and palpability that was striking. I could name just about any instrument on any album I listened to as an example

Technology

The V3's drivers and cabinet construction are unlike those used in other loudspeakers. As described in the body of the review, the enclosure is made from stacked slices of 1.5"-thick birch ply, which gives the V3's side panels their distinctive striations. The baffle on which the drivers are mounted is a curved slab of 6061-T6 aircraft-grade aluminum. The slab begins as a rectangle and spends eight hours in a CNC machine to create the curved shape and to machine the driver openings and driver-mounting system. The baffle is bead-blasted to give it a lustrous sheen, and then anodized black to strengthen the metal. This expensive technique was employed not only because aluminum is more rigid and less resonant than MDF, but also because it provides a much more secure platform for mounting the drivers. The maximum amount of torque that can be applied to a bolt holding a driver in MDF is 3 Newton/meters (after which the MDF strips). The V3's drivers are mounted with a force of 11 Newton/meters. According to Magico, drivers mounted to MDF loosen over time; drivers mounted to aluminum do not. Incidentally, an early prototype (shown at the 2007 CES) used a much less expensive flat aluminum baffle, but that solution was rejected in favor of the better-sounding curved baffle (the baffle's curvature reduces diffraction).

The baffle is attached to the cabinet by a unique method that avoids bolts penetrating the birch cabinet. Six 1"-square solid-aluminum rods are spaced horizontally at intervals behind the baffle. The 12 Allen bolts you see on the baffle go into these rods, in effect squeezing the birch front panel between the aluminum baffle and anchors at the back of each rod.

The crossovers were designed using computer modeling, with much of the modeling software written in-house. They are so-called "elliptical" crossovers in that they can create steeper slopes with fewer components. A drawback to elliptical crossovers is that they are very finicky, and must be fine-tuned to high precision. The parts quality throughout the crossover is over-the-top. For example, one of the crossover inductors costs $126; most loudspeakers use an inductor (of the same electrical value) that costs $8.

As described in detail by Jonathan Valin in his review of Magico's Mini II this issue, the drivers are custom-made from scratch. The Mini II uses the same midrange and tweeter as the V3, but the floorstanding speaker augments this array with two 7" woofers of similar construction (and cone material).

of this, but two instruments stood out as preternaturally realistic. The first was Hubert Laws' flute on the Victor Feldman LP *Secret of the Andes* (available on JVC XRCD as *Audiophile*). This album, recorded by the great Alan Sides with tubed microphones live to an Ampex ATR-100, is terrific-sounding to begin with. Through the V3, however, the unaccompanied flute passage was startling in its sense of the instrument actually being in my listening room. I could hear the slight puff of breath at the beginning of notes as the air entered the flute's embouchure, the subtle amplitude modulation of the air vibrating inside the tube, and the sound of air escaping from the open valves. On the track "Pound for a Brown" from Zappa's magnificent orchestral album *The Yellow Shark*, there's an ostinato figure played by a bass clarinet that struck me with its startling realism. I had a vivid impression of the instrument, of the reed moving back and forth and of the richness of that instrument's unique timbre. I describe these impressions not because I'm a detail freak who points to such resolution as desirable for its own sake, but to convey the idea that these details added up to a reproduction of instrumental tone colors that was a significant step closer to what one hears from live instruments. These examples are purely for illustration; the gestalt of the V3 is that every time I sat down to listen, I heard the most natural reproduction of instruments and voices I've experienced from a hi-fi system.

The V3's next quality, the palpability of images, is closely related to the timbral realism just described. Images were presented in space with a tangibility and solidity that were breathtaking. Here's an anecdote that suggests just how palpable and tangible the V3's imaging is. I have parallel systems in my listening room—a stereo system and a multichannel system for music and film. The two-channel signal path is completely independent of the multichannel signal path, and the video is provided by a ceiling-mount projector and retractable screen. The first full day I had the V3, I went in the listening room in the morning, put on a CD, and when I sat down, immediately thought that the center-channel speaker (a Wilson WATCH) was active. (It is possible to play a CD in my system and hear music from the multichannel system, although I never use it for that purpose.) The sense of palpability and solidity of the images between the pair of V3s was so powerful that I got up out of my chair, convinced that I had inadvertently engaged the center-channel speaker. Images thrown by the V3 have a *right there* quality, both in the precision of their placement on the soundstage and in their vividness and immediacy.

The third remarkable quality about the V3 is its ability to present music as a group of separate musical lines interwoven into a whole. Individual instrumental voices were clearly resolved, rather than congealed into one big image. The V3 was simply revelatory when reproducing dense, complex music; I could hear the musical contributions of even the quietest instruments in the arrangement. Rather than being obscured or thickened into a monolithic presentation, every instrumental line was its own entity.

A Tale of Two Loudspeakers: **The Magico V3 and Revel Salon2**

The $21,998 Revel Ultima Salon2 reviewed last issue left my listening room (for cover photography) the same day that the V3 arrived. Given this timing, and the loudspeakers' similar prices, it makes sense to compare and contrast these products, particularly considering the Salon2's terrific performance.

First, the companies building these great loudspeakers couldn't be more different from one another. Revel is part of the huge Harman International conglomerate, and consequently, the Salon2 represents the effort of perhaps a dozen or more engineers. From driver designers to crossover experts to production engineers who have an interest in making the design practical to build on a relatively large scale, the Salon2 is a team effort.

By contrast, Magico is a tiny company and its products reflect its founder's single-minded vision. The V3 is very much the work of an *auteur*. Outside companies are contracted to build certain components, but under tight control.

Which approach theoretically produces a superior product? One could argue that a single person can't possibly possess the combined expertise of a team of engineers. One could also posit that "design by committee" inevitably results in compromise. (I'm reminded of the Stanley Kubrick quote: "One man writes a novel. One man composes a symphony. It is essential that one man make a movie.")

Another question is whether relatively large-scale-manufactured speakers such as Revel's can match the quality of small-scale, hand-built speakers such as Magico's—or vice versa. Magico can employ tweaky build techniques that are simply impractical on a larger scale. On the other hand, higher-volume manufacturing confers an economy of scale that allows the larger company to deliver greater value. By creating greater efficiency, the larger company can put that money saved into the product itself. In addition, Magico could never spend a fraction of the money Revel spent on tooling for the Salon2, but conversely, Magico can employ build techniques that are impractical for large-scale manufacturing.

Much effort was put into making the Salon2 elegant and attractive. The V3, by contrast, is very much a "form follows function" product. There's no sonically superfluous patina of elegance in the V3; its visual beauty flows from the underlying design principles. In fact, the V3 is supplied without a grille. The V3 is like a sports car that comes without air conditioning, a stereo, or heated and powered seats. This is minimalist design in its purist form.

In terms of sound quality, the two speakers shared some important attributes. Both have extremely low levels of tonal and dynamic colorations, terrific soundstaging, and wonderful clarity. The coherence and clarity I found so appealing in the Salon2 was evident in the V3, but the Magico speaker, surprisingly, took this quality to another level. The V3 had greater transparency, richer, more vivid, and more saturated tone colors, greater palpability, a bigger soundstage, and more precise imaging. In its favor, however, the Salon2's treble was smoother and better integrated with the upper midrange. The V3's top two octaves were brighter than the Salon2's, resulting in a more open and airy presentation, but one that lacked the Salon2's silky smoothness. It is possible, however, to fine-tune the V3's treble balance through toe-in. The Salon2 and the V3 are the two best loudspeakers I've had in my home in terms of clarity, palpability of tone color, image tangibility, midrange resolution, and just the general sense of the speaker getting out of the way and conveying musical expression. The V3, however, crosses a threshold and enters a realm in which instruments and voices are reproduced with such lifelike precision that they sometimes sound spooky-real.

The two loudspeakers had very different bass performances. Two 7" drivers in a sealed cabinet are bound to deliver a different presentation than three 8" units in a large ported enclosure. Not surprisingly, the Revel goes deeper and plays louder, and manages to avoid the obvious problems of ported speakers (chuffing and overhang—see the sidebar on sealed vs. reflex loading). The V3's bass tended to be more subtle, but no less rewarding. The Salon2 packed a wallop in the midbass; the V3's bass was less dramatic, but nonetheless formed a satisfying tonal underpinning to the music. The V3's bottom end seemed to pressurize the room at the lowest frequencies (the organ pedal tones on Rutter's Requiem on Reference Recordings, for example), much as one hears from the instrument in a large space. The Salon2 would play louder and delivered a more "robust" presentation at high playback levels; the V3's bass was tighter, leaner, and a bit more refined.

Finally, the V3 was considerably easier to drive than the Salon2. For example, the Audio Research Reference 110 (110Wpc of tube power) drove the V3 to satisfying levels, but I could hear it get into trouble driving the less sensitive Salon2.

Ported vs. Sealed Enclosures

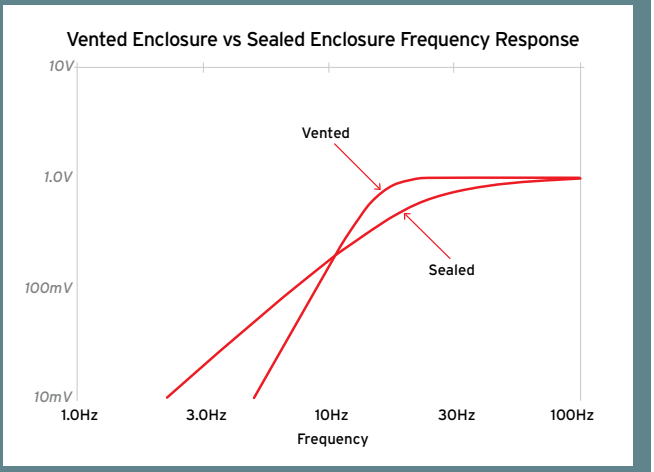
Loudspeaker designers over the past 30 years have increasingly abandoned sealed enclosures (so-called "air suspension," "acoustic suspension," or "infinite baffle") in favor of ported ones ("bass-reflex," or "vented"). Virtually all modern high-end loudspeakers are ported; the V3 is an interesting exception. But what are the technical virtues and tradeoffs of ported enclosures, and how do these tradeoffs affect the musical presentation?

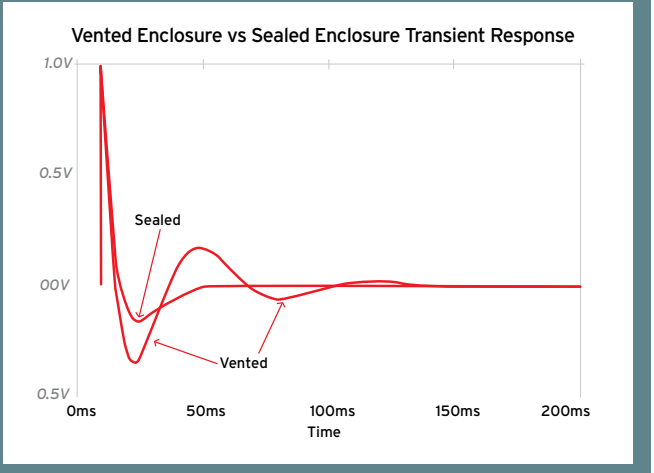
In a sealed enclosure, the cabinet wraps around the woofer and traps a volume of air inside the cabinet. The air inside the cabinet acts as a spring, compressing when the woofer moves in and creating some resistance to woofer motion. This is why the technique is known as "air suspension."

In a ported enclosure, the acoustic energy inside the enclosure created by the woofer's motion is channeled to the outside—there's just as much sound inside the cabinet as outside it. This technique confers three advantages. First, it increases the speaker's maximum acoustic output—it will play louder. Second, it can make a loudspeaker more sensitive—it needs less amplifier power to achieve the same volume. Third, reflex-loading lowers a speaker's cutoff frequency—it will go lower in the bass. (Note that these benefits are not available simultaneously. Reflex loading can be used either to increase a loudspeaker's sensitivity or extend its cutoff frequency, but not both.)

The sealed enclosure's woofer and air in the box form a resonant system—that is, the woofer moves most easily at a certain frequency. Below that frequency, the woofer's output decreases at the rather gentle rate of 12dB per octave. For example, if the resonant frequency is 40Hz, the woofer begins rolling off below this frequency with the response attenuated by 12dB at 20Hz. Reflex loading lowers this cutoff frequency, effectively extending the speaker's bass response. But the reflex-loaded woofer's output decreases at the relatively steep rate of 24dB per octave. If all other factors are equal, the reflex-loaded system maintains flat bass response down to a lower frequency, but then the bass output drops off more quickly than it does in a sealed system. A comparison of low-frequency cutoff points and rolloff slopes is illustrated in the top diagram.

Sealed and reflex loading exhibit very different behaviors with transient signals. A transient signal (think of a kick drum) driving a sealed system causes the woofer to move in response to the signal, but then the woofer stops moving relatively quickly after the drive signal's decay. By contrast, the woofer in a ported system continues to move back and forth long after the drive signal has stopped (called "overhang"). This phenomenon, shown in the bottom diagram, gives rise to the term "slow" to describe the bass performance of some ported speakers. The term is technically a misnomer, but has entered the common usage as "bass with overhang."





Subjectively, a sealed system has a tighter, more defined, and leaner sound, particularly through the midbass. Transient performance is also better from a sealed system. A ported speaker has greater impact and a "bigger" bottom-end, but with less sense of true deep extension. The reduction in apparent extension is objective because the reflex-loaded system rolls off faster than a sealed system, and subjective because the increased bass energy tends to mask the sound of the bottom half-octave below it.

Note that these observations are very broad generalizations; the best bass performance I've heard (including transient fidelity) was delivered by the Wilson MAXX 2, a ported loudspeaker. The MAXX 2 exhibited none of the problems associated with reflex-loaded systems, which proves that with careful design it's possible to create a reflex-loaded system with state-of-the-art bass.

The musical effect of this sonic virtue cannot be overstated; music had more meaning when every element the composer wrote or the musician played was clearly revealed. This was particularly apparent on orchestral works, but was meaningful across all types of music. Listening to a straight-ahead jazz CD I engineered (*Confirmation* by the Chiz Harris Quartet, recorded live in the studio to two-track), the unison phrases between Conti Candoli on flugelhorn and Jay Migliore on tenor sax revealed the V3's startling ability to convey the two instruments' individual tone colors.

These three characteristics—timbral realism, image palpability, and separation of musical lines—combined in a way that elevated the listening experience to a new level of involvement and connection. An analogy that embodies these three qualities is high-quality analog playback compared with mediocre digital. The mediocre digital is somewhat flat, with a synthetic character overlaying timbres, a congealing of individual instruments, and a lack of immediacy. The V3 is more like analog playback, even with digital sources (albeit great digital like the Esoteric P-03/D-03 combination with the G-0Rb rubidium clock). That said, LPs played on the fully loaded Basis 2800 Signature turntable and Vector 4 tonearm through the V3 took the system to yet another level. This is a speaker that will reveal everything about what's upstream of it, and one whose resolution limits must be explored with first-rate analog gear. Put on the direct-to-disc LP *Michael Newman, Guitarist* on Sheffield, close your eyes, and the sense of hearing a classical guitar right before you is spooky-real. This record, on this system, is the closest I've ever come to experiencing a live instrument in my listening room.

Part and parcel of this transparency was the V3's open, extended, and airy treble. The top end was highly resolved, with clean rendering of transient information. The treble balance was on the lively side, although the amount of treble at the listening position could be changed with fine adjustment of toe-in. As great a tweeter as the Super Revelator is, I thought that it wasn't quite as smooth as the tweeter in the Revel Salon2 reviewed last issue, and didn't quite integrate as well with the upper midrange. The Salon2 is the best dynamic speaker I've heard in this regard, and a tough act to follow.

The V3's soundstaging was no less impressive than the rest of the product's performance. The pair of Magico's painted a vast space in front of me, with extraordinary resolution of spatial detail. For my money, no one captures a sense of space on a recording like Keith Johnson, and his latest effort, *Crown Imperial*, was simply staggering through the V3. (*Crown Imperial* is "festive music for organ, winds, brass, and percussion" performed by the Dallas Wind Symphony under Jerry Junkin on the Reference Recordings label.) Each instrument is laid out in a three-dimensional diorama occupying a specific point in space with a palpable sense of air between the images. The soundstage replaces the acoustic of the listening room, with the stage rear apparently across the street. In addition, the V3 had a "wrap-around" effect that was eerily similar to what I hear from good multichannel recordings that have just a hint of ambience encoded in the rear channels. Those multichannel recordings, and the V3 in stereo, seem to extend the soundstage's lateral boundaries around to the sides of the listening position. This quality contributed greatly to the sense of immersion in the performance.

The V3's bass presentation was different from what I'm used to—it's been quite a long time since I had a loudspeaker with a sealed enclosure in my listening room. The V3's midbass and bass were well balanced with the rest of the spectrum, with a solid sense of weight and bottom-end impact. The resolution of pitch in the lower octaves was outstanding, as was the transient performance. This was particularly apparent (and welcome) on acoustic bass in jazz, where I could hear a wealth of tonal and dynamic nuances in a way that brought the instrument to life. The midbass was exceptionally quick, clean, and dynamic, giving the entire presentation a feeling of agility and rhythmic drive. The V3's bass doesn't pack the punch of, for example, the Revel Salon2 or Wilson MAXX 2, but it has a refinement, smoothness, and extension that were fully satisfying on a wide range of music.

Conclusion

The Magico V3 is revelatory in its transparency, lifelike timbres and imaging, resolution, and clarity. But these descriptors simply don't do the V3 justice; to fully appreciate just what an achievement this loudspeaker is, you must hear it firsthand for yourself. But be forewarned; once you've heard your favorite music reproduced with this level of musical intimacy, there's no going back. **TAS**

SPECS & PRICING

Three-way floorstanding dynamic loudspeaker
Driver complement: Two 7" Nano-Tec woofers, one 6" Nano-Tec midrange, one 1" ScanSpeak ring-radiator tweeter.
Frequency response: 32Hz–40kHz
Sensitivity: 89dB
Impedance: 4 ohms
Recommended amplifier power: 50–300W
Dimensions: 12" x 42" x 15"
Weight: 160 lbs. (net, each)
Price: $25,000

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ASSOCIATED EQUIPMENT
Digital source: Esoteric P-03 transport, Esoteric D-03 DAC, Esoteric G-0Rb rubidium clock
Analog source: Basis 2800 Signature turntable with Calibrator Base, Syncho-Wave power supply, and Basis Vector 4 tonearm, Transfiguration Orpheus cartridge
Preamplification: Aesthetix Rhea phonostage, Mark Levinson No.326S linestage, Balanced Audio Technology Rex linestage
Power amplification: Mark Levinson No.433, Audio Research Reference 110
Cabling: MIT Oracle MA (loudspeaker), Shunyata Antares and AudioQuest WEL Signature (interconnects)
Power conditioning: Shunyata V-Ray and Hydra-8 conditioners, Shunyata Anaconda and Python AC cables; three separate dedicated AC lines in listening room with isolated ground
Room: Custom built; acoustic design and computer modeling by Norm Varney of AV Room Service