

the absolute sound



Wilson Audio
Specialties Chronosonic
XVX Loudspeaker,
Subsonic Subwoofer,
and ActivXO Crossover



T I M E M A C H I N E

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Every audiophile knows the futility of describing to the uninitiated the experience of hearing music through a high-end audio system. You can resort to all the usual jargon of dynamics, timbre, soundstaging, etc., but until that person experiences music through a great system for himself, he just won't understand. Five minutes in the sweet spot, however, may forever etch on his consciousness just what his favorite music can sound like when reproduced with exquisite fidelity. Those five minutes might indelibly change his relationship to music; he can't un-hear the newfound musical expression. But without this firsthand personal experience, there's absolutely no way of even *imagining* how reproduced music can sound, never mind knowing and understanding it.

This phenomenon isn't confined to neophytes. A seasoned audiophile can think that he's reached the pinnacle, but he's just as oblivious to the next level of realism as the neophyte who has never heard even a basic high-end system. Despite decades of experience, the sophisticated audiophile simply can't know what musical expression has been lost. Of course, we can all hear a flawed system and imagine how the system would sound without the flaw, but that imagining utterly fails to fill in the missing musical expression.

We can't conjure in our minds the missing artistic intent because music's meaning is *encoded in the physical sound*. Change the physical sound and you change the music's meaning. For just one of countless examples, if a loudspeaker has thick, slow, plodding bass reproduction, the music's sense of rhythmic flow and drive will be diluted. The way that great musicians lock into the groove, get "in the pocket," will be diminished. This aspect of the musical expression disappears just by the changes in the physical medium—the patterns of air-pressure variations striking your eardrum. Contrast this with expression through the printed word, which isn't dependent on its physical characteristics to convey meaning. This review could be printed with gold ink on the world's finest paper, or on the cheapest newsprint, and the meaning wouldn't change. The printed word's meaning isn't dependent on the physical characteristics of the medium. But music's meaning is physically encoded in electrical signals and resulting acoustic waveforms that are susceptible to infinitely variable degradation, alteration, and dilution.

This line of thought was prompted less than 24 hours after the Wilson Audio Chronosonic XVX loudspeaker and a pair of Wilson's Subsonic subwoofers were installed in my listening room. After the dust settled from two intensive days of installation and setup by three Wilson personnel, and I was alone with the system and my music library, I felt just like the neophyte hearing high-quality music reproduction for the first time. I've lived with many, many of the world's greatest loudspeakers in my home, and heard countless others at shows, but I've never listened to a speaker quite like the Chronosonic XVX. It is the most realistic sounding, the most musically expressive, and the most intellectually and emotionally engaging loudspeaker I've heard.

I'm not saying that the XVX produces a sound that I happen to like. Or that if you favor multi-way dynamic loudspeakers you'll love the

XVX. Or that this new Wilson will appeal to some listeners more than others. Rather, I'm going to assert in this review that the XVX sets a new standard of realism in reproduced music—a realism that more fully conveys artistic intent regardless of your favored technologies or sonic priorities. I can't imagine anyone, no matter what their preferred speaker brands or listening biases, not being captivated by the XVX's lifelike presentation. After all, real is real. The XVX isn't just a milestone for Wilson Audio; I believe that it is a landmark achievement in loudspeaker design.

If you're familiar with big Wilson speakers, and even if you've lived with a speaker like Wilson's XLF, it's natural to look at the Chronosonic XVX and see just a bigger and more elaborate version of the speakers Wilson has been building for decades. It's easy to project on the XVX your expectations based on Wilson's 47-year track record. But

whatever you imagine the XVX sounds like, you will not be prepared for how the XVX actually performs. Although the XVX is most assuredly a technical evolution of nearly fifty years

of loudspeaker engineering at Wilson Audio, the XVX is a *sui generis* creation that deserves to be considered as its own entity.

Wilson Audio calls the Chronosonic XVX the flagship in the Wilson Audio line. But what about the \$850,000-per-pair WAMM Master Chronosonic? David Wilson's *magnum opus* is a limited-edition statement product that has nearly sold out its 70-pair run, leaving the XVX as Wilson's top model. As we'll see, the XVX has much in common with the WAMM MC, but the XVX is not "merely" (if that word is applicable in this context) a scaled-down version of the WAMM MC. Instead, this new speaker incorporates cabinet materials, drivers, crossover components, and technologies that are unique to the XVX. In fact, the XVX introduces more innovations than any other single product in Wilson's long history. The two-year development project was led by Daryl Wilson, who became CEO of Wilson Audio in 2016 shortly before his father, David, passed away. Daryl has led the design effort of the most recent—and best, in my view—Wilson speakers including the Sabrina, Yvette, Alexx, and Sasha DAW.

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The Chronosonic XVX carries a price tag of \$329,000 per pair, positioning it in the upper echelon of the high end. The optional pearl finish's \$30,000 price tag is reportedly justified by the labor-intensive process needed to create that special paint. Although the XVX is clearly a full-range speaker, Wilson offers the Subsonic subwoofer to extend the system response down to 10Hz. Wilson installed two Subsonics in the review system, along with Wilson's ActivXO electronic crossover. Between the pearl finish, two Subsonic subwoofers at \$40,000 each, and the \$4500 ActivXO, the total system price comes in at a breathtaking \$443,500, making it the most expensive audio product I've reviewed. Unlike many speakers of this lofty price, the XVX is a full-production model, and one that can be auditioned at eleven U.S. dealers as of this writing (see the Wilson website for a list of dealers demonstrating the XVX).

The Chronosonic XVX is a four-way, seven-driver dynamic loudspeaker. This new flagship is a massive, and massively complex, piece of loudspeaker engineering. The Chronosonic moniker the XVX shares with the WAMM Master Chronosonic indicates that the XVX is built around the ability to time-align the drivers at any listening position with the same accuracy as that of the WAMM MC. Although time alignment has been a hallmark of Wilson products since the first iteration of the WAMM back in 1984, it is realized in the WAMM MC, and now the XVX, with unprecedented precision.

The XVX architecture consists of a lower woofer module that houses the reflex-loaded 12.5" and 10.5" woofers (the same drivers developed for the WAMM MC), and four separate enclosures for the five upper drivers (two lower midrange, one upper midrange, one forward-firing tweeter, one rear-firing tweeter) that can be independently articulated. The upward/rearward-firing tweeter is mounted in the upper-most midrange module. An open-air "gantry" that is bolted to the woofer enclosure forms the infrastructure for the midrange and tweeter modules, as well as for the intricate mechanism for time-aligning the drivers.

The XVX's technical and mechanical complexity is partially revealed by standing behind the speaker. In addition to the individual driver modules, you can see the wiring system used to connect them, the terminal block for that wiring, the interchangeable resistors that can fine-tune the tonal balance and that also protect the driv-

ers, as well as the massive carbon-fiber-encased crossover network. It's quite a sight.

The XVX has a large physical presence, standing 6' 4" and weighing in at 685 pounds (per speaker side). Yet despite its size and weight, the XVX is astonishingly svelte and elegant. As you stand next to the speaker and allow your eyes to explore its many contours, you gain an appreciation for the myriad design touches, some of them miniscule, that contribute to its overall organic appearance. The result is a large speaker that doesn't have the boxy appearance of previous Wilson designs. Everywhere you look are radiused edges, subtle contours, gradations of depth, and flowing curves that together create a harmony of visual design. That's important when you consider the strong statement the XVX will make in a living room.

Each speaker is supplied with seven grilles (available in a variety of colors), one for each enclosure plus a pair of large grilles that cover the gantry's open sides. The gantry grilles, machined from Wilson's X-Material, are held in place magnetically. You can elect to leave them off, exposing the gantry's machined aluminum frame as well as the time-alignment mechanism. In a nice touch, the aluminum surface is machined with a fine

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Listening

Whenever I've experienced a new standard in loudspeaker performance throughout the years, it's usually been a case of the new speaker achieving an incremental improvement in a few or several areas of sonic performance that outweigh that new speaker's shortcomings in other areas. For me, judging a loudspeaker that aspires to the state of the art involves weighing tradeoffs and then perhaps concluding that, on balance, the new speaker is the best I've heard.

This wasn't the case with the Chronosonic XVX; it is markedly superior to any other speaker I've heard in many, many specific areas and, most

importantly, in musical realism and expression. That musical expression is the synergistic combination of its myriad sonic attributes that infuse reproduced music with a sense of life and

realism. These attributes include dynamic contrast, transient resolution and coherence, transient weight, bass power and articulation, midrange beauty, soundstaging, timbral resolution, and clarity of instrumental line.

I customarily begin this part of the review by describing the product's most salient virtue. But the XVX has so many outstanding performance qualities that choosing just one to begin with is difficult. Nonetheless, I'll start with the XVX's reproduction of transients and dynamic contrasts, and the sense of realism and life this transient fidelity brings to music reproduction.

The XVX delivered a physically startling sense of suddenness on transient attacks. Compared with the real thing, reproduced music typically suffers from a diminution of the initial transient, in both speed and impact. Horn speakers and electrostatics can have lifelike leading-edge transient reproduction, but horns are to my ears often tonally colored, and electrostatics lack weight and impact behind the transient. The XVX has the speed of a horn speaker or an electrostatic, but without the respective shortcomings of those two technologies. The XVX managed to combine tremendous transient speed with a hard-hitting physical power and force that is nothing short of thrilling. The drum kit as reproduced through the XVX was absolutely revelatory, with a visceral verve and lifelike suddenness. The way that each drum strike pops out of the music, the way a live kit sounds, is one of the defining aspects of the XVX's sense of realism. This quality brought a new level of rhythmic expression to familiar music.

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ribbed finish, further enhancing the elegant presentation. You can specify a natural aluminum finish (silver) or black-anodized.

The XVX's build-quality and paint finish are absolutely spectacular. Wilson's paint quality has long been the standard of the industry, but the XVX seems to have taken the finish to another level. For the past 15 years I've made a hobby of car detailing, and have some experience looking at and evaluating fine painted surfaces. I can say that the XVX's paint is a step up from even the finest luxury-automobile finishes. To create a painted surface of the XVX's size, with that level of flawless mirror finish, is a remarkable achievement, and reflects the large investment Wilson has made in developing its in-house paint facilities and techniques over the decades. The closer you look at the XVX the more there is to see and appreciate.

I've broken out the details of the XVX's remarkable design and construction in the sidebar, and also included sidebars on the Subsonic subwoofers, ActivXO crossover, and the set-up process for such an elaborate system.

Although some speakers sound fast, the XVX stands alone in its ability to convey great weight and energy along with speed. There's a sense of massive power to transients, particularly those that have low-frequency energy, such as low-tuned toms, congas, and kettle drums. I had the impression that all the energy in the transient is delivered instantaneously rather than smeared over time, and with equal speed and decay across a very wide frequency band. There was no sense of the low-frequency component lagging behind the rest of the spectrum, either on attacks or decays. The track "Armando's Rhumba" from Chick Corea's Spanish Heart Band album *Antidote* [Tidal MQA] features an extended percussion break with low-tuned congas, timbales, and other Latin percussion instruments. I could hear and feel the low-frequency resonance of the congas' wooden body (with superb pitch definition, I should add) coupled with the sharp attack of hands on the skins. The exuberantly played timbales during this break were reproduced with the startling force of the stick hitting the head, and accompanied by the unmistakable sound of the metal drum resonating. The XVX sounded as though it had virtually unlimited dynamic range; peaks were reproduced in their full expression, with no compression. Concomitantly, decays were equally fast, without smearing or overhang. The XVX seemed to have a very fast settling time, swinging from loud peaks to deep silence instantaneously. It was like hearing music without a compressor in the signal path.

It's impossible to overstate the effect of this transient fidelity on the sense of realism, and of conveying the life, vitality, and energy in the music. This speed, weight behind the transients, and lack of overhang were amplified by the XVX's ability to extend this performance into the bottom octaves. It wasn't just fast and powerful through the mids and treble, but also down to the very lowest frequencies, and without any bloat or bass artifacts that called attention to themselves. The resulting sense of physicality was unlike anything I've heard from any other loudspeaker. To say that the XVX is hard-hitting is an understatement. It is whole-body thrilling, from orchestral climaxes to propulsive grooves. The XVX reveals the absolutely perfect lockstep between the kick drum and bass guitar on Talking Heads' *Speaking in Tongues* [Tidal MQA], for example. This music demands this level of dynamic agility and bass precision to fully convey the musicians' intent.

But the XVX wasn't only about bombast. At the other end of the dynamic scale, the XVX was equally adept at portraying very fine transient information

SPECS & PRICING

Chronosonic XVX Loudspeaker

Four-way, seven-driver dynamic loudspeaker

Driver complement: One 12.5" woofer, one 10.5" woofer, two 7" lower midranges, one 4" upper midrange, one 1" main tweeter, one 1" rear-firing tweeter.

Loading: XLF port, front- or rear-firing (woofer); rear vented (two lower-midrange modules); bottom vented (upper-midrange module)

Frequency response: 20Hz–30kHz ±2dB

Sensitivity: 92dB, 1W/1m at 1kHz

Nominal impedance: 4 ohms, 1.6 ohms minimum at 326Hz

Minimum amplifier power: 100Wpc

Dimensions: 16.5" x 73.625" x 33"

Weight: 685 lbs. net per speaker

(1695 lbs. total shipping weight)

Price: \$329,000 per pair, standard finishes; \$30,000 additional for WilsonPearl finish

Associated Equipment

Analog source: Basis Audio A.J. Conti Transcendence turntable with SuperArm 12.5 tonearm; Air Tight Opus cartridge; Moon 810LP phonostage; DS Audio ST-50 stylus cleaner

Digital source: Aurender W20SE server, Berkeley Audio Design Alpha DAC Reference Series 3 DAC; Berkeley Alpha USB USB-to-AES/EBU converter; Shunyata Sigma USB cable; AudioQuest Wild Digital AES/EBU cable

Amplification: Constellation Altair II preamplifier; Constellation Hercules II monoblock power amplifiers; Constellation Centaur II stereo amplifier; Tidal Prisma preamplifier, Tidal Ferios monoblock power amplifiers

AC Power: Shunyata Triton V3, Typhon QR, Sigma power cords; Shunyata Everest 8000; Shunyata AC outlets, five dedicated 20A lines wired with identical-length 10AWG

Support: Critical Mass Systems Olympus equipment racks and Olympus amplifier stands; CenterStage2 isolation

Cables: Shunyata Sigma interconnects and loudspeaker cables; AudioQuest WEL Signature interconnects and AudioQuest Dragon Zero and Dragon Bass loudspeaker cables

Acoustics: Acoustic Geometry Pro Room Pack 12

Room: Purpose-built; Acoustic Sciences Corporation Iso-Wall System

LP cleaning: Klaudio KD-CLN-LP200, Levin Design record brush

Subsonic Subwoofer

Three-driver passive subwoofer

Driver complement: Three 12" dual-spider woofers

Loading: Front ported

LF extension: 10Hz, –2dB

Sensitivity: 87dB at 1W

Dimensions: 18" x 27.25" x 65"

Weight: 612 lbs.

Price: \$40,000

ActivXO Crossover

Line-level electronic crossover

Inputs: Balanced and single-ended

Outputs: High-pass, balanced and single-ended, two stereo pairs; low-pass, balanced and single-ended, two mono

Low-pass filter: 30Hz–150Hz, 6dB or 12dB per octave

High-pass filter: 30Hz–150Hz, 6dB or 12dB per octave

Phase: 0–180°, continuously variable

Dimensions: 18.8" x 4.5" x 11.5"

Weight: 16.75 lbs. net

Price: \$4500

such as gentle shakers toward the back of the mix. Low-level information was rendered with tremendous clarity, making instruments sound like distinct objects in space rather than undifferentiated sounds buried within the musical fabric. I greatly enjoyed the way the XVX revealed a wealth of subtle nuances in the most delicate cymbal work. I've appreciated drummer Billy Higgins' work on many records (he was the house drummer for Blue Note for many years, and appeared on more than 500 albums), but the XVX's transient fidelity and low-level resolution revealed the full extent of his artistry. I heard newfound expression through the XVX, such as the way Higgins maintains a shimmering rhythmic pulse on the riveted ride cymbal, snare accents that surprise and delight, subtle modulations of the volume of kickdrum beats, and rhythmic interplay with a soloist. Listen to the track "Second Balcony Jump" from Dexter Gordon's album *Go* [Music Matters LP reissue] and marvel at how adeptly he shifts from the oddly syncopated head to a full-on swing when Dexter launches into his soaring solo. (Incidentally, there's a funny story in *Sophisticated Giant*, Maxine's Gordon's biography of her late husband, about how this piece was named.) This kind of connection with a musician's expression is the *raison d'être* of high-end audio, and the XVX delivers like no other speaker I've heard. It wasn't just Higgins' drumming that I came to appreciate more; I had the same experience with many other drummers. The XVX's lifelike rendering of the drum kit, from its transient impact to subtleties of dynamics, brought to the fore the playing of my favorite drummers, including Peter Erskine, Jack DeJohnette, Tony Williams, Billy Cobham, and Leon Chancler.

The XVX's dynamic agility paid dividends not just on percussive sounds, but on virtually all instruments. The entrance of a brass or woodwind instrument or section, for example, had a similar kind of physical immediacy. The way the XVX portrayed the initial attack, followed by the sense of expanding air around the instrument, was sensational. The XVX presents a powerful sense of presence and immediacy; a vocal entrance momentarily startles the brain's primitive response into thinking another human has suddenly appeared in the room. I heard this quality, uniquely before hearing the XVX, during a 90-minute audition of the WAMM MC at its introduction several years ago.

I had a hard time wrapping my head around the XVX's tonal balance. On one hand, it is extremely flat, smooth, and neutral in character, all the way down to the bottom octave. When playing music without much energy in the mid-to-upper bass, the XVX's bottom-end is world class in pitch definition and clarity, but doesn't sound qualitatively different from other reference-class loudspeakers. But when asked to reproduce instruments with a lot of energy in the lower registers, the XVX takes on an entirely different character. Suddenly, it's as though there's another level of weight, richness of tone color, solidity, and visceral power. The XVX, unlike any other speaker I've heard, fully reproduces the solidity, density, and weight of low-frequency-rich instruments such as an orchestra's doublebass section, or brass in-



ACTIVXO DUAL-SUBWOOFER CROSSOVER AND CONTROLLER

THE NEW ACTIVXO subwoofer crossover is an updated version of Wilson's long-standing WATCH Controller. The all-analog ActivXO is a dual-channel unit, meaning that it can control two subwoofers with independent fine-tuning of each. These adjustments include the crossover frequency and slope, as well as continually variable phase for each sub. Balanced and unbalanced inputs and outputs are provided.

The ActiveXO can be operated as a high-pass filter and a low-pass filter in those systems where high-pass filtering the main speakers is desired. Alternately, the unit can low-pass filter the signal driving the subwoofer amplifier while leaving the signal driving the main speakers unfiltered. This is the configuration of the review system; one stereo output from the Constellation Altair II preamplifier drove the main amplifiers directly (Constellation Hercules II monoblocks), and the Altair's second stereo output fed the ActivXO's input. The ActivXO's low-pass-filtered output then drove the Constellation Centaur II Stereo amplifier which powered the two Subsonic subwoofers. In this setup, the ActiveXO isn't in the signal path of the main speakers. Wilson prefers this method of running the main speakers full-range, bringing in the sub at a frequency that complements the main speakers' roll-off. In the review system, the two Subsonic subwoofers rolled in at 32Hz.

struments when playing in their lower registers. This is the classic "power range" of the orchestra, and heard through the XVX it is thrilling. Listen, for example, to the Dallas Winds brass section on the spectacular Keith Johnson recording *John Williams at the Movies* on Reference Recordings (176/24 downloaded from Reference). The big brass-section tuttis will lift you out of your seat with their force. Not only that, but the timbre of the instruments is fully fleshed out, without the common affliction of low-frequency-rich instruments sounding thinned in tone color and robbed of their weight.

I began the previous paragraph by saying that the XVX's tonal balance was an enigma. The puzzlement is this: The XVX has a huge bottom end with seemingly limitless weight, extension, dynamics, and sheer ability to move air. Yet, at the same time, it's fast, light, agile, and completely free from any thickness, bloat, or boom. The tonal balance is lean and light on music without much low-frequency energy, yet extremely dense, rich, and full when the music calls for it. The XVX's preternatural ability to seemingly change its tonal balance based on the music's energy distribution is unique in my experience. I was amazed by how much bass energy the XVX

SUBSONIC SUBWOOFER

MOST SUBWOOFERS TODAY pack a large driver into a small enclosure, and then massively equalize the drive signal to compensate for the lack of cabinet volume. The Wilson Subsonic is not one of these. Rather, Wilson has made the Subsonic's enclosure as big as it needs to be for the woofers to operate correctly without resorting to equalization. This approach results in a subwoofer that's just over five feet tall, eighteen inches wide, twenty-seven inches deep, and 610 pounds. The enclosure houses three long-excursion 12" woofers that are reflex loaded via two giant round aluminum ports on the baffle. These woofers feature a dual spider to maintain linear motion even at high excursions. The enclosure is made primarily from X-material, with HDF internal bracing. The Subsonic is rated as being flat to 10Hz (-2dB), an astonishing specification.

The Subsonic is passive, which means you'll need to drive it with an outboard amplifier of your choice. Sensitivity is 87dB and the nominal impedance is 4 ohms.

like rendering of timbre that combines warmth and richness with very high resolution—often mutually exclusive qualities. There's an organic, relaxed beauty to the sound, yet at the same time the midband is extraordinarily revealing of very fine textural, spatial, and dynamic cues. The result is an almost spooky sense of presence that makes it easy to forget that you're listening to a reproduction. In addition, the XVX portrays instrumental timbre with a weight and density without sounding dark or closed in. The common affliction in reproduced music of thinning tone color and upper harmonics overlaid with a whitish patina was completely absent in the XVX. The sound of the violin (Hillary Hahn's *Retrospective* on DG, direct-to-disc) was particularly revealing of the XVX's unique combination of harmonic warmth with resolution of very fine detail. Her instrument was rich, full-bodied, and densely textured in the fundamentals and lower-order harmonics along with a sweetness in the upper harmonics that simply made the reproduction sound closer to the real thing. The sound was ravishingly beautiful in timbre and in the full measure of her expression. The trumpet is another example; the XVX conveys a

tremendous amount of high-frequency detail and power yet without a hard, whitish edge. Consequently, I could listen to music at very high levels, when appropriate, without my ears closing down on peaks, and without listening fatigue. The XVX is a speaker you can listen to for very long sessions at high levels and not feel tired.

This realism may be the result of the XVX's resolution of the very fine microstructure in instrumental timbre. For example, woodwind instruments don't produce a purely steady-state tone on held notes, but rather a rapid series of micro-transients created by the reed moving back and forth. It could be that the XVX's transient fidelity extends into this micro-realm, correctly reproducing the temporal microstructure that provides the brain with cues that trigger the impression of timbral realism.

The sense of ease through the midrange carried over to the treble, which was utterly without metallic hardness, grain, or excessive brightness. The silk dome tweeter never called attention to itself, instead blending seamlessly into the sound. The top end was natural and relaxed; the treble never sounded like a separate component riding on top of the music. Vocal sibilance was noticeably smoother and more natural, blending perfectly into the sound of the voice rather than sounding like an artifact riding on top of it. Cymbals seemed to float in air, their decays richly textured and resolved way down into deep silence. The treble openness contributed to the XVX's sense of live air and space in a hall, no doubt aided by the upward-firing tweeter.

Despite the XVX's size, this speaker rendered all types of music with the appropriate scale. Many big speakers sound big on everything, reducing the intimacy of smaller-scale works. But the XVX presented music with a realistic scale, from a solo acoustic guitar, to a violin and piano duet, to a string quartet or jazz piano trio, to a chamber orchestra, to a big band, to a 120-piece orchestra with choir. On really big music, the XVX is stunning in its sense of expansive size. The speakers completely disappear into a huge three-dimensional stage, with not

could put into the room without a trace of boom, as well as its ability to maintain an unflappable sense of precision and control at the lowest frequencies, even when reproduced at high listening levels. This is a combination that I've not heard in any other speaker, and one that takes reproduced music to the next level of realism. This sense of tight control was revealed in the XVX's superb definition of the pitch and articulation of each note. I heard detail in bass lines that I'd never heard before, each note clearly distinct in timbre, pitch, and dynamics. This combination of clarity, massive weight, and unlimited dynamics, with those qualities maintained down to the very bottom octave, was viscerally thrilling. This was true of the XVX without the Subsonic subwoofers, but the pair of subs extended this remarkable performance to the infrasonic range—the subs are flat to an astonishing 10Hz.

I should add a caveat here; my only experience with the XVX is in my listening room—I haven't heard it at a show, the factory, or in a dealer's showroom. My listening room is atypical, designed from scratch with good dimensional ratios for smooth distribution of room-resonant modes. It was built with the ASC IsoWall technique whose primary virtue is the room's ability to be driven hard by low-frequency energy and not overload or cause the building structure to store and later release energy ("wall shudder"). I don't know how the XVX will behave in a conventional room, but can say that the XVX's bass and dynamic performance in this room were uniquely spectacular.

We've all had the experience of walking down a street and upon hearing music, knowing instantly that it's live. The XVX has that similar quality of presence and immediacy through the midrange. The mids are simply sensational in lifelike presence and vividness. This vividness isn't the result of sounding forward or analytical, but rather from the sheer sense of realism, that impression of the instrument *right there*, in front of you. The XVX has a gorgeous and life-



on and off with the flick of a switch on the ActivXO crossover, they were adding an extra measure of power and depth to instruments such as timpani and pipe organ. The pedal points on the Rutter *Requiem* (Reference Recordings) felt like they extended to the center of the earth, with subtle power and precise pitch as they pressurized the air in my room. The Subsonics added a new dimension of majestic sweep to this recording. The Subsonics also expanded the space and air of the Myerson Symphony Center by resolving very low-level, low-frequency components that cue the brain to the size of the hall. I also heard a greater midrange clarity on the voices with the Subsonics engaged, with more separation between the choir and the orchestra. Pipe organ spectaculars were just that—spectacular. The sense of limitless extension, limitless power, and limitless control, along with the precise sense of pitch with no port artifacts or bloat, was simply stunning. It's really something you have to experience for yourself. I've never heard better bass from an audio system, or bass that extended this low and maintained its quality in the bottom two octaves.

Conclusion

If forced to sum up in one word the quality that makes the Chronosonic XVX stand apart from other speakers, that word would be "physicality." The XVX projected a physical impression of instruments and voices in my listening room with startling realism. Physicality also describes this speaker's hard-hitting and lifelike reproduction of music's transients, not just in speed but also in weight and power. Physicality is the best word to convey the impression of a tangible soundstage populated by individual instruments, each of its own vibrant tone color. And then there's the visceral physicality of the bottom few octaves that combine seemingly limitless extension and power with precise articulation.

Yet the word "physicality" merely describes the *sound* the XVX produces. Far more important is the rich musical expression contained within that sound. This speaker's remarkable sonic attributes simply allowed me to hear more of the musical intent. Playing familiar recording after familiar recording, I was repeatedly amazed at the way I discovered new expression—how a drummer's subtle but musically significant dynamic accents changed a piece's rhythmic feel or how (for the first time) individual musical lines fit into a coherent whole, for just two examples. The XVX lets you instantly and deeply fall into that zone of complete musical immersion—free of distractions that remind you that you're listening to an electro-mechanical recreation of music and not the music itself.

I've had the XVX system in my home for five months, yet every time I sit down and listen, I feel a profound sense of musical discovery. The Chronosonic XVX is an open window into a world of musical expression that has even this experienced listener feeling like the neophyte hearing a high-end system for the first time.

just tremendous depth, but also with fine gradations of that depth. I could easily hear space between rows of instruments in the orchestra, like looking at a diorama rather than a photograph. Image precision was pinpoint, with clear delineation of the instrument's outline, with well-defined space around that outline. Because this is a big speaker, it presents images higher than that of smaller speakers. The XVX beautifully portrayed the way air expands around an instrument, just as you hear in life. A good example is the brass on the Reference Recordings title *From the Age of Swing*; the XVX gets out of the way to fully reveal the instruments' dynamic envelopes in both power and space.

There's one other aspect of the XVX's presentation that sets a new standard, in my experience; I could clearly hear every instrumental line no matter how complex or dense the music. The sound wasn't composed of one big fabric of many colors, but rather of entirely separate objects in space, just the way we hear live music. Consequently, I could easily shift my attention from one instrument to another—I found myself more deeply appreciating great comping during a solo, for example. Herbie Hancock's funky Rhodes playing behind Milt Jackson's and Freddie Hubbard's solos on the title track from the LP *Sunflower* sets the entire feel of the tune, and was never more clearly articulated.

Although a four-way, seven-driver speaker, with what must be a very complex crossover (including a crossover point within the two-way midrange), the XVX sounded completely coherent from top to bottom. There was no change in timbre, articulation, or dynamics as a function of frequency.

I could happily live with the XVX alone, but must admit that the pair of Subsonic subwoofers took the performance up a substantial notch, and not just in the bottom end. When I turned the woofers



INSTALLATION AND SETUP

AS YOU MIGHT IMAGINE, setting up the XVX and a pair of Subsonic subwoofers is quite a process. The XVX is shipped in six crates and must be assembled and the modules connected in your room. The woofer cabinets are shipped on casters so that they can roll out of the crates into rough position. Once the gantries have been attached to the woofer cabinets, the midrange and tweeter modules are loaded into the gantries. The installer measures the height of the seated listener's ears, and the distance between the speaker and the seated listener. This information tells the installer which spike length to insert into each upper module, as well as which step on a machined aluminum staircase the spike will rest. This adjustment rotates the midrange and tweeter modules' axes so that the listener is within each driver's optimum dispersion zone. Next, the drivers are moved on calibrated sleds to the positions specified in the owner's manual for your listening distance and listening height.

Before the speakers are moved into rough position, however, the installer finds the approximate ideal location based on a technique Wilson has developed and refined over many years. One person sits in the listening seat while a second person moves slowly around the approximate speaker location while speaking. At some points within this area, the speaking person's voice will sound the most natural. Wilson calls this area the "zone of neutrality." The zone of neutrality, generally measuring about 3' x 3', is marked on the floor with blue painter's tape, and the speakers are rolled into that zone. Then it's a matter of listening and moving within the zone, listening and moving, until you find that magical perfect position. Hash marks on the tape allow repeatable positions. Wilson has developed an evaluation protocol for this move-and-listen process that involves grading the speaker's performance in several of sonic criteria. The grades are entered as numbers on a chart along with the speaker's location and other notes. This makes it possible to document the performance at previous positions; the hash marks on the tape allow recreation of any previous position. Wilson archives these set-up notes for every installation going back decades. On a visit to the Wilson factory many years ago I saw rows and rows of three-ring binders in Dave's office, each filled with these set-up notes for every installation he had done going back 40 years. That fact alone speaks volumes about David Wilson's meticulous approach to audio.

With most speakers, this is the point where you would replace the casters with spikes and call it a day. The problem with this method, however, is two-fold. First, it's impossible to realize precise positioning because a small movement of the speaker causes the casters to roll back into the carpet depressions where they have just been.



Second, if you can find the perfect position with the speaker on casters, the speaker inevitably moves from that perfect position when you lift the speaker to spike it. A quarter of an inch can mean the difference between great and transcendental sound.

Wilson has solved both these problems with a simple solution. The XVX is supplied not just with large spikes (which Wilson calls "mechanical diodes"), but also with machined aluminum discs with a rounded bottom surface and a divot in the top that accepts the point of the diode's spike. Before the listen-move-listen process, the speaker is jacked up (with a Wilson-built machined aluminum jack) and the casters are replaced with the beefy mechanical diodes and the discs. The discs' dish-shaped bottoms allow the speaker to slide across carpet (although it takes some effort to effect small movements) so that the speaker's position can be fine-tuned while the diodes are in place. You can move the speaker in very precise and repeatable increments and know that it won't move from those positions. This is important with a very high-resolution speaker like the XVX; achieving its maximum potential requires exceedingly precise placement. When the speaker is perfectly positioned, it is jacked up again a fraction of an inch (just enough for the spike point to clear the divot in the slider) to remove the sliders.

On the first installation day (which started midday), we got the speakers assembled and connected to amplifiers so that they could run all night and start to settle in. The second day was spent fine-tuning the placement. Wilson Audio's Peter McGrath and John Giolas took turns in the listening seat while Wilson's Tyler Hall pushed the speaker side-to-side, and forward-and-back, in smaller and smaller movements as directed by John and Peter. Peter used his own recordings, which he knew intimately. I've noticed an interesting phenomenon in watching recording engineers perform a setup; it takes them just a few seconds to know whether a speaker placement is correct or not. Where most listeners, even skilled ones, might listen for a few minutes,

great recording engineers instantly recognize sub-optimal placements. Nonetheless, the fine-tuning phase of the process took four hours. It was interesting to hear how the XVX responded to small changes in position, gradually getting better and better. The pair of Subsonic subwoofers were positioned in the corners behind each XVX, and their casters were replaced by spikes. The ActiveXO was installed in my rack tuned for crossover frequency (32Hz), phase, and level. *Voilà!* A full XVX/Subsonic setup.

CHRONOSONIC XVX TECHNICAL DESCRIPTION

AS STATED in the overview earlier, the XVX is a four-way, seven-driver dynamic loudspeaker housed in five enclosures. The upper four enclosures are mounted within an open-air gantry that sits atop the woofer enclosure. The bass is reproduced by two woofers, one 12.5" and one 10.5", in the same cabinet and covering the same frequency range. The pulp-paper woofers were designed from scratch for the WAMM MC, specifically to work together. I can't think of another speaker that uses woofers of different sizes in the same enclosure. The woofer enclosure, slightly smaller than that of the WAMM MC, features Wilson's Cross-Load Firing (XLF) port that can be vented out the front or the rear depending on the installation. The switchable port allows better integration with a wider range of listening room placements. You simply listen to the port venting forward and then backward to decide which sounds better.

The upper driver array is composed of two 7" lower-midrange drivers, one 4" upper-midrange, and a two 1" silk-dome tweeters, one of them a rear/upward-firing ambience tweeter. Unusually, the midrange is a two-way design (split into two bands) with the lower midrange reproduced by the two 7" drivers and the upper-midrange by the single 4" unit. This two-way midrange approach allows the respective drivers to be optimized for the frequency ranges each is asked to reproduce. This method confers a host of benefits. First, each midrange driver in the two-way system can be specialized for the frequency range it reproduces. Second, the larger lower-midrange driver, made feasible by the two-way approach, can be crossed over to the woofer at a lower frequency. By lowering the crossover frequency between the woofer and midrange driver, dynamic contrast is improved; the 7" lower-midrange driver can move faster than the woofer through the frequency band (upper-bass to lower midrange) that is conventionally reproduced by the woofer. Similarly, the 4" upper-midrange driver can move faster than the 7" unit for steeper leading-edge attacks. (The 4" driver is a modified version of the 4" driver developed specifically for this purpose in the WAMM, which employs two of these units.) The two-way midrange further improves dynamic performance by allowing a higher crossover frequency to the tweeter, which puts less stress on that driver. Without the need to reproduce the lowest treble frequencies, the tweeter is freed to have wider dynamic

range and lower distortion. Remember that each halving of frequency requires four times the excursion from a driver for the same acoustic output. Finally, the two-way midrange, with the drivers in separate enclosures, allows each driver to be loaded independently; the XVX's lower-midrange drivers are vented out the rear, and the upper-midrange is vented out the enclosure bottom. The two-way midrange adds considerable expense and complexity, particularly when each driver is mounted in its own enclosure that can be articulated, but confers many advantages.

The XVX's 7" midrange driver is an entirely new design that wasn't available when the WAMM was developed. This driver, developed by Dave Wilson and long-time Wilson engineer Vern Credille (whose brilliance extends to many disciplines, incidentally), was Dave's last project. In a departure from the trend toward rare-earth magnets, the new midrange's motor is based on a traditional Alnico (aluminum, nickel, cobalt) magnet. David had always found some special qualities in this classic magnetic material, but thought that existing examples of the technology were lacking. Dave and Vern spent more than a year designing and prototyping various magnet geometries, finally hitting on a four-magnet array that reportedly lowered distortion and increased efficiency. Daryl and Vern then further refined the driver, now called the QuadraMag, specifically for the XVX.

The tweeter is the Mark 5 version of Wilson's Convergent Synergy Tweeter, the same 1" silk-dome unit used in the WAMM MC. In addition to the front-firing tweeter, an identical rear-firing tweeter, located on the topmost midrange enclosure, reproduces ambient information. The rear-firing tweeter's level can be adjusted to the room via a rotary knob. When I visited Wilson Audio a few years ago to hear the WAMM at its introduction, Dave showed me a tableful of tweeters he'd evaluated in developing the WAMM. He explained how the silk dome was the most natural sounding, and that he favored it over every hard dome he



ALIGNMENT REFERENCE

Manufacturer Comments

Larsen Model 9 Loudspeaker

We want to thank Mr. Greene for his glowing and insightful review of the Larsen 9 speakers. He took the time to carefully explain how speakers actually interact with the listening room and the many challenges and hurdles that conventional speakers must overcome in order to perform their best. Worldwide, many listeners live with speakers that are not set up correctly, either because their spouse or living situation won't allow it, or because their room layout or furniture arrangement won't permit it—or because they don't have the knowledge to set them up correctly.

Getting our customers the best possible sound has always been the goal of Larsen speakers, and Mr. Greene has done a great job at explaining not only how easy Larsens are to set up, but also how well they manage to overcome the many problems conventional speakers face and how well the Larsen speakers fix those issues for optimal listening-room performance.

Mr. Greene vividly describes the Larsen sound: “Musically, the absence of early reflections makes the sound very clear but also very natural in the sense of sounding like real instruments in real space...You are there.”

To us, it's the highest praise. Take a listen.

John Larsen
Designer

Yamaha 5000 System

Firstly, thank you to Mr. Moulton, Mr. Harley, and everybody at *The Absolute Sound* for allowing Yamaha to have an opportunity to share our products with the North American market.

Yamaha is a total music brand, and we have pursued musicality in the 5000 system over a long development period.

Our goal is to make the existence of the equipment disappear, leaving only the music. We want you to feel the sense of unity with the music that you would experience at concerts and live performances. We hope you encounter new music with excitement that moves your heart through our products.

Susumu Kumazawa
Product Planner, Yamaha Hi-Fi

REL S/812 Sub-Bass System

Thank you for the opportunity to supply commentary and a little background to Neil Gader's review of our new REL S/812. From a pure musical standpoint, it's important to note that the REL design staff doesn't focus on making bass. I know that may sound strange, but as audiophiles (and students of the art of making film-sound come alive) we are far more interested in what edge-of-the-art bass can do to bring the entire system's performance alive. This has to be the singular difference between our company and anyone else building subwoofers. We listen forensically into the ways softly struck concert bass drums decay into a live sound space, how the leading edge of a cymbal energized by the downward pull of the edge of a drummer's stick creates the shimmering sheen of complex harmonics that sprays across the entire soundstage when the latest REL filter circuit is perfect-

ly tuned, versus splashing harshly into a discordant, distracting mess. In short, we're less interested in bass per se, than in how very fine sub bass can open up and bring music to life.

Design is a humbling and iterative process, a process where, if one pays close attention to what works and what doesn't, you get better over time—sometimes just a little. In this case, a lot. We're now in our 4th generation of medium-chassis designs going all the way back to the original R Series of 2005, and these models carry a terrible burden. Why? Because customers purchasing these products are expecting Reference levels of performance for one-half to one-third the cost of a Reference. It's a tough burden, but based on the remarkable responses to the new Serie S, these deliver so much more of every performance parameter as to exceed everyone's expectations. The new S models play deeper, play much louder, and are more dynamic when the performance demands (“The ability to surprise and even shock was part of the REL experience”). But, importantly, we work to extract the tiniest amounts of spatial data and resolving power down into the nano-darkness of the best recordings.

It is this ability to stretch the performance boundaries at both extremes that careful listeners admire the most about the new S. Lots of subwoofers can play loud. Few can do so one moment and the next instant, halt and let the decay patterns swirl past, allowing you to hear the hall or studio and its scale and acoustic signature. This honoring of transient speed and massive dynamics, coupled with quietness is the hallmark of the new S.

I welcome a future opportunity to visit Robert Harley and allow him to experience what a state of the art REL Line Array (three units stacked per side, each individually controlled and dialed-in per their location within the stack) sub-bass system can do in his newly redone state-of-the-art sound room.

Thank you Neil and Robert for continuing to press forward, for waving the banner for products of deep meaning, and for delivering to us *The Absolute Sound*. Harry would be proud of you.

John Hunter
Head of Design and Acoustics
REL Acoustics

heard and measured, including those made from beryllium, diamond, and other exotic materials. He pointed out that for the WAMM the tweeter's cost was not a consideration.

The crossover, potted in epoxy, is encased in a massive carbon-fiber enclosure mounted on the back of the woofer cabinet. The crossover frequencies and slopes are considered proprietary, and not disclosed. The capacitors are a new type built in-house specifically for the XVX. Wilson had been using capacitors made by Reliable Capacitors (better known as Rel Caps) for decades, but recently bought the company and moved capacitor manufacturing in-house. Before re-starting the production line in its factory, Wilson re-engineered the capacitors to a higher specification, and can manufacturer the caps to tighter tolerances. In addition, the in-house capacitor-making ability allows Wilson to experiment by making one-off caps to try new designs. The caps in the XVX are the product of this development effort, and exclusive to this new speaker (for now).

Wilson has long pursued advanced composite materials for loudspeaker enclosures, but has recently taken this development effort to new levels, aided by a measurement technique called Laser Doppler Vibrometry that reveals extremely low levels of vibration. The technique provides a high-resolution visual representation of surface vibration, allowing the engineers to experiment with different materials and construction techniques to eliminate unwanted resonances. All five of the XVX's enclosures are made from the fifth generation of Wilson's X-material, a very dense and heavy phenolic resin that combines stiffness with damping. The midrange baffles, however, are made from S-material, which has a lower resonant frequency, which sounds better in this application. The gantry is made from machined aluminum, reinforced and damped with X-material. The XVX debuts Wilson's newest composite, V-material, that optimizes damping over stiffness. (Wilson's proprietary composites are named after the speaker in which they debuted; "X" for the X-1, "S" for the Sasha, and now "V" for the XVX.) A layer of V-material forms the interface between the woofer enclosure and the gantry. V-material is also used in the moveable stainless-steel platforms, which Wilson calls "trucks," that move the upper-array enclosure modules.

Note that Wilson uses a wide variety of custom materials in different parts of the speaker rather than the usual approach of a single, or perhaps two, materials.

Looking at the rear of the speaker reveals the design's complexity. The bottom-rear panel holds a single pair of binding posts for amplifier connection—nothing unusual here. But this input internally feeds a row of five pairs of bindings posts mounted on the gantry to provide a connection point for five pairs of cables that connect to each of the five drivers in the upper array. Even the cable system was re-engineered for the XVX; it includes a tensioning system in the mechanism where the cable connects to each driver. In addition, the binding posts were designed from scratch by Wilson (they made their debut in the Sasha DAW), and the

spade lugs were created specifically for these binding posts. A row of resistors beneath the binding posts allows the installer to fine-tune the tonal balance by replacing one of the resistors with a different value. The resistors are also designed to open under excessive current, protecting the drivers from damage.

Now we get to what sets the XVX apart from all previous Wilson speakers (and any other speaker for that matter), save the WAMM MC—the time-alignment ability it shares with the WAMM MC. As you may know, Wilson speakers are based on the idea that the outputs of each driver should reach the listener's ears at the same time, regardless of listening distance or listening height. The only way to achieve this objective is to adjust the individual drivers' positions for a particular installation. Dave Wilson discovered this idea back in 1980 when he hung tweeters above his Dahlquist DQ-10s on an elaborate mechanism that allowed the tweeters to move back and forth with repeatable precision. Using his own recordings, he found that the sound of the speakers more closely matched the sound in the concert hall when the tweeters were in a certain position relative to the other drivers. That discovery has been the animating concept behind all Wilson speakers since. Contemporary Wilson speakers realize this time alignment with a mechanism that allows the individual driver enclosures to move back and forth. On some models, the upper drivers can also be rotated so that the listener is always on the optimal axis. This rotation is achieved with a spike that protrudes from the bottom of the midrange and tweeter enclosures and terminates on one step of an aluminum staircase. The spike length and determination of which stairstep the spike rests on has been carefully calculated for every possible listening distance and listening height, shown in a chart in the owner's manual. Wilson calls this technology Spherical Propagation Delay.

With Wilson's patented time-alignment method in products before the WAMM, alignment between drivers could be realized with 12 microseconds precision. In the development of the WAMM MC, Dave found that even more precise time-alignment resulted in higher fidelity to the source. He thus developed for the WAMM MC an elaborate mechanism for adjusting the drivers with unprecedented precision—just two microseconds. The hardware for moving the drivers back and forth with this accuracy is extraordinary; a wheel turns a screw-driven platform (the "truck") on which a pair of driver enclosures are mounted (two trucks total). Calibration markings indicate the driver's precise position. The final positions of each driver are determined by the listening distance and listening height, factors that will differ between installations. In a nice touch, two lighting systems inside the gantry, machined from aluminum and appearing to be integral to the superstructure, can be turned on to illuminate the calibration hardware.

The mechanism for achieving this alignment is the same between the WAMM and XVX, although realized with somewhat different materials in the new speaker. Remember that the vibration-absorbing V-material, used in the XVX between the upper-module array and the woofer enclosure and in the moveable truck platforms, wasn't available when the WAMM was developed. According to Wilson, the discovery of the V-material was a "game changer" because of its extraordinary damping properties, and is what inspired the company to build the Pedestal, a vibration-absorbing footer recently announced by the company.

The XVX's time-alignment mechanism is so precise that it can be used to compensate for the differing "group delay" characteristics in

power amplifiers. Group delay is a phenomenon in amplifiers in which some frequency ranges are delayed relative to other frequency ranges as the signal passes through the amplifier. For example, a particular power amplifier may delay the treble by a few microseconds compared with the lower frequencies. The amount of group delay, and whether the treble leads or lags the bass and midrange, is different for every power amplifier. This fact has until now been academic; there was no way to compensate for group delay in a loudspeaker—or to even know if it was audible. But the XVX's temporal resolution is so fine that the driver positions can be adjusted for the specific amplifier driving it, essentially compensating in the speaker for the amplifier's group delay.

These group-delay characteristics account for some of the differences we hear between power amplifiers. Two amps may have an identically flat frequency response, but have different tonal balances because of their different group delays. In most solid-state amplifiers, the treble leads the rest of the spectrum. In most tube amps, the treble lags the rest of the spectrum. This phenomenon also explains why certain pairings of power amplifiers and loudspeakers results in a synergistic match; the speaker's fixed time-alignment error

by chance compensates for the amplifier's group delay characteristics. Wilson has demonstrated how a solid-state amplifier and a tube amplifier can be made to sound more similar when each amplifier's group delay is compensated for with the Chronosonic time-alignment system.

I have firsthand experience with this group-delay adjustment. Wilson set up the XVX in my room without having yet measured the group delay of my reference amplifier, the Constellation Hercules II. A month later, after Wilson had obtained an amplifier sample to measure, John Giolas visited again to adjust the XVX to compensate for the Hercules II's group delay. The adjustment took seconds, and could easily be repeated for before/after comparisons. Specifically, he moved the tweeter module back by the equivalent of 3.5 microseconds. The change was surprisingly easy to hear; sibilance on a vocal sounded softer and better integrated with the voice; the top end was a little smoother and more delicate; the voice had greater palpability; the soundstage was slightly better defined and had a little more air around instrumental outlines. If you had not heard the compensated version you wouldn't have thought anything was amiss, but the compensation was a worthwhile improvement. In an example of how far Wilson Audio and its dealers will go to provide their customers with the best experience, Wilson Audio will measure any XVX customer's amplifier and provide the dealer with the proper calibration settings for that amplifier. **tas**